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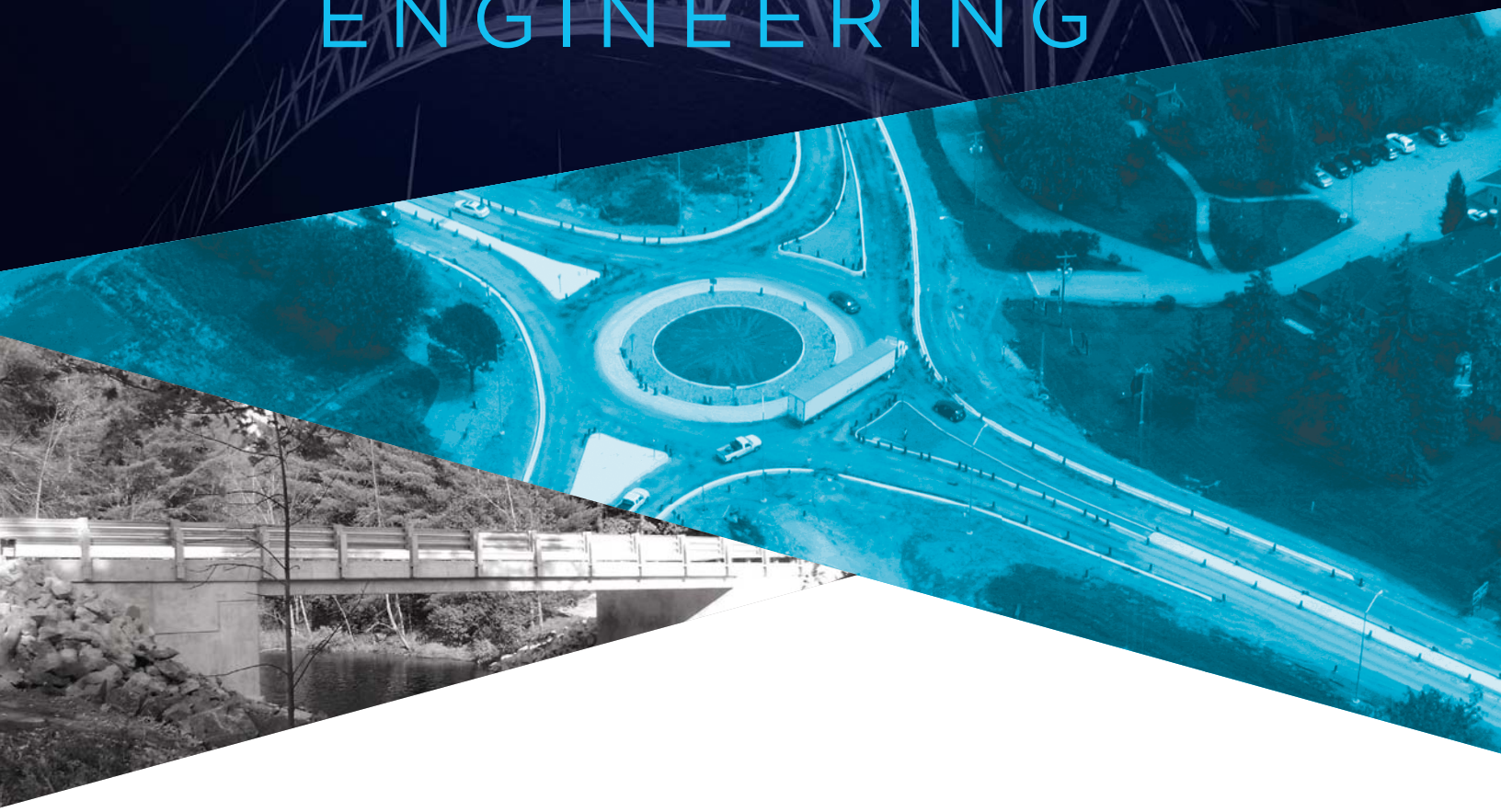

Stormwater Management Report

Grainboys Holdings Inc

3469 York Durham Line

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STORMWATER MANAGEMENT REPORT

Grainboys Holdings Inc.

3469 York Durham Line

December 19, 2019

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1 Background

The Owner, Kresho Petrovich, is proposing the development of the new Grainboys Holdings Inc. facility at 3469 York Durham Line. A residential dwelling is located on the existing 36.3 ha site and is surrounded by primarily agricultural cropland and wooded areas (see Figure 1-1). St. Lawrence Grains & Farm Supply Ltd. Is located directly south of the subject site.

Figure 1-1: Site Location

Jewell Engineering Ltd. (JE) has prepared this SWM report to address the concerns for quality and quantity treatment with the proposed development. The site is subject to Oak Ridge Moraine guidelines and located in a headwater area of the Toronto and Region Conservation Authority (TRCA) watershed.

The proposed development of the new mill facility is considered a “major development” based on the *Oak Ridge Moraine Conservation Plan* (ORMCP). Additionally, the ORMCP states that the net developable area of the site is to be limited to 50 percent of the total site area. Impervious surfaces are also limited to 20 percent of the total site area.

According to Map 5 of the ORMCP Land Use Designations for the Township of Uxbridge, the site is classified as a “Natural Linkage Area” (see Figure 1-2). The purpose of this designation is to protect critical natural and open space linkages between the Natural Core Areas and along rivers and stream, maintain the quantity and quality of groundwater and surface water, and maintain the ecological integrity of the ORMCP area. Policies for development within Natural Linkage Areas are typically very

restrictive. This is reflected in the development limitations outlined above and the study objectives described in Section 2.

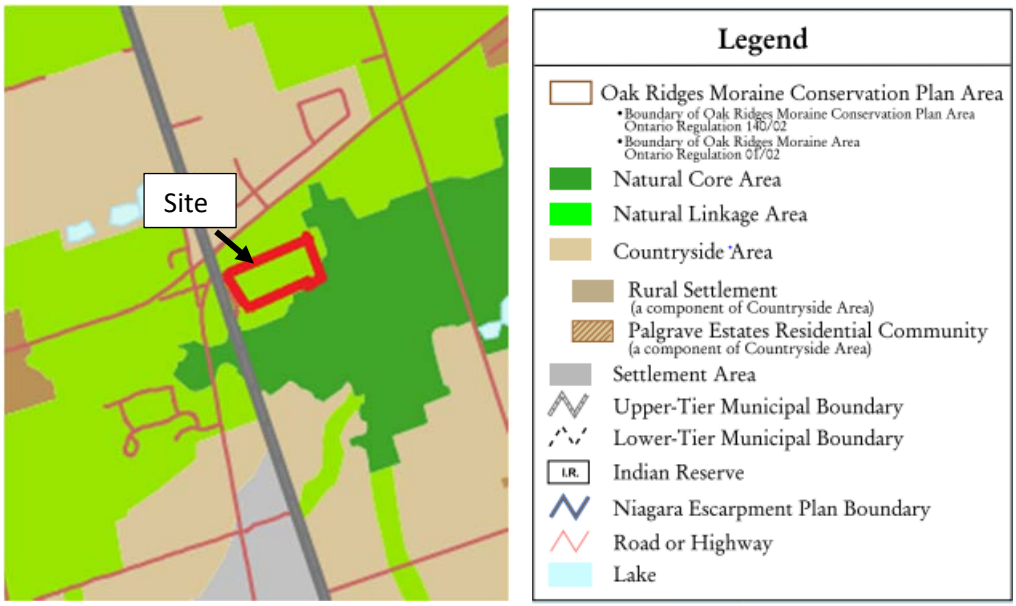

Figure 1-2: ORMCP Land Use Designation

The commenting agencies for the SWM plan include Toronto and Region Conservation Authority (TRCA) and the Township of Uxbridge. The subject site is within the Duffins Creek watershed.

2 Proposed Development

The proposed development plan is provided in Figure 2-1. The development includes construction of a new building and associated asphalt parking/driveways and concrete bins. Stormwater is proposed to be conveyed via sheet flow from the building and asphalt driveway/parking areas to a perimeter enhanced grass swale which directs drainage to a centralized SWM facility. External drainage from the north will be re-directed around the proposed development and outlet to the same location as the existing drainage.

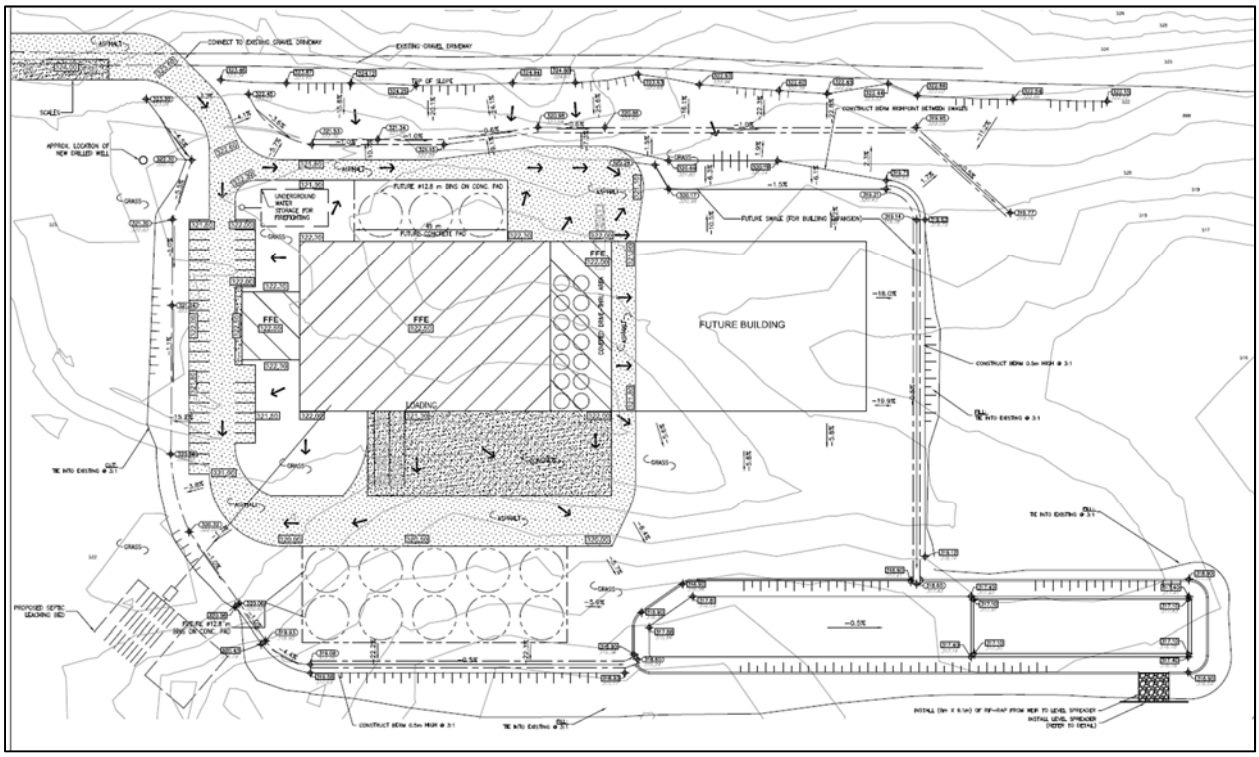

Figure 2-1: Proposed Development Plan

Site grading plans have been completed for the immediate proposed development as well as future expansions. This SWM report has been completed in consideration of the full build out (inclusive of the future expansions).

3 Study Objectives

The subject site falls within the Duffins Creek watershed in the TRCA area. The stormwater objectives summarized below were determined in accordance with the TRCA Stormwater Management Criteria 2002 and the 2012 Duffins Creek Hydrology Update by Aquafor Beech Ltd.

Quantity Control Objectives

To provide on-site storage for the development area to control post-development runoff to the designated quantity control release rates as defined in Appendix A of the TRCA Stormwater Management Criteria 2002 for the 2 to 100 year event for the 12 hour AES storm distribution.

Quality Control Objectives

To provide water quality treatment to the Enhanced objectives outlined in the Ministry of Environment's *Storm Water Management Planning Design Manual, 2003.*

Sediment and Erosion Control during Construction

- Retain 5mm on site to mitigate the release of sediment offsite
- Minimize the potential for erosion of soils and construction materials
- Protect planned infiltration facilities

Water Balance

To provide a site specific water balance analysis and maintain water recharge.

4 Methodology

This section is provided for the interested reader to gain an understanding of the hydrologic and hydraulic modelling methods used by JE during the course of the investigation.

The results of the analysis are presented in the following sections.

4.1 Hydrology

A hydrologic analysis was completed using HEC-HMS version 4.3. This hydrologic modeling software is developed by the U.S. Army Corps of Engineers and distributed freely.

HEC-HMS software can simulate the hydrologic response of catchment areas to rainfall inputs, including losses, storage, routing, diversions etc. HEC-HMS contains modelling tools for pumping systems, gridded inputs, snow melt and evapotranspiration routines.

A description of the HEC-HMS inputs follows.

4.1.1 Precipitation

Precipitation inputs are supplied as hyetographs to the precipitation gages in HEC-HMS located in the *Time-Series Data Manager*. These inputs were derived using precipitation gauge statistics from Intensity-Duration-Frequency (IDF) curves using the MTO Look-Up tool (see Appendix C). In accordance with the TRCA Stormwater Management Criteria 2002 and the 2012 Duffins Creek Hydrology Update by Aquafor Beech Ltd., the 12hr AES storm was selected as the design storm for the 2 to 100 year events. The hyetograph provided in MTO Design Chart 1.03 for the last 12 hours of the Hurricane Hazel event was used for the regional event. The 4hr 25mm Chicago storm was used for the quality event.

4.1.2 Catchment Area

The site has a total area of 36.3 ha. JE used land contour information to delineate catchment boundaries for the site and external areas (see Appendix B). The Ontario Flow Assessment Tool was consulted to confirm extents of external drainage areas.

Pre development catchment 100 and post development catchments 200A & 200B represent the western portion of the site and external lands to the north which drain west to a tributary of Reesor Creek. These catchments contain a small portion of the existing/proposed driveway and grassed/cultivated lands. As there are no significant alterations proposed to the lands within this catchment, detailed analysis of the catchment has not been included in this report.

Pre development catchment 101 and post development catchments 201A & 201B represent the site's largest drainage area. The majority of the proposed development is expected to occur within this catchment (specifically 201A). These catchments drain south across adjacent lands before entering a tributary of Reesor Creek. Post development catchment 201B contains external and internal lands which will remain undisturbed by the development. Drainage from these lands has been routed around the proposed development and directed back to the pre-development outlet location.

The remainder of the site (catchment 102/202) will remain undisturbed and drains to the east to a tributary of Reesor Creek. Since this catchment will remain undisturbed, detailed analysis of the catchment has not been included in this report.

A catchment area summary is provided in the table below.

Table 4-1: Catchment Area Summary

Pre Development		Post Development	
Catchment	**Area (ha)**	**Catchment**	**Area (ha)**
100	7.16	200A	6.01
		200B	1.17
101	29.01	201A	3.74
		201B	25.25
102	3.95	202	3.95
Total Area	40.12	Total Area	40.12

4.1.3 Imperviousness

Imperviousness is a measure of how much hardening has occurred within the catchment. It is expressed as a percentage of the catchment area that is hardened by asphalt, roof, concrete, etc. which restricts water infiltration into the ground and results in higher runoff. Imperviousness was calculated for the pre & post development catchments as shown in table 4-2. Note that the overall imperviousness for the subject site is 7% which is less than the 20% allowed per the ORMCP.

4.1.4 Runoff Coefficient

The runoff coefficient was calculated using a weighted average (see Equation 1). Individual areas and runoff coefficients are shown in Table 4-2 for the varying land covers that will occur after development of the new Grainboys Holdings Inc. facility.

Equation 1: Weighted Average Calculation for Runoff Coefficient

$$C_w = \frac{C_1 \, x \, A_1 + \, C_2 \, x \, A_2 + \, \ldots \, C_n \, x \, A_n}{A_1 + \, A_2 + \, \ldots \, A_n}$$

Where:
C_i = Runoff Coefficient for A_i
A_i = Land Area (ha) of Cover Type

Table 4-2: Catchment 101/201A & 201B Runoff Coefficient & Percent Impervious

	Catchment 101			Catchment 201A			Catchment 201B		
Land Use	**Area (Ha)**	**Selected RC (2yr)**	**RC x A**	**Area (Ha)**	**Selected RC (2yr)**	**RC x A**	**Area (Ha)**	**Selected RC (2yr)**	**RC x A**
Pavement/ Concrete	0.00	0.90	0.00	1.08	0.90	0.97	0.00	0.90	0.00

Roofs	0.02	0.90	0.02	0.87	0.90	0.78	0.02	0.90	0.02
Gravel	0.32	0.50	0.16	0.00	0.50	0.00	0.31	0.50	0.15
Grass	0.00	0.20	0.00	1.79	0.20	0.36	0.00	0.20	0.00
Cultivated (0-5%, Loam)	28.67	0.35	10.03	0.00	0.35	0.00	24.92	0.35	8.72
Total	29.01	-	10.21	3.74	-	2.11	25.25	-	8.89
Weighted RC	**0.35**			**0.57**			**0.35**		
Percent Impervious (%)	**1**			**52**			**1**		

4.1.5 Curve Number

Curve numbers (CNs) are used in the Soil Conservation Service (now known as the *National Resources Conservation Service*) methodology for estimating the proportion of precipitation that will runoff the lands and the portion that will infiltrate. CNs are a function of soil type, land cover, slope, and land use. The higher the CN – the greater the proportion of precipitation that is expected to runoff the lands. CNs are representative of the pervious portion of the watershed.

JE determined the CN using information from GHD's *Geotechnical Investigation Report* and the Agricultural Atlas tool developed by the Ministry of Agriculture, Food and Rural Affairs. The soil type at the site is Woburn Loam and is classified under Hydrologic Soils Group (HSG) B and are considered suitable for infiltration technologies.

JE used MTO Design Chart 1.09 to determine a CN of 78.

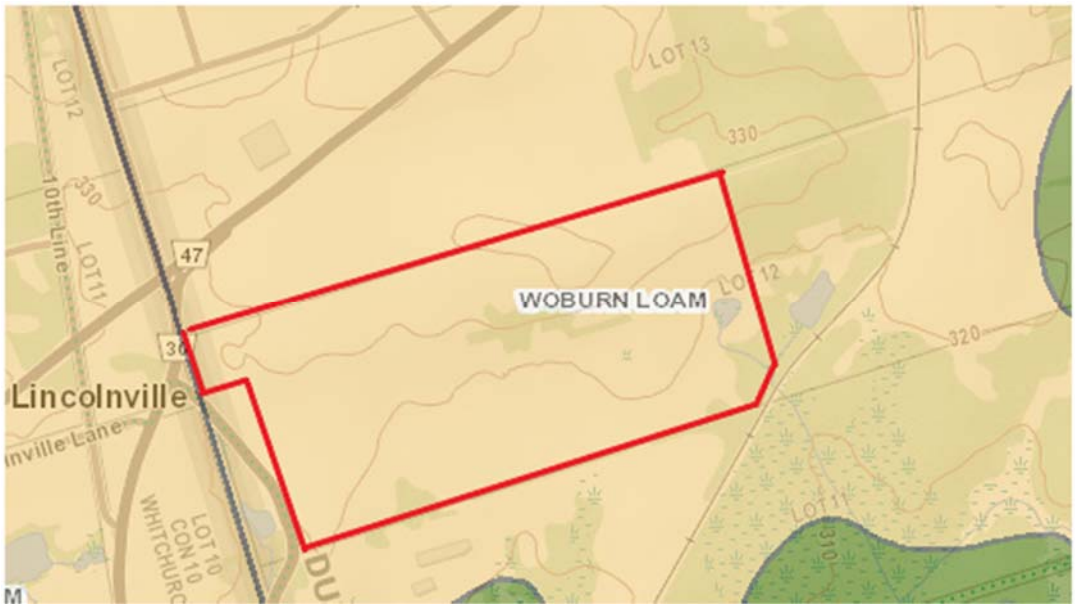

Figure 4-1: Soil Classification

In accordance with the TRCA Stormwater Management Criteria 2002, JE used the CN method in HEC-HMS modelling for simulation of losses. For the Hurricane Hazel regional event, the CN was adjusted to account for the saturated antecedent moisture conditions (AMCs) that would be present during the last 12 hours of the storm. The CN adjustment is calculated using MTO Design Chart 1.10. With the conversion to AMC III, a CN of 90 is used for the regional storm (see Appendix C).

4.1.6 Initial Abstraction

Initial abstraction is the depth of precipitation input that is subtracted from the model and does not contribute to runoff. It may include interception by vegetation and infiltration or depression storage. A value of 5 was selected for the initial abstraction.

4.1.7 Basin Lag

Basin lag time has been defined as the time from the centroid of rainfall excess to the centroid of the corresponding runoff hydrograph (USGS, 2012). This is an important measure in estimating the time of peak runoff.

The Natural Resources Conservation Service completed studies of basin lag time and it is generally accepted that the lag time can be estimated as 60 percent of the time of concentration (Hydrologic Modeling System HEC-HMS User's Manual, 2013).

The time of concentration is the time it takes for the drainage area to contribute to peak flows. It is determined following methods presented in the Ministry of Transportation Drainage Manual. JE analysed several methods of calculating the time of concentration to select the most appropriate as shown below.

Time of Concentration

Kirpich (channel flow) slope in m/m

Tc: $0.0195L^{0.77}S^{-0.385}$

Airport (c<0.4, sheet flow) , slope in %

Tc: $3.26*(1.1-C)*L^{0.5}/S_w^{0.33}$

Bransby Williams (c>0.4, channel flow), slope in %

Tc: $0.057*L/(S_w^{0.2}xA^{0.1})$

Watt & Chow (1985)

Tc: $0.000326(L/S^{0.5})^{0.79}$

Table 4-3: Time of Concentration

Catchment	Area (ha)	Watershed Length (m)	Slope (%)	Return Period	RC	Airport T_c (min)	Bransby-Williams T_c (min)	Watt & Chow , Tc (min)	Kirpich	Selected T_c	Channel Length (m)	Channel Slope	Pipe or Channel Flow T_c (min)	Total T_c (min)	Lag Time T_p (min)
101	29.01	790	3.4	2/5/10	0.35	45.8	25.2	58.8	12.2	58.8	0	0.00	0.0	58.8	35.3
				25	0.39	43.6				58.8				58.8	35.3
				50	0.42	41.5				58.8				58.8	35.3
				100	0.44	40.4				58.8				58.8	35.3
201A	3.74	245	1.3	2/5/10	0.57	25.3	11.7	27.0	7.3	15.0			0.0	15.0	9.0
				25	0.62	22.7								0.0	0.0
				50	0.68	20								0.0	0.0
				100	0.71	18.6								0.0	0.0
201B	25.25	607	3.2	2/5/10	0.35	41	19.9	46.3	10.2	46.3	140	0.02	4.2	50.5	30.3
				25	0.39	39								0.0	0.0
				50	0.42	37.1								0.0	0.0
				100	0.44	36.2								0.0	0.0

4.2 Hydraulics

Hydraulic calculations were completed for the SWM facility outlet and overflow spillway and the grass swales that convey runoff to the SWM facility.

The broad-crested weir used for the overflow spillway was sized using Equation 2.

Equation 2: Broad-Crested Weir Formula

$$Q = 1.67LH^{3/2}$$

Where:

Q = Flow (m^3/s)
L = Length of Weir (m)
H = Depth of flow (m)

The orifices used for the SWM facility outlet were sized using Equation 3.

Equation 3: Broad-Crested Weir Formula

$$Q = CAo(2gh)^{0.5}$$

Where:

Q = Flow (m^3/s)
C = Coefficient of discharge (0.6)
Ao = Area of orifice opening (m^2)
g = acceleration due to gravity ($9.81 m/s^2$)

H = Head measured from centroid of orifice (m)

JE sized the grassed swales using Manning's open channel flow (see Equation 4). A roughness value of 0.027 was used for a grass bottom.

Equation 4: Manning's Open Channel Flow

$$Q = 1/n\ AR^{2/3}S^{1/2}$$

Where:

n = roughness coefficient
A = area (m^2)
R = hydraulic Radius (m)
S = slope

5 Hydrology

Jewell completed a hydrologic model based on HEC-HMS software in order to determine SWM facilities. The existing site generally drains in a southeast direction and a similar drainage path will be provided with the proposed development.

5.1 Summary of Catchment Properties

A summary of input parameters is provided in Table 5-1.

Table 5-1: Summary of Modelling Inputs

Catchment	Area (ha)	Initial Abstraction	CN	% Impervious	Lag Time (min)
101	29.01	5	78	1	35.3
201A	3.74	5	78	52	9
201B	25.25	5	78	1	30.3

5.2 Uncontrolled Post Development Peak Flows

Uncontrolled post Development Peak Flows are provided below. Detailed modelling outputs are provided in Appendix D. Post development flows have increased from the pre development flows due to the increase in impervious surfaces. Therefore, quantity control is required.

Table 5-2: Summary of Post Development Peak Flows

Storm Event	Catchment 201A	Catchment 201B
2-Year	0.078	0.272
5-Year	0.110	0.448
10-Year	0.133	0.575
25-Year	0.162	0.744
50-Year	0.184	0.875
100-Year	0.207	1.006

5.3 Quantity Control Release Rates

Permissible quantity control release rates for catchment 201A (the development site) were determined using Unit Flow Equation 1 from the TRCA Stormwater Management Criteria Appendix A for the Duffins Creek Watershed. Allowable release rates for the 2 to 100 year events are provided below.

Table 5-3: Summary of Quantity Control Release Rates for Catchment 201A

Storm Event	Unit Flow Equation	Catchment 201A Area (ha)	Quantity Control Release Rate (m^3/s)
2-Year	$Q_2 = 5.364 – 0.520*LN(Area)$	3.74	0.017
5-Year	$Q_5 = 8.535 – 0.826*LN(Area)$		0.028
10-Year	$Q_{10} = 10.729 – 1.036*LN(Area)$		0.035
25-Year	$Q_{25} = 13.832 – 1.334*LN)Area)$		0.045
50-Year	$Q_{50} = 16.132 – 1.549*LN(Area)$		0.053
100-Year	$Q_{100} = 18.629 – 1.787*LN(Area)$		0.061

6 Quantity Control

6.1 SWM Concept

The SWM concept is to use a dry pond for quantity treatment of runoff from catchment 201A. The SWM facility location is identified in Appendix A. All of the runoff from the development (catchment 201A) is conveyed to the SWM facility on the southeast side of the development via perimeter swales. JE designed the SWM facility to meet the quantity control objectives outlined by TRCA, that is, the facility must have sufficient storage to reduce post development peak flows to below the specified allowable release rates for catchment 201A.

6.2 SWM Pond

The SWM facility was designed to provide sufficient storage to restrict post development flow to the specified allowable release rates in Table 5-3.

The table below specifies the proposed pond's "Elevation-Discharge-Storage" relationship.

Table 6-1: Proposed Pond Elevation-Discharge-Storage Relationship

Elevation (m)	Discharge (m3/s)	Storage (m3)
317.40	0.000	0
317.50	0.005	134
317.60	0.008	309
317.70	0.010	526
317.80	0.012	787
317.90	0.014	1088
318.00	0.020	1411
318.10	0.038	1748
318.20	0.049	2097
318.30	0.057	2458
318.40	0.169	2832
318.50	0.368	3218
318.60	0.624	3616

*This table conservatively disregards discharge due to infiltration within the SWM facility, therefore quantity control will be sufficient even in frozen ground conditions

The pond outlet structure includes 2 orifices and a rectangular broad crested weir as detailed in the table below.

Table 6-2: Proposed Pond Outlet Structure

Outlet Type	Invert Elevation (m)	Orifice Diameter (m)	Weir Length (m)

Orifice	317.40	0.1	-
Orifice	317.90	0.2	-
Weir	318.30	-	2.0

6.3 Controlled Post Development Peak Flows

The peak runoff from the development site (catchment 201A), with quantity control, are presented in the table below. Detailed modelling outputs are provided in Appendix D. Runoff from catchment 201A (the development site) will be directed to the stormwater management facility to receive quantity treatment. Runoff from catchments 200A & B, 201B, and 202 will continue to drain uncontrolled as they will remain undisturbed and therefore do not require treatment. As illustrated by the controlled post development flows listed below, the post development flows are less than the allowable release rates for the development area (catchment 201A) and the quantity control objectives are satisfied.

Table 6-3: Summary of Controlled Post Development Peak Flows (Catchment 201A)

Storm Event	Quantity Control Release Rate (m^3/s)	Catchment 201A Controlled Peak Flow (m^3/s)	Storage Elevation (m)	Storage Used (m^3)
2-Year	0.017	0.013	317.85	0.939
5-Year	0.028	0.019	317.98	1.344
10-Year	0.035	0.029	318.05	1.583
25-Year	0.045	0.041	318.13	1.852
50-Year	0.053	0.048	318.19	2.060
100-Year	0.061	0.053	318.25	2.278

7 Conveyance

7.1 Swale Sizing

The site is within a headwater area of the Duffins Creek watershed and the SWM objective for external drainage is to receive and safely convey runoff.

Catchment 201A was further sub-divided to determine capacity requirements for the two grass swales around the perimeter of the proposed development. Swale A is located at the west and south side of the development site and Swale B is located on the east side of the site. Both swales convey runoff from the proposed development to the SWM facility on the southeast side of the development.

Catchment 201B was also subdivided to determine the capacity requirements of the swale (Swale C) required to divert external drainage from the north around the proposed development.

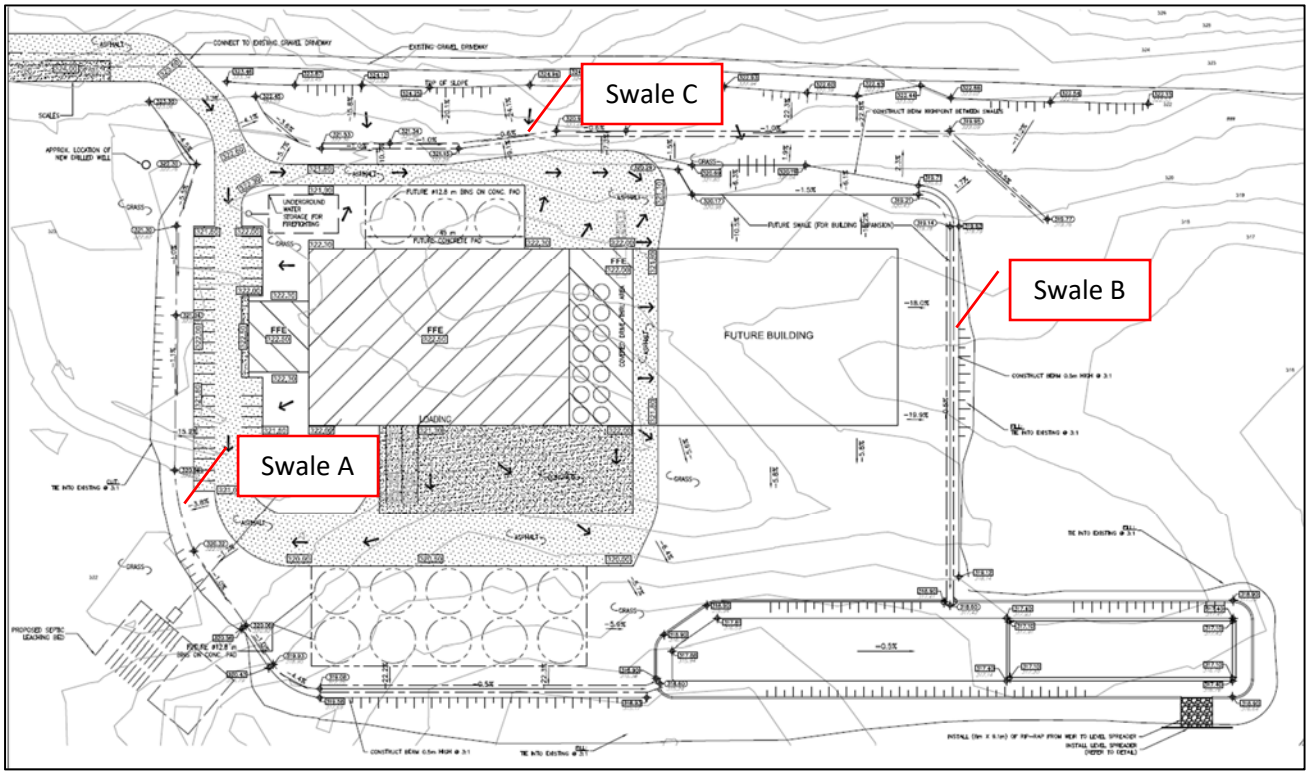

Figure 7-1: Conveyance Swales

As demonstrated by the table below, the channel flow capacity is greater than both the 100-yr and the Hurricane Hazel (regional event) design flow. Therefore, the swales are adequately sized.

Table 7-1: Swale Design

	Swale A	Swale B	Swale C
Catchment (ha)	1.5	2.25	7.58
CN	78	78	78

Imperviousness (%)	52	52	1
Tc (min)	9	9	15
100-Yr Design Flow (m^3/s)	**0.083**	**0.124**	**0.320**
Hurricane Hazel Design Flow (m^3/s)	**0.217**	**0.326**	**1.06**
V Swale			
Swale Slope (%)	1.0	1.0	
Swale Bottom Width (m)	0	0	
Swale Side Slopes	3:1	3:1	
Swale Depth (m)	0.3	0.4	
Swale Capacity (m^3/s)	**0.27**	**0.59**	
Flatt Bottom Enhanced Swale			
Swale Slope (%)	0.5	**0.5**	**0.6**
Swale Bottom Width (m)	2.0	2.0	1.5
Swale Side Slopes	3:1	3:1	3:1
Swale Depth (m)	0.3	0.4	0.4
Swale Capacity (m^3/s)	**0.84**	**1.44**	**1.29**

7.2 Overflow Spillway

A 2m wide broad-crested weir will be provided for an overflow spillway at the pond outlet. The purpose of the overflow spillway is to safely convey the regional event (Hurricane Hazel) through the SWM facility. The peak elevation in the SWM facility will be 318.54 under the Hurricane Hazel storm event. This is less than the top of pond elevation of 318.90 and less than the swale inlet elevation of 318.60.

8 Quality Control

8.1 SWM Concept

JE designed the SWM facility to meet the quality control objectives outlined by TRCA, that is, Enhanced level protection must be provided.

A treatment train approach will be applied to this site to achieve water quality requirements. Runoff from the development site (catchment 201A) will be pre-treated by enhanced grass swales prior to discharging to the SWM facility. A portion of the dry pond SWM facility has been enhanced by perching the outlet and enhancing the bottom with clear stone and sand to improve the contact with the underlying soils, thereby creating an infiltration basin to provide quality treatment.

All runoff from the development site is conveyed to the SWM facility via two perimeter swales, identified as Swale A and Swale B in section 7.1 above. The downstream portion of each of these swales is designed as an enhanced swale for quality treatment.

8.2 Enhanced Swales

The following guidance is provided in the Credit Valley Conservation 2010 Low Impact Development Stormwater Management Planning and Design Guide regarding enhanced grass swales:

- Longitudinal slope of 0.5-4% but less than 1% preferred
- Bottom width between 0.75 and 3.0m
- Soil infiltration rate 15mm/hr or higher
- Design velocity 0.5m/s or less for a 4hr 25mm Chicago storm
- Maximum flow depth of 100mm during 4hr 25mm Chicago storm

Accordingly, the downstream portions of swales A and B that have been designed as enhanced swales have slopes of 0.5% and flat bottom widths of 2.0m. A geotechnical investigation completed by GHD determined that an infiltration rate of 50mm/hr is appropriate for this site (see Appendix E).

Modelling of the Quality event (4hr 25mm Chicago storm) demonstrates velocities and flow depths as listed below:

Table 8-1: Proposed Infiltration Basin Elevation-Discharge-Storage Relationship

	Swale A	**Swale B**
Flow (m3/s)	0.086	0.129
Flow Velocity (m/s)	0.46	0.53
Flow Depth (mm)	83	105

Therefore the proposed swales satisfy the design criteria for enhanced swales.

8.3 Infiltration Basin

Table 8-1 shows the storage volume required for infiltration facilities to achieve an Enhanced protection level as outlined in the MOE *2003 SWM Planning and Design Manual*. The amount of storage volume required is dependent on the impervious level. The development area (catchment 201A) is 52% impervious. Interpolation of the values provided in the MOE manual yields a requirement of 29m^3/ha of storage for quality treatment via infiltration. The development area (catchment 201A) is 3.74ha, therefore a total storage volume of 110m^3 is required to achieve Enhanced level protection for the development area.

Table 8-2: Storage Volume for Impervious Level to Achieve Enhanced Treatment with Infiltration SWM Practices

Percent Impervious	Storage Volume Required (m3/ha)
35	25
55	30
70	35
85	40

Per the MOE *2003 SWM Planning and Design Manual,* infiltration basins should be used for drainage areas of less than 5ha. The development catchment area is 3.74ha, therefore, an infiltration basin is appropriate for this site.

The bottom of the infiltration basin is governed by the groundwater elevation which was documented at 315.7m to 315.8m in the location of the proposed infiltration basin (no bedrock was encountered within the test holes at the site). Per the MOE *2003 SWM Planning and Design Manual,* infiltration basins must be separated from the groundwater table by a minimum of 1.0m. Therefore, the bottom of the infiltration basin was set at 317.10m, providing a 1.2m separation from the identified groundwater level.

The following guidance is provided in the Credit Valley Conservation 2010 Low Impact Development Stormwater Management Planning and Design Guide:

- the impervious drainage area to treatment facility area ratio should be between 5:1 and 20:1
- a maximum stone reservoir depth of 2m is recommended to prevent soil compaction

The SWM facility has been designed with a 0.5% slope on the pond bottom towards the east side. At the east end, a depressed area has been provided to serve as an infiltration basin. The infiltration basin will be 0.3m deep and will contain clear stone to a depth of 0.15m. The infiltration basin bottom area is 1000m^2 which provides an impervious drainage area to treatment facility area ratio of 19:1. Accounting for a 40% void ratio in the clear stone layer yields a total storage volume of 228m^3. The basin storage exceeds the MOE requirement of 110m^3.

A geotechnical investigation completed by GHD determined that an infiltration rate of 50mm/hr is appropriate for this site (see Appendix E). TRCA guidelines describe the safety factor required to calculate a design infiltration rate. The purpose of this safety factor is to account for any compaction that occurs during construction and for uncertainties in infiltration capabilities. It is dependent on the soil type at the bottom of the SWM facility as well as the least permeable soil horizon within 1.5m below

the bottom of pond (Toronto and Region Conservation Authority, 2012). The bottom of pond is located within the till layer. The least permeable soil horizon within 1.5m below this elevation is also within the till layer, **therefore a safety factor of 2.5 is applied**. Accordingly, the design infiltration rate used in JE's HEC-HMS modelling of the SWM infiltration basin is 20 mm/hr.

The table below specifies the proposed infiltration basin's "Elevation-Discharge-Storage" relationship.

Table 8-3: Proposed Infiltration Basin Elevation-Discharge-Storage Relationship

Elevation (m)	Discharge (m3/s)	Storage (m3)
317.100	0.00000	0
317.101	0.00556	0.4
317.200	0.00557	41
317.300	0.00558	116
317.400	0.00559	228
317.401	4.50000	230

Modelling of the Quality event (4hr 25mm Chicago storm) demonstrates a drawdown time of approximately 15 hours. The ability to increase the drawdown time is restricted by the required impervious drainage area to treatment facility area ratio discussed above. The drawdown time provided is satisfactory.

The water quality treatment satisfies the quality objectives.

9 Sediment and Erosion Controls

9.1 SWM Concept

JE designed the SWM facility to meet the erosion control objectives outlined by TRCA, that is, 5mm must be retained on site.

An infiltration basin has been located on the east side of the SWM facility and will provide storage for erosion control protection.

9.2 Infiltration Basin

The development area (catchment 201A) is 3.74ha, therefore a total storage volume of 187m^3 is required to achieve Erosion control protection for the development site.

The infiltration basin will be 0.3m deep and will contain clear stone to a depth of 0.15m. Accounting for a 40% void ratio in the clear stone layer yields a total storage volume of 228m^3 which exceeds the Erosion control requirement of 187m^3.

9.3 Construction

Construction of the proposed development involves the movement of and exposure of soils and is typically protracted in time. There is a risk of erosion leading to sediment deposition into the downstream system. Typical sediment and erosion control measures include:

- Siltation fencing
- Strawbale check dams
- Rip-rap check dams

Controls are to be placed downstream of all active work areas and upstream of protected receivers. Controls should also be placed around stockpiles of topsoils and fill materials.

Typical OPSDs provide good instruction on the correct placement and construction of the controls. The controls provide some protection if they are properly maintained, but they should be considered last resort measures. The most effective means of control are those which prevent or reduce erosion at the source. This would include diligent stabilization of exposed areas immediately after grading is completed. Stabilization measures include sod, erosion blankets or rip-rap and filter cloth on steep slopes as well as topsoil and hydroseed on gently sloped areas (<10%).

A silt fence should be located along the south property line during the construction and be maintained until the lands have stabilized or as directed by the municipality.

10 Water Balance

10.1 SWM Concept

JE designed the SWM facility to meet the water balance objectives outlined by TRCA, that is, to maintain the pre development water balance.

The proposed development will reduce the overall pervious area on this site thereby reducing the infiltration of precipitation. Consequently, without mitigation there would be an impact to the water budget. GHD investigated the water balance and concluded the following:

Annual Precipitation	857.7mm/yr
Evapotranspiration	581.6mm/yr
Recharge Available	276.1mm/yr

The available recharge is split into infiltration and runoff. Over the site area of 36.3ha, total infiltration was calculated to be 51,387m^3/yr (or 141mm/yr).

After development, the infiltration is estimated to be reduced to 49,463m^3/yr. This is a total difference of 1,924m^3 per year. The lost infiltration will contribute to increased runoff volume (estimated by GHD to increase by 13%). GHD recommended enhanced infiltration measures to mitigate the loss in infiltration and to reduce impacts from runoff.

An infiltration basin is proposed on the east side of the SWM facility and will provide infiltration for water balance objectives.

10.2 Infiltration Basin

A simplified HEC-HMS model was developed to determine the potential increased infiltration strategy.

The precipitation statistics for Pearson International Airport were considered in the 1994 SWMP Design Manual. In total, there are 144 precipitation events per year. Of these, 55 were in excess of 5mm depth, 31 were in excess of 10mm depth, 14 exceeded 15mm depth and 4 exceeded 25mm. The distribution is shown in Figure 10-1.

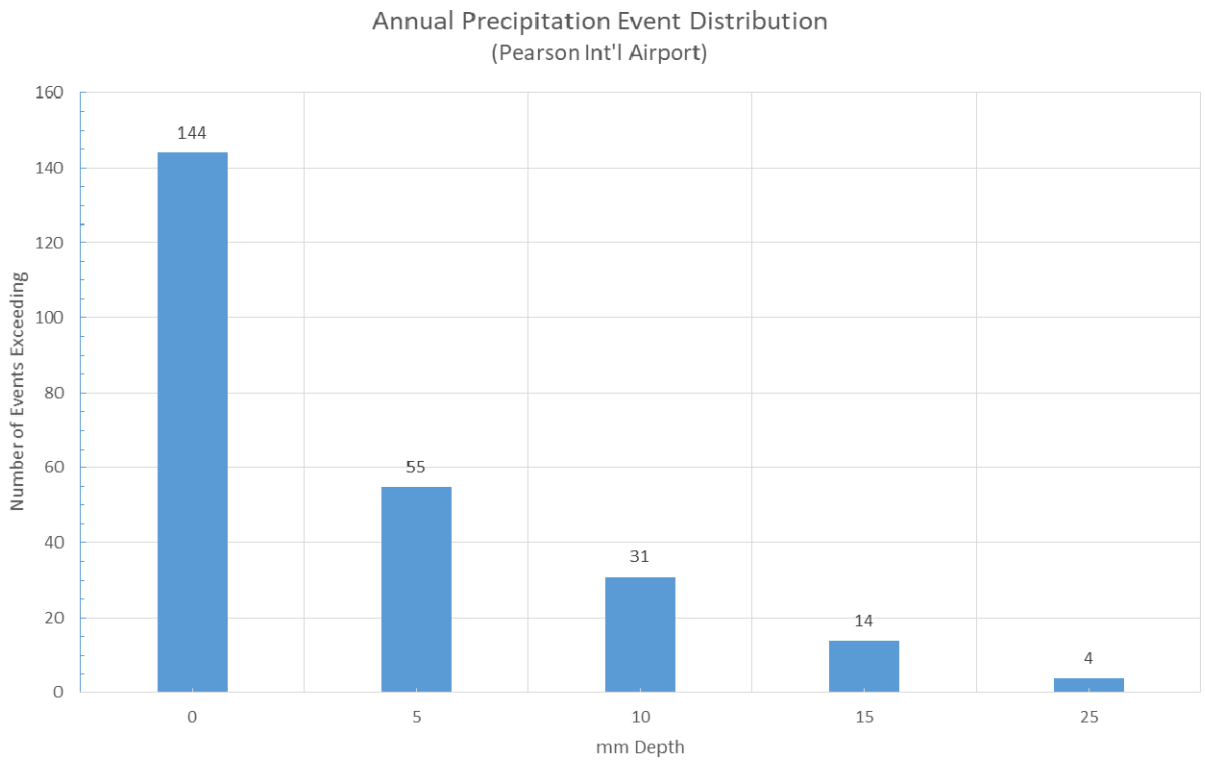

Figure 10-1: Precipitation Events by Depth at Pearson International Airport

The events were binned into five bins and supplied to the HEC-HMS model using the AES distribution. An average depth for each bin was estimated assuming the 1/3rd point for each bin. A total depth of annual precipitation of 860.8mm was simulated. This is slightly in excess of the amount estimated by GHD (857.7mm/yr) and will provide some conservatism. See Table X.

Using the five events, Jewell determined the infiltration potential for the basin by multiplying each event by the frequency of events per bin. In this way a simplified infiltration potential was found.

Table 10-1: Precipitation Bins for HEC-HMS Model

Greater Than (mm)	Up To (mm)	# of Events	1/3 rainfall depth (mm)	Interval Depth (mm)
0	5	89	1.7	151.3
5	10	24	6.7	160.8
10	15	17	11.7	198.9
15	25	10	18.3	183
25	75	4	41.7	166.8
Total		144		**860.8**

The Elevation-Storage-Discharge relationship for the infiltration basin is described previously in section 8.3. The simulation results show that in excess of 5,500m^3/yr of infiltration may be provided within the

infiltration basin. The dry pond and basin occupy 4,400m^2. With a conservative assumption of 4,400m^2 x 141mm = 620m^3 infiltration that would already be occurring over the pond area. Therefore, the assumed infiltration is 5,500m^3 – 620m^3 = 4,880m^3/yr. This exceeds the 1,921m^3/yr water balance target provided by GHD and therefore, the infiltration target is achieved.

11 Maintenance

During the first 2 years of operation, the owner should complete a visual inspection of the complete stormwater management system after each significant storm event (approx. 4 times per year) with annual spring inspections thereafter. The owner is responsible for all inspection and maintenance requirements. The points below are a guide for inspection and maintenance practices.

Vegetation Condition – annual weed control including the removal of invasive species like purple loose strife, the spread of which is undesirable or does not provide a useful treatment function. Weed removal should be done by hand without the use of herbicides. Grass should be maintained in a healthy condition and should be kept at a height of approximately 150 mm.

• **Obstruction Occurrences** – obstructions and garbage should be cleaned from the detention area, swales, and outlet structures.

• **Swales** – all swales should be inspected for signs of erosion. Areas of erosion should be infilled and vegetated immediately.

• **Sediment Removal** – We expect the need for sediment removal to be very infrequent. Based on Figure 6.2 (average impervious of 55%%) of the 2003 M.O.E. Storm Water Manual we expect a sediment removal frequency in excess of 20 years, however the detention area should be inspected annually for sediment accumulation. If sediment accumulation is greater than 50 mm, the sediment should be removed down to original design grade and natural vegetation restored. Should sediment need to be removed from the facility, it will need to be tested in accordance with M.O.E.C.P requirements. If it is determined to be non-hazardous, as is expected, it could be disposed on-site, or offsite in an area undergoing filling. Hazardous material would need to be transported to a sanitary landfill.

• **Outlet Structure** – the outlet structure should be inspected for blockages and outlet erosion. All blockages and outlet erosion should be repaired immediately to ensure proper function of the outlet structure.

12 Conclusions

12.1 SWM Concept

The Owner, Kresho Petrovich, is proposing the development of the new Grainboys Holdings Inc. facility at 3469 York Durham Line. The subject site falls within the Duffins Creek watershed in the TRCA area. Perimeter swales will direct all runoff from the development area (catchment 201A) to a centralized SWM facility. The SWM facility consists of a dry pond with a perched outlet and enhanced bottom (clear stone and sand to improve the contact with the underlying soils) to create an infiltration basin.

12.2 Quantity Control

Quantity treatment for the development area (catchment 201A) is provided by the dry pond. Runoff from catchments 200A & B, 201B, and 202 will continue to drain uncontrolled as they will remain undisturbed and therefore do not require treatment. JE designed the SWM facility to meet the quantity control objectives outlined by TRCA, that is, the facility must have sufficient storage to control post-development runoff to the designated quantity control release rates as defined in Appendix A of the TRCA Stormwater Management Criteria 2002 for the 2 to 100 year event for the 12 hour AES storm distribution.

The dry pond was designed with 2 orifices and a rectangular broad crested weir as detailed in the table below.

Table 12-1: Proposed Pond Outlet Structure

Outlet Type	Invert Elevation (m)	Orifice Diameter (m)	Weir Length (m)
Orifice	317.40	0.1	-
Orifice	317.90	0.2	-
Weir	318.30	-	2.0

The dry pond limits post development flows to less than the allowable release rates for the development area (catchment 201A), therefore quantity control objectives are met.

The grassed swales and emergency spillway have been designed to convey the regional event.

12.3 Quality Control

Quality treatment is provided via a treatment train approach. Runoff from the development site (catchment 201A) will be pre-treated by enhanced grass swales prior to discharging to the infiltration basin. JE designed the swales and SWM facility to meet the quality control objectives outlined by TRCA, that is, Enhanced level protection must be provided.

The enhanced swales were designed in accordance with Credit Valley Conservation 2010 Low Impact Development Stormwater Management Planning and Design Guide recommendations and have a longitudinal slope of 0.5% and flat bottom width of 2.0m.

The infiltration basin was designed in accordance with Credit Valley Conservation 2010 Low Impact Development Stormwater Management Planning and Design Guide recommendations. The infiltration basin has a bottom elevation of 317.10, is 0.3m deep, contains clear stone to a depth of 0.15m, and provides a storage volume of 228m^3 which exceeds the MOE requirement of 110m^3. Modelling of the Quality event (4hr 25mm Chicago storm) demonstrates a drawdown time of approximately 15 hours.

The water quality treatment satisfies the quality objectives.

12.4 Erosion Control

Erosion control protection is provided by the infiltration basin. JE designed the SWM facility to meet the erosion control objectives outlined by TRCA, that is, 5mm must be retained on site.

The development area (catchment 201A) is 3.74ha, therefore a total storage volume of 187m^3 is required to retain 5mm on site. The infiltration basin will be 0.3m deep and will contain clear stone to a depth of 0.15m. Accounting for a 40% void ratio in the clear stone layer yields a total storage volume of 228m^3 which exceeds the Erosion control requirement of 187m^3. Therefore, erosion control requirements have been met.

12.5 Water Balance

Water balance is provided by the infiltration basin. JE designed the SWM facility to meet the water balance objectives outlined by TRCA, that is, to maintain the pre development water balance.

GHD investigated the water balance and concluded that infiltration would be reduced by approximately 1,924m^3 per year by the development. The lost infiltration will contribute to increased runoff volume (estimated by GHD to increase by 13%). GHD recommended enhanced infiltration measures to mitigate the loss in infiltration and to reduce impacts from runoff.

The infiltration basin is capable of infiltrating in excess of 4,880m^3/yr of infiltration which exceeds water balance requirements.

The SWM plan meets the study objectives and demonstrates that stormwater runoff can be effectively managed within the available lands for the proposed development.

Prepared and Submitted by:

Amanda Redden, P.Eng.
Jewell Engineering Ltd.

13 References

Ontario Ministry of the Environment. (2003). *Stormwater Management Planning and Design Manual.* Queen's Printer for Ontario.

Ontario Ministry of Transportation. (1997). *Drainage Management Manual.*

US Army Corps of Engineers. (2013). *Hydrologic Modelling System HEC-HMS Manual.*

Toronto and Region Conservation Authority. (2012). Stormwater management Criteria.

Credit Valley Conservation & Toronto and Region Conservation. (2010). Low Impact Development Stormwater Management Planning and Design Guide.

Aquafor Beech Limited. (2013). 2012 Duffins Creek Hydrology Update.

APPENDIX A

Proposed Site Plan Drawings

12/19/2019

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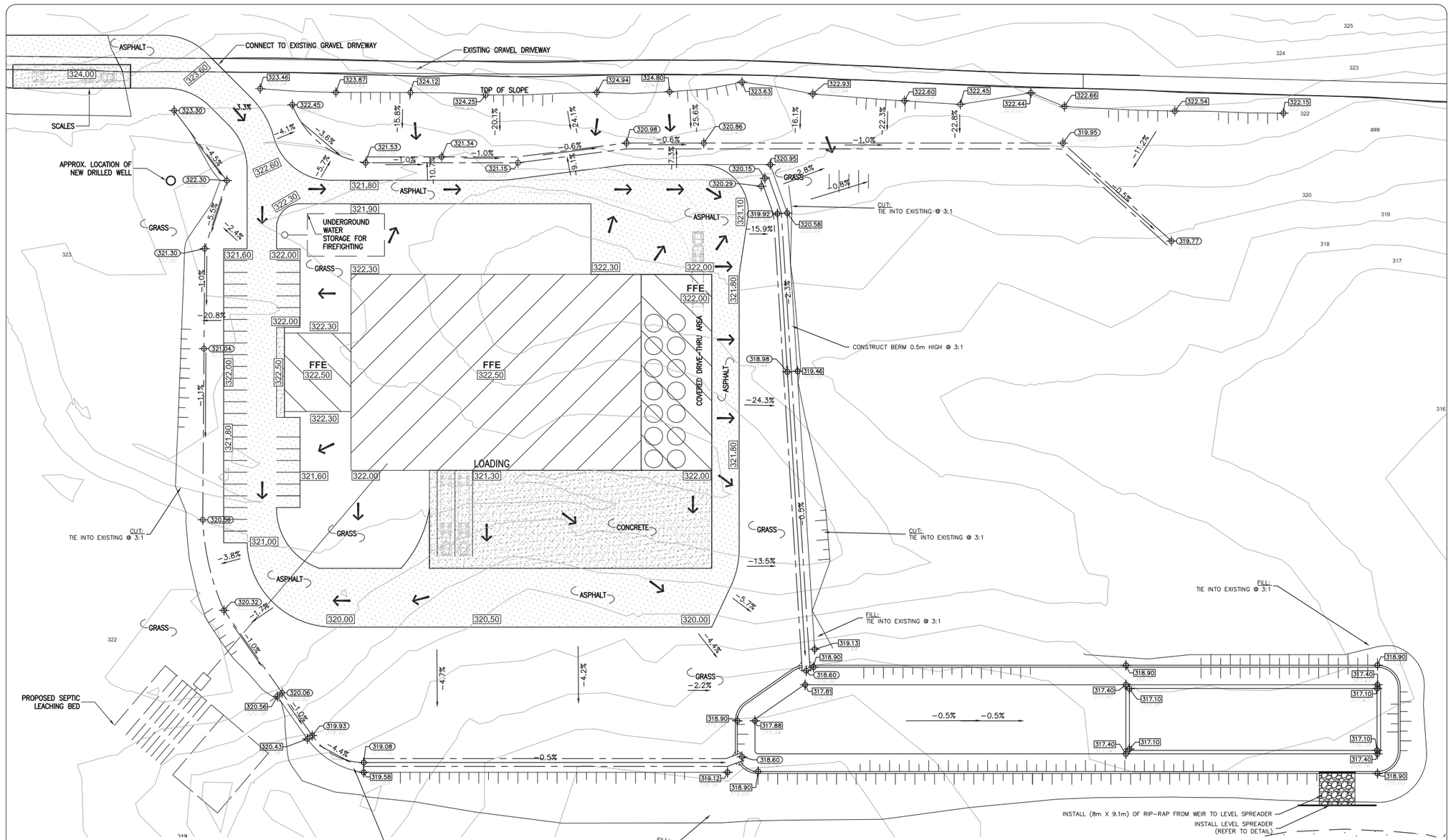
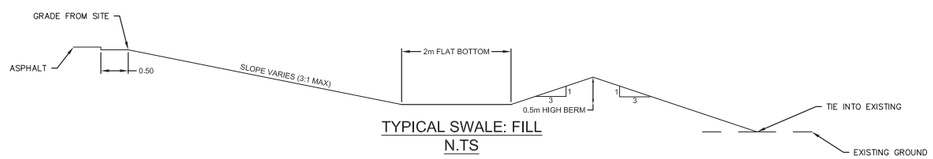
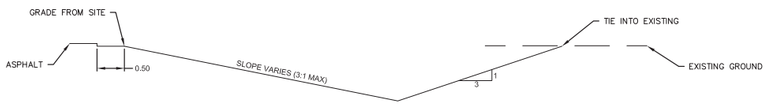




TYPICAL SWALE: FILL
N.TS



TYPICAL SWALE: CUT
N.TS

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METRIC NOTE:

ALL DIMENSIONS SHOWN ARE IN METRES OR MILLIMETRES, UNLESS OTHERWISE NOTED.

** DRAWINGS ARE NOT TO BE SCALED **

REVISIONS

NO.	DATE	DESCRIPTION	BY

LEGEND:

318.90	PROPOSED SWALE ELEVATIONS
318.90	PROPOSED GROUND ELEVATIONS
318.90	EXISTING GROUND ELEVATIONS

LICENSED PROFESSIONAL ENGINEER
A. M. REDDEN
100177808
Dec. 19, 2019
PROVINCE OF ONTARIO

JEWELL ENGINEERING

GRAINBOYS HOLDING INC.
3469 YORK DURHAM LINE
K. PETROVICH

SITE GRADING PLAN

DRAWN BY: C,D	PROJECT NO: 190-4636	
DESIGNED BY: A,R	DATE: December 2019	
CHECKED BY:	SCALE: HORIZONTAL - 1:500 VERTICAL -	
APPROVED BY:	CONTRACT NO:	DRAWING NO: G - 1

12/19/2019

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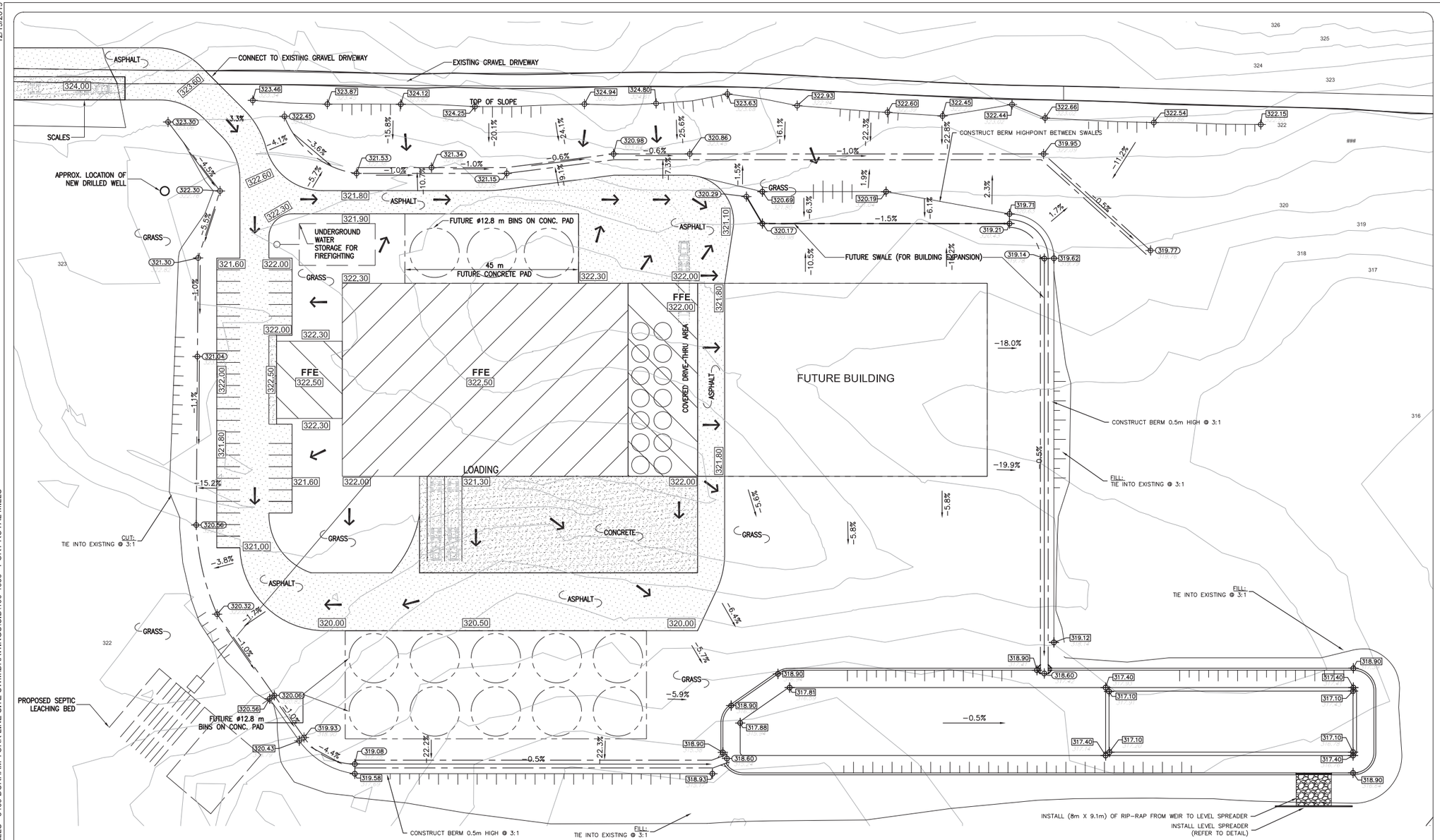

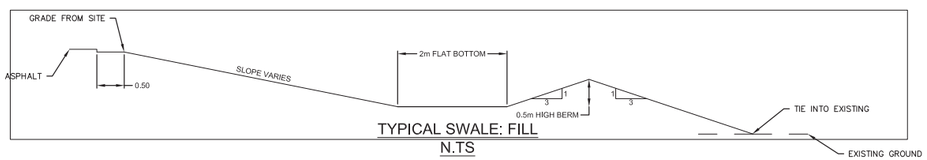

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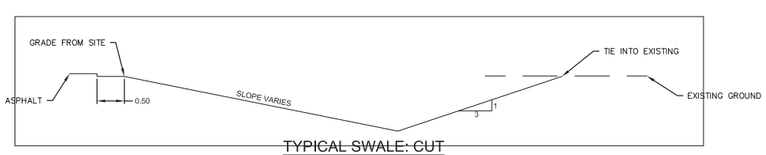
N.TS



TYPICAL SWALE: CUT
N.TS

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REVISIONS

NO.	DATE	DESCRIPTION	BY

LEGEND:

- 318.90 PROPOSED SWALE ELEVATIONS
- 318.90 PROPOSED GROUND ELEVATIONS
- *318.90* EXISTING GROUND ELEVATIONS

LICENSED PROFESSIONAL ENGINEER
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Dec. 17, 2019
PROVINCE OF ONTARIO

JEWELL ENGINEERING

GRAINBOYS HOLDING INC.
3469 YORK DURHAM LINE
K. PETROVICH

SITE PLAN
FUTRUE GRADING

DRAWN BY: C.D	PROJECT NO: 190-4636	
DESIGNED BY: A.R	DATE: December 2019	
CHECKED BY: A.R	SCALE: HORIZONTAL - 1:500 VERTICAL -	
APPROVED BY:	CONTRACT NO:	DRAWING NO: G - 2

12/19/2019

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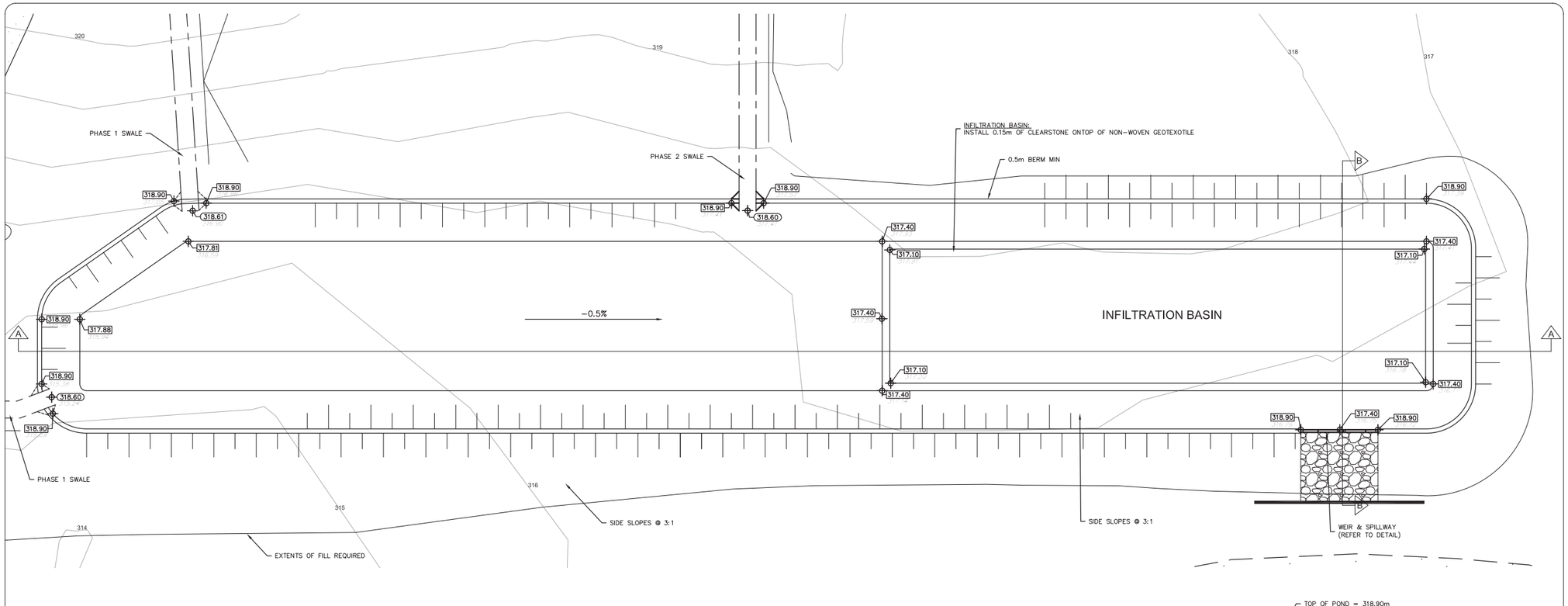

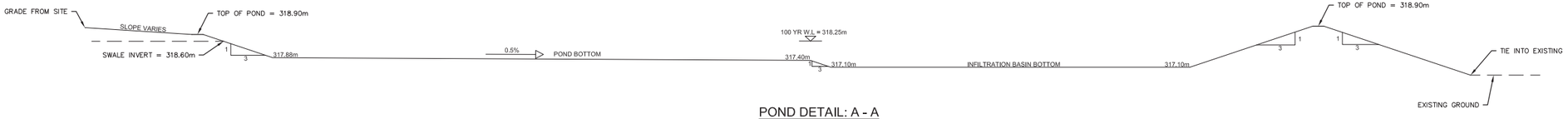

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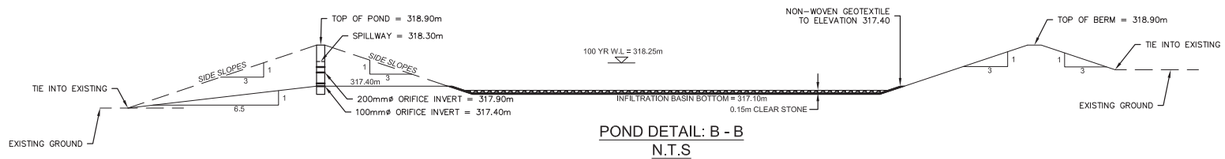

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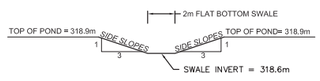

TYPICAL SWALE TRANSITION INTO POND
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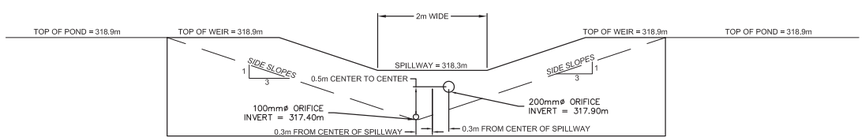

OUTLET WEIR DETAIL
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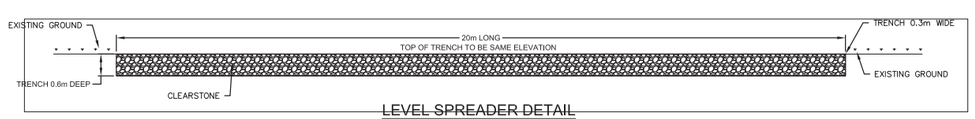

LEVEL SPREADER DETAIL
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REVISIONS

NO.	DATE	DESCRIPTION	BY

LEGEND:

318.90 PROPOSED SIWALE ELEVATIONS

318.90 PROPOSED GROUND ELEVATIONS

318.90 EXISTING GROUND ELEVATIONS

LICENSED PROFESSIONAL ENGINEER
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100177808
Dec. 19, 2019
PROVINCE OF ONTARIO

JEWELL ENGINEERING

GRAINBOYS HOLDING INC.
3469 YORK DURHAM LINE
K. PETROVICH

POND DETAILS

DRAWN BY: C.D	PROJECT NO: 190-4636	
DESIGNED BY: A.R	DATE: December 2019	
CHECKED BY: A.R	SCALE: HORIZONTAL - 1:250 VERTICAL -	
APPROVED BY:	CONTRACT NO:	DRAWING NO: P-1

APPENDIX B

Catchment Area Drawings

12/19/2019

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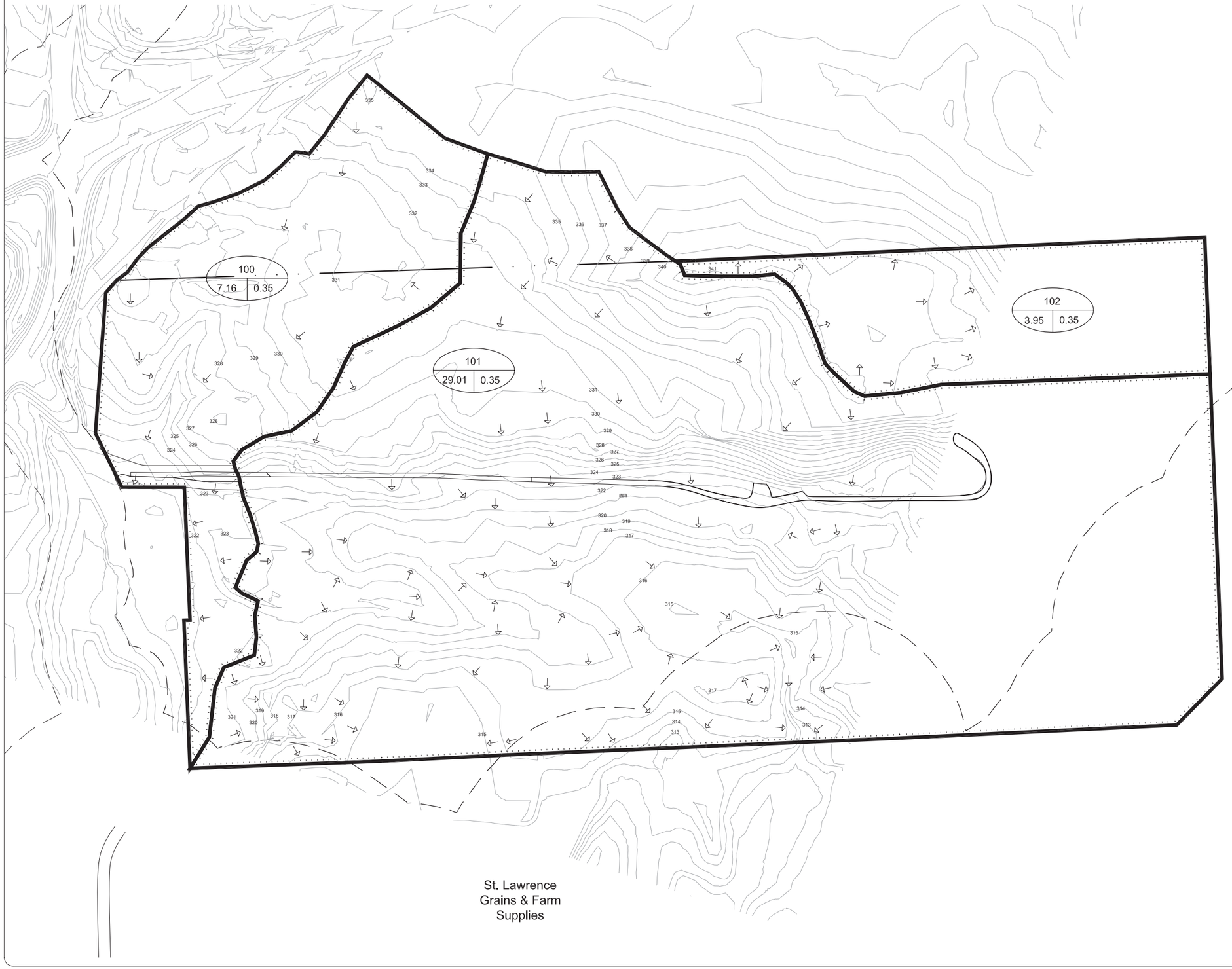

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REVISIONS

NO.	DATE	DESCRIPTION	BY

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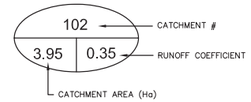

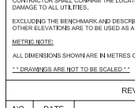

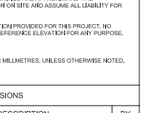

JEWELL ENGINEERING

GRAINBOYS HOLDING INC.
3469 YORK DURHAM LINE
K. PETROVICH

PRE DEVELOPMENT
CATCHMENT

DRAWN BY: C,D	PROJECT NO: 190-4636	
DESIGNED BY: C,D	DATE: December 2019	
CHECKED BY: A,R	SCALE: HORIZONTAL - 1:1500 VERTICAL -	
APPROVED BY: A,R	CONTRACT NO:	DRAWING NO: C - 1

12/19/2019

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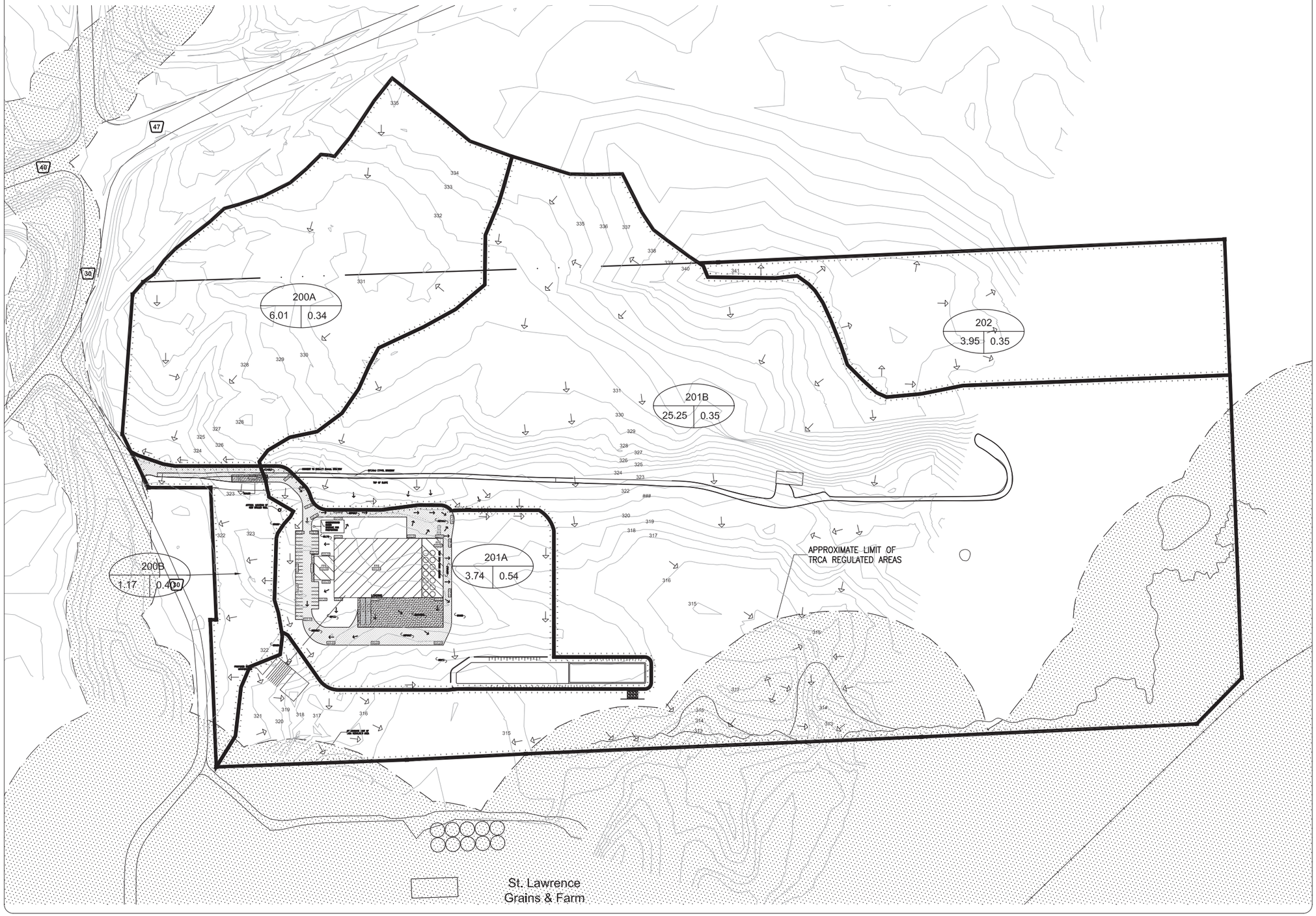

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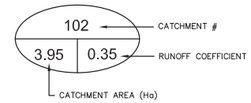
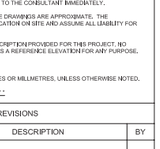
REVISIONS

NO.	DATE	DESCRIPTION	BY

LEGEND:





JEWELL ENGINEERING

GRAINBOYS HOLDING INC.
3469 YORK DURHAM LINE
K. PETROVICH

POST DEVELOPMENT
CATCHMENT

DRAWN BY: C.D	PROJECT NO: 190-4636		
DESIGNED BY: C.D	DATE: December 2019		
CHECKED BY: A.R	SCALE: HORIZONTAL - 1:1500 VERTICAL -		
APPROVED BY: A.R	CONTRACT NO:	DRAWING NO: C - 2	

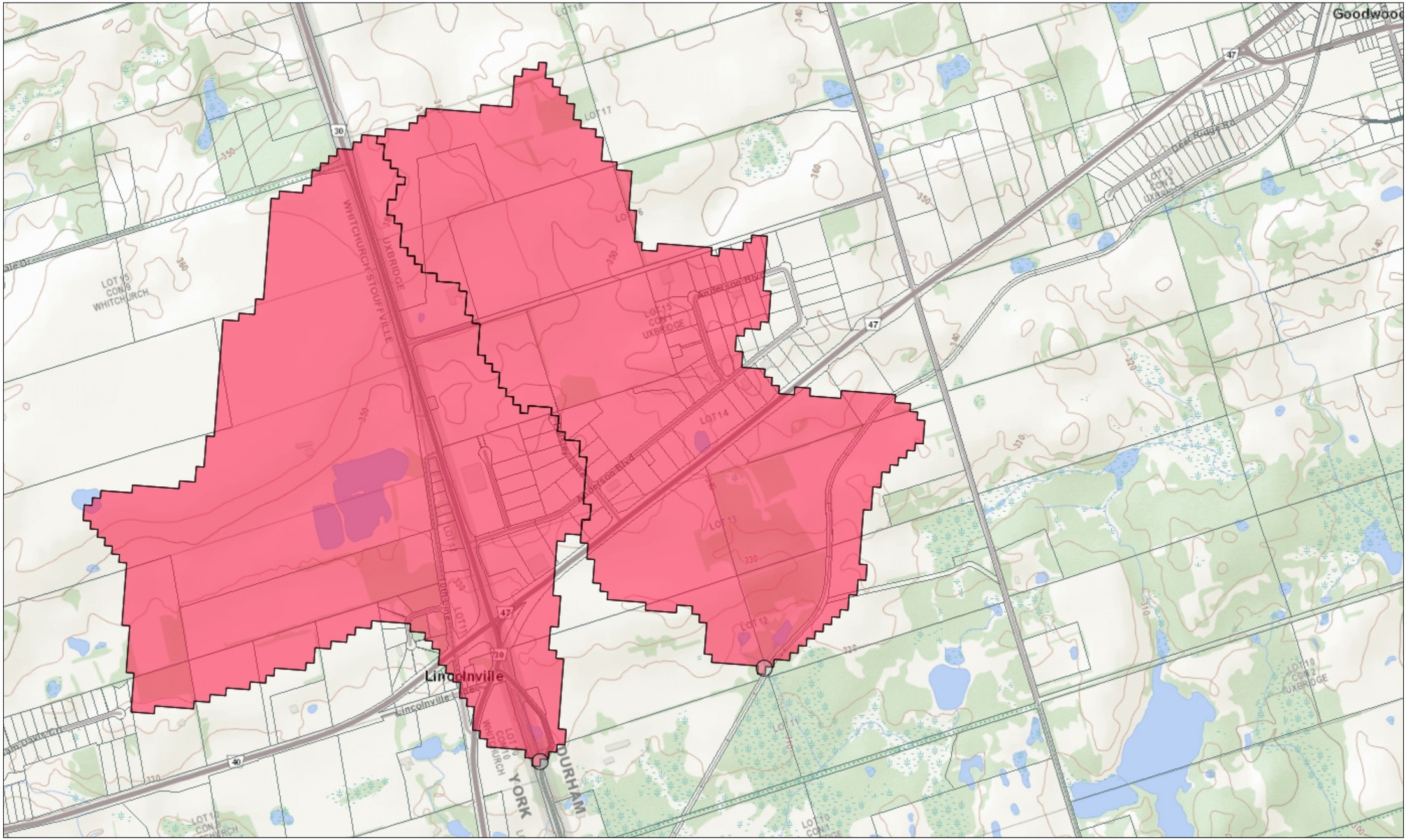
Ontario

MINISTRY OF NATURAL RESOURCES AND FORESTRY

Ontario Flow Assessment Tools

External Drainage Areas

Notes:



Legend

- Assessment Parcel
- Secondary Watershed
- Tertiary Watersheds
- Great Lakes - St. Lawrence Basin
- Hudson - James Bay Basin
- Nelson River Basin
- Diversions
- Waterbody Outlet
- Conservation Authority Dam
- Provincial Dam
- Federal Dam
- OPG Dam
- Other Dam
- HYDAT Gauge
- HYDAT Gauge (RHBN)

Land Cover Compilation

- Other
- Cloud/Shadow
- Clear Open Water
- Turbid Water
- Shoreline
- Mudflats
- Marsh
- Swamp
- Fen
- Bog
- Heath
- Sparse Treed
- Treed Upland
- Deciduous Treed
- Mixed Treed
- Coniferous Treed
- Plantations - Treed Cultivated
- Hedge Rows
- Disturbance
- Open Cliff and Talus
- Alvar
- Sand Barren and Dune
- Open Tallgrass Prairie
- Tallgrass Savannah
- Tallgrass Woodland
- Sand/Gravel/Mine Tailings/Extraction
- Bedrock
- Community/Infrastructure
- Agriculture and Undifferentiated Rural Land Use

0.7 0 km 0.37 0.7

Scale: 1 : 14,644

Projection: Web Mercator

APPENDIX C

IDF Curves/AMC Conversion

Ontario IDF CURVE LOOKUP

Active coordinate

44° 0' 45" N, 79° 14' 14" W (44.012500,-79.237500)

Retrieved: Tue, 10 Dec 2019 13:10:12 GMT

Location summary

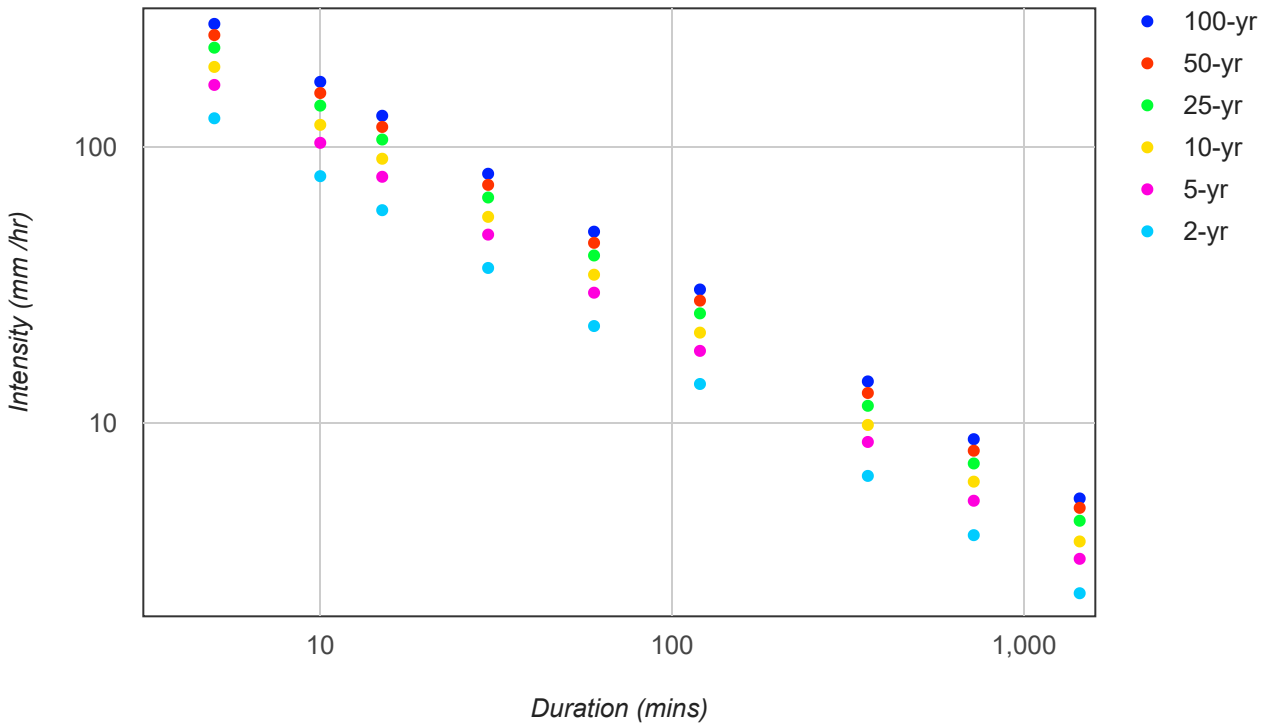
These are the locations in the selection.

IDF Curve: 44° 0' 45" N, 79° 14' 14" W (44.012500,-79.237500)

Results

An IDF curve was found.

Coordinate: 44.012500, -79.237500
IDF curve year: 2010



Coefficient summary

IDF Curve: 44° 0' 45" N, 79° 14' 14" W (44.012500,-79.237500)

Retrieved: Tue, 10 Dec 2019 13:10:12 GMT

Data year: 2010
IDF curve year: 2010

Return period	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
A	22.4	29.6	34.4	40.4	44.9	49.3
B	-0.699	-0.699	-0.699	-0.699	-0.699	-0.699

Statistics

Rainfall intensity (mm hr^{-1})

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	127.2	78.4	59.0	36.4	22.4	13.8	6.4	3.9	2.4
5-yr	168.1	103.6	78.0	48.1	29.6	18.2	8.5	5.2	3.2
10-yr	195.4	120.4	90.7	55.8	34.4	21.2	9.8	6.1	3.7
25-yr	229.5	141.4	106.5	65.6	40.4	24.9	11.5	7.1	4.4
50-yr	255.0	157.1	118.3	72.9	44.9	27.7	12.8	7.9	4.9
100-yr	280.0	172.5	129.9	80.0	49.3	30.4	14.1	8.7	5.3

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	10.6	13.1	14.8	18.2	22.4	27.6	38.4	47.3	58.3
5-yr	14.0	17.3	19.5	24.0	29.6	36.5	50.8	62.5	77.0
10-yr	16.3	20.1	22.7	27.9	34.4	42.4	59.0	72.7	89.5
25-yr	19.1	23.6	26.6	32.8	40.4	49.8	69.3	85.4	105.2
50-yr	21.3	26.2	29.6	36.4	44.9	55.3	77.0	94.9	116.9
100-yr	23.3	28.7	32.5	40.0	49.3	60.7	84.5	104.2	128.3

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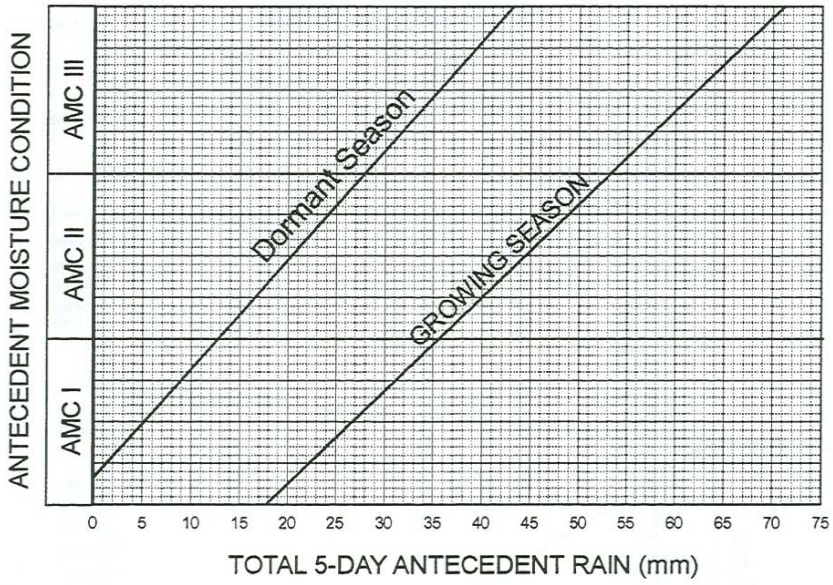
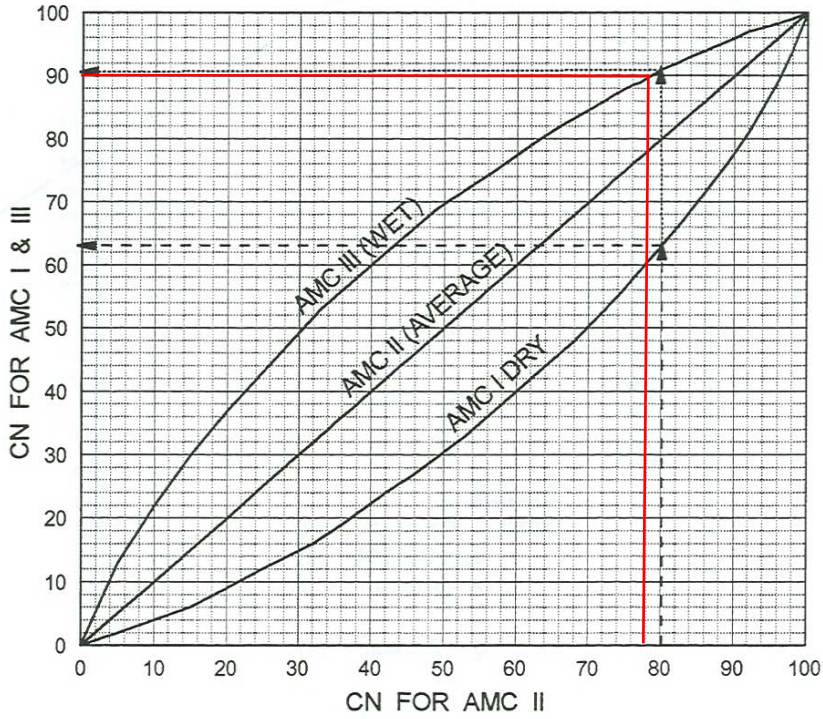
Last Modified: September 2016

Design Chart 1.10: Antecedent Moisture Condition





EXAMPLE

AMC II CN = 80
AMC I CN = 63
AMC III CN = 91

APPENDIX D

HEC-HMS Modelling Outputs

Total Rainfall Depth		47.3	62.5	72.7	85.4	94.9	104.2	Regional Event	
Hr	AES Distribution (%)	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	Hurricane Hazel Distribution (%)	Hurricane Hazel Depth (mm)
0	0	0.0	0.0	0.0	0.0	0.0	0.0		
1	15	7.1	9.4	10.9	12.8	14.2	15.6	3	6
2	25	11.8	15.6	18.2	21.4	23.7	26.1	2	4
3	22	10.4	13.8	16.0	18.8	20.9	22.9	3	6
4	14	6.6	8.8	10.2	12.0	13.3	14.6	6	13
5	12	5.7	7.5	8.7	10.2	11.4	12.5	8	17
6	8	3.8	5.0	5.8	6.8	7.6	8.3	6	13
7	3	1.4	1.9	2.2	2.6	2.8	3.1	11	23
8	1	0.5	0.6	0.7	0.9	0.9	1.0	6	13
9	0	0.0	0.0	0.0	0.0	0.0	0.0	6	13
10	0	0.0	0.0	0.0	0.0	0.0	0.0	25	53
11	0	0.0	0.0	0.0	0.0	0.0	0.0	18	38
12	0	0.0	0.0	0.0	0.0	0.0	0.0	6	13
Total Depth		47.3	62.5	72.7	85.4	94.9	104.2	100	212

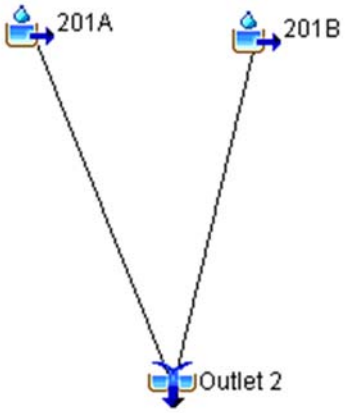
Quality Event

Time (hrs)	Intensity (mm/hr)	Depth (mm)
0.00	0	0
0.08	1.73	0.14
0.17	1.83	0.15
0.25	1.94	0.16
0.33	2.07	0.17
0.42	2.23	0.19
0.50	2.41	0.20
0.58	2.64	0.22
0.67	2.92	0.24
0.75	3.28	0.27
0.83	3.74	0.31
0.92	4.41	0.37
1.00	5.41	0.45
1.08	7.1	0.59
1.17	10.69	0.89
1.25	23.51	1.96
1.33	68.86	5.74
1.42	29.9	2.49
1.50	17.13	1.43
1.58	12.05	1.00
1.67	9.35	0.78
1.75	7.68	0.64
1.83	6.55	0.55
1.92	5.73	0.48
2.00	5.1	0.43
2.08	4.61	0.38
2.17	4.21	0.35
2.25	3.88	0.32
2.33	3.61	0.30
2.42	3.38	0.28
2.50	3.18	0.27
2.58	3	0.25
2.67	2.84	0.24
2.75	2.7	0.23
2.83	2.58	0.22
2.92	2.47	0.21
3.00	2.37	0.20
3.08	2.28	0.19
3.17	2.19	0.18
3.25	2.11	0.18
3.33	2.04	0.17
3.42	1.97	0.16
3.50	1.91	0.16
3.58	1.86	0.16
3.67	1.8	0.15
3.75	1.75	0.15
3.83	1.7	0.14
3.92	1.66	0.14
4.00	1.62	0.14
		25

Water Balance

	Rainfall Depth	1.7	6.7	11.7	18.3	41.7
Hr	AES Distribution (%)	0-5	5-10	10-15	15-25	25-75
0	0	0.0	0.0	0.0	0.0	0.0
1	15	0.3	1.0	1.8	2.7	6.3
2	25	0.4	1.7	2.9	4.6	10.4
3	22	0.4	1.5	2.6	4.0	9.2
4	14	0.2	0.9	1.6	2.6	5.8
5	12	0.2	0.8	1.4	2.2	5.0
6	8	0.1	0.5	0.9	1.5	3.3
7	3	0.1	0.2	0.4	0.5	1.3
8	1	0.0	0.1	0.1	0.2	0.4
9	0	0.0	0.0	0.0	0.0	0.0
10	0	0.0	0.0	0.0	0.0	0.0
11	0	0.0	0.0	0.0	0.0	0.0
12	0	0.0	0.0	0.0	0.0	0.0
Total Depth		1.7	6.7	11.7	18.3	41.7

Post Development Uncontrolled Model Schematic



Project: Port Royal Mills Simulation Run: Post Unctrl 2yr 12hr AES CN

Start of Run: 01Jan2000, 00:00 Basin Model: Post Uncontrolled -
End of Run: 01Jan2000, 14:00 Meteorologic Model: 2 yr 12 hr AES
Compute Time: 16Dec2019, 13:12:24 Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
200A	0.0601	0.065	01Jan2000, 03:15	15.70
200B	0.0118	0.016	01Jan2000, 03:00	19.18
Outlet 1	0.0719	0.079	01Jan2000, 03:00	16.27
201B	0.2525	0.272	01Jan2000, 03:15	16.02
201A	0.0374	0.078	01Jan2000, 02:00	32.13
Outlet 2	0.2899	0.336	01Jan2000, 03:00	18.10

Project: Port Royal Mills Simulation Run: Post Uctl CN 5yr 12hr AES

Start of Run: 01Jan2000, 00:00 Basin Model: Post Uncontrolled -
End of Run: 01Jan2000, 14:00 Meteorologic Model: 5 yr 12 hr AES
Compute Time: 16Dec2019, 13:12:16 Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
200A	0.0601	0.107	01Jan2000, 03:15	25.67
200B	0.0118	0.025	01Jan2000, 03:00	29.73
Outlet 1	0.0719	0.131	01Jan2000, 03:00	26.34
201B	0.2525	0.448	01Jan2000, 03:15	26.04
201A	0.0374	0.110	01Jan2000, 02:00	44.87
Outlet 2	0.2899	0.541	01Jan2000, 03:00	28.47

Project: Port Royal Mills Simulation Run: Post Uctl CN 10yr 12hr AES

Start of Run: 01Jan2000, 00:00 Basin Model: Post Uncontrolled -
End of Run: 01Jan2000, 14:00 Meteorologic Model: 10 yr 12 hr AES
Compute Time: 16Dec2019, 13:12:14 Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
200A	0.0601	0.137	01Jan2000, 03:15	32.89
200B	0.0118	0.032	01Jan2000, 03:00	37.27
Outlet 1	0.0719	0.168	01Jan2000, 03:00	33.61
201B	0.2525	0.575	01Jan2000, 03:15	33.29
201A	0.0374	0.133	01Jan2000, 02:00	53.59
Outlet 2	0.2899	0.689	01Jan2000, 03:00	35.91

Project: Port Royal Mills Simulation Run: Post Uctrl CN 25yr 12hr AES

Start of Run: 01Jan2000, 00:00
End of Run: 01Jan2000, 14:00
Compute Time: 16Dec2019, 13:12:17

Basin Model: Post Uncontrolled -
Meteorologic Model: 25 yr 12 hr AES
Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
200A	0.0601	0.178	01Jan2000, 03:00	42.59
200B	0.0118	0.040	01Jan2000, 03:00	47.31
Outlet 1	0.0719	0.218	01Jan2000, 03:00	43.37
201B	0.2525	0.744	01Jan2000, 03:15	43.02
201A	0.0374	0.162	01Jan2000, 02:00	64.90
Outlet 2	0.2899	0.886	01Jan2000, 03:00	45.85

Project: Port Royal Mills Simulation Run: Post Uctrl CN 50yr 12hr AES

Start of Run: 01Jan2000, 00:00 Basin Model: Post Uncontrolled -
End of Run: 01Jan2000, 14:00 Meteorologic Model: 50 yr 12 hr AES
Compute Time: 16Dec2019, 13:12:19 Control Specifications: Control 1

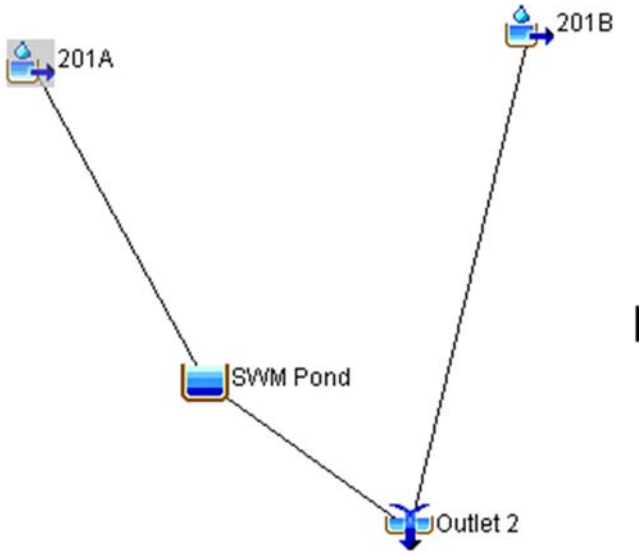
Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
200A	0.0601	0.209	01Jan2000, 03:00	49.95
200B	0.0118	0.047	01Jan2000, 03:00	54.88
Outlet 1	0.0719	0.256	01Jan2000, 03:00	50.76
201B	0.2525	0.875	01Jan2000, 03:15	50.40
201A	0.0374	0.184	01Jan2000, 02:00	73.27
Outlet 2	0.2899	1.039	01Jan2000, 03:00	53.35

Project: Port Royal Mills Simulation Run: Post Unctl 100yr 12hr AES CN

Start of Run: 01Jan2000, 00:00 Basin Model: Post Uncon
End of Run: 01Jan2000, 14:00 Meteorologic Model: 100 yr 12 hr
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
200A	0.0601	0.241	01Jan2000, 03:00	57.52
200B	0.0118	0.053	01Jan2000, 03:00	62.64
Outlet 1	0.0719	0.294	01Jan2000, 03:00	58.36
201B	0.2525	1.006	01Jan2000, 03:15	57.98
201A	0.0374	0.207	01Jan2000, 02:00	81.74
Outlet 2	0.2899	1.192	01Jan2000, 03:00	61.05

Post Development Controlled Model Schematic



Project: Port Royal Mills Simulation Run: Post Ctrl CN 2yr 12hr AES

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - CN
End of Run:	01Jan2000, 14:00	Meteorologic Model:	2 yr 12 hr AES
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

Computed Results

Peak Inflow:	0.078 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:45
Peak Discharge:	0.013 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 06:30
Inflow Volume:	31.82 (MM)	Peak Storage:	0.939 (1000 M3)
Discharge Volume	14.70 (MM)	Peak Elevation:	317.851 (M)

Project: Port Royal Mills Simulation Run: Post Ctrl CN 5yr 12hr AES

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - CN
End of Run:	01Jan2000, 14:00	Meteorologic Model:	5 yr 12 hr AES
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

Computed Results

Peak Inflow:	0.110 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:45
Peak Discharge:	0.019 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 06:30
Inflow Volume:	44.47 (MM)	Peak Storage:	1.344 (1000 M3)
Discharge Volume	18.63 (MM)	Peak Elevation:	317.979 (M)

Project: Port Royal Mills Simulation Run: Post Ctrl CN 10yr 12hr AES

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - CN
End of Run:	01Jan2000, 14:00	Meteorologic Model:	10 yr 12 hr AES
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

Computed Results

Peak Inflow:	0.133 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:45
Peak Discharge:	0.029 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 06:15
Inflow Volume:	53.12 (MM)	Peak Storage:	1.583 (1000 M3)
Discharge Volume	23.74 (MM)	Peak Elevation:	318.051 (M)

Project: Port Royal Mills Simulation Run: Post Ctrl CN 25yr 12hr AES

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - CN
End of Run:	01Jan2000, 14:00	Meteorologic Model:	25 yr 12 hr AES
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

Computed Results

Peak Inflow:	0.162 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:45
Peak Discharge:	0.041 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 06:15
Inflow Volume:	64.35 (MM)	Peak Storage:	1.852 (1000 M3)
Discharge Volume	32.12 (MM)	Peak Elevation:	318.130 (M)

Project: Port Royal Mills Simulation Run: Post Ctrl CN 50yr 12hr AES

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - CN
End of Run:	01Jan2000, 14:00	Meteorologic Model:	50 yr 12 hr AES
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

Computed Results

Peak Inflow:	0.184 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:45
Peak Discharge:	0.048 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 06:15
Inflow Volume:	72.65 (MM)	Peak Storage:	2.063 (1000 M3)
Discharge Volume	38.40 (MM)	Peak Elevation:	318.190 (M)

Project: Port Royal Mills Simulation Run: Post Ctrl CN 100yr 12hr AES

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - CN
End of Run:	01Jan2000, 14:00	Meteorologic Model:	100 yr 12 hr AES
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

Computed Results

Peak Inflow:	0.207 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:45
Peak Discharge:	0.053 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 06:15
Inflow Volume:	81.06 (MM)	Peak Storage:	2.278 (1000 M3)
Discharge Volume:	44.74 (MM)	Peak Elevation:	318.250 (M)

Project: Port Royal Mills Simulation Run: Swales - 100yr

Start of Run: 01Jan2000, 00:00 Basin Model: Swale Sizin
End of Run: 01Jan2000, 14:00 Meteorologic Model: 100 yr 12 hr
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
Swale A	0.01500	0.083	01Jan2000, 02:00	81.74
Swale B	0.02250	0.124	01Jan2000, 02:00	81.74
Swale C	0.07575	0.320	01Jan2000, 03:00	57.98

Project: Port Royal Mills Simulation Run: Swales - Hazel

Start of Run: 01Jan2000, 00:00 Basin Model: Swale Sizin
End of Run: 01Jan2000, 14:00 Meteorologic Model: Hurricane H
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications: Control 1

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
Swale A	0.01500	0.217	01Jan2000, 10:00	197.68
Swale B	0.02250	0.326	01Jan2000, 10:00	197.68
Swale C	0.07575	1.064	01Jan2000, 10:00	182.46

Project: Port Royal Mills Simulation Run: Hurricane Hazel - Post Contr

Reservoir: SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl - Hazel
End of Run:	01Jan2000, 14:00	Meteorologic Model:	Hurricane Hazel
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: MM

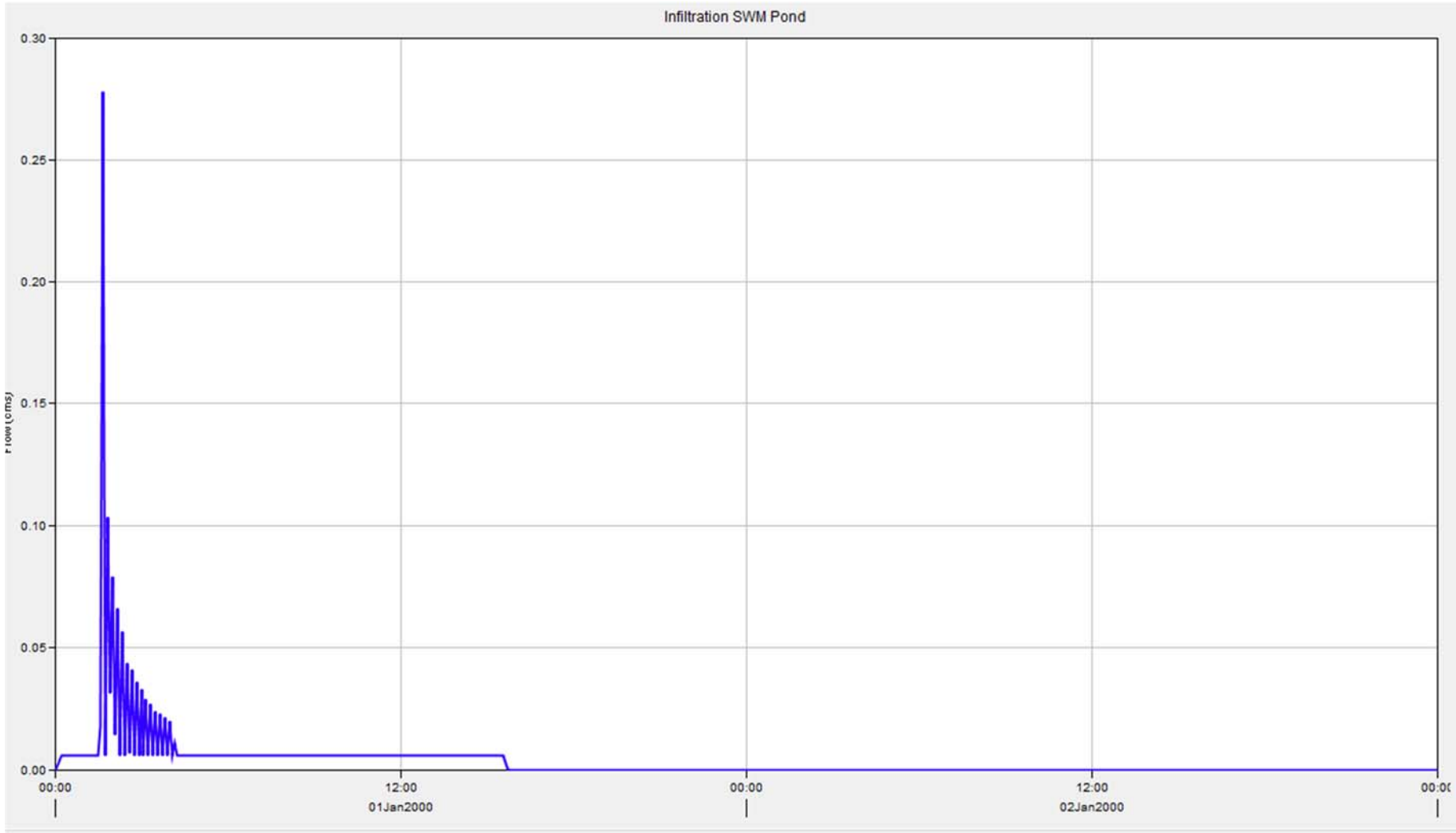
Computed Results

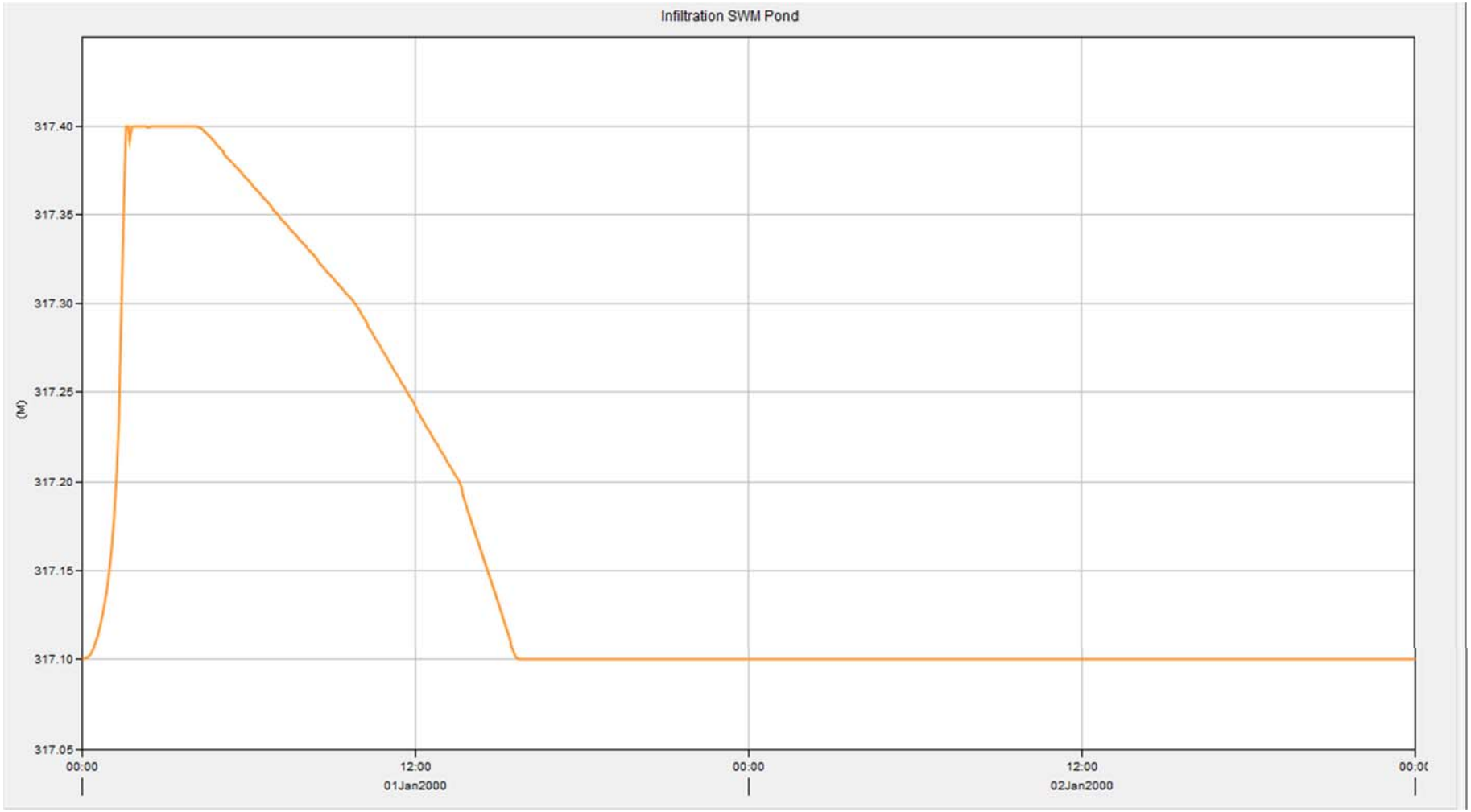
Peak Inflow:	0.542 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 09:45
Peak Discharge:	0.459 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 10:15
Inflow Volume:	197.42 (MM)	Peak Storage:	3.359 (1000 M3)
Discharge Volume	135.81 (MM)	Peak Elevation:	318.536 (M)

Project: Port Royal Mills Simulation Run: Swales - Quality

Start of Run: 01Jan2000, 00:00 Basin Model: Swale Sizing
End of Run: 03Jan2000, 00:00 Meteorologic Model: Quality Event 4hr 2
Compute Time: 17Dec2019, 13:08:58 Control Specifications: Control 2 - Quality

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
Swale A	0.01500	0.086	01Jan2000, 01:30	15.11
Swale B	0.02250	0.129	01Jan2000, 01:30	15.11
Swale C	0.07575	0.084	01Jan2000, 01:40	4.58


Infiltration SWM Pond
0.30
0.25
0.20
0.15
0.10
0.05
0.00
00:00
12:00
01Jan2000
00:00
12:00
02Jan2000


Infiltration SWM Pond
317.40
317.35
317.30
317.25
317.20
317.15
317.10
317.05
(M)
00:00
12:00
01Jan2000
00:00
12:00
02Jan2000

Project: Port Royal Mills Simulation Run: Water balance 0-5 Pond Infl

Reservoir: Infiltration SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl w Infil in Pond
End of Run:	03Jan2000, 00:00	Meteorologic Model:	Water balance 0-5
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 2 - Quality

Volume Units: MM

Computed Results

Peak Inflow:	0.002 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:50
Peak Discharge:	0.002 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 02:00
Inflow Volume:	0.88 (MM)	Peak Storage:	0.000 (1000 M3)
Discharge Volume	0.88 (MM)	Peak Elevation:	317.100 (M)

Project: Port Royal Mills Simulation Run: Water Balance 5-10 Infil Pon

Reservoir: Infiltration SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl w Infil in Pond
End of Run:	03Jan2000, 00:00	Meteorologic Model:	Water Balance 5-10
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 2 - Quality

Volume Units: MM

Computed Results

Peak Inflow:	0.009 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:50
Peak Discharge:	0.006 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 03:15
Inflow Volume:	3.50 (MM)	Peak Storage:	0.022 (1000 M3)
Discharge Volume	3.50 (MM)	Peak Elevation:	317.153 (M)

Project: Port Royal Mills Simulation Run: Water Balance 10-15 Pond Inf

Reservoir: Infiltration SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl w Infil in Pond
End of Run:	03Jan2000, 00:00	Meteorologic Model:	Water Balance 10-15
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 2 - Quality

Volume Units: MM

Computed Results

Peak Inflow:	0.016 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:50
Peak Discharge:	0.006 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 05:30
Inflow Volume:	6.35 (MM)	Peak Storage:	0.105 (1000 M3)
Discharge Volume	6.37 (MM)	Peak Elevation:	317.285 (M)

Project: Port Royal Mills Simulation Run: Water balance 15-25 Pond Inf

Reservoir: Infiltration SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl w Infil in Pond
End of Run:	03Jan2000, 00:00	Meteorologic Model:	Water balance 15-25
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 2 - Quality

Volume Units: MM

Computed Results

Peak Inflow:	0.026 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:55
Peak Discharge:	0.022 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 05:00
Inflow Volume:	10.51 (MM)	Peak Storage:	0.228 (1000 M3)
Discharge Volume	10.52 (MM)	Peak Elevation:	317.400 (M)

Project: Port Royal Mills Simulation Run: Water balance 25-75 Pond Inf

Reservoir: Infiltration SWM Pond

Start of Run:	01Jan2000, 00:00	Basin Model:	Post Ctrl w Infil in Pond
End of Run:	03Jan2000, 00:00	Meteorologic Model:	Water balance 25-75
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 2 - Quality

Volume Units: MM

Computed Results

Peak Inflow:	0.068 (M3/S)	Date/Time of Peak Inflow:	01Jan2000, 01:55
Peak Discharge:	0.126 (M3/S)	Date/Time of Peak Discharge	01Jan2000, 02:05
Inflow Volume:	27.64 (MM)	Peak Storage:	0.229 (1000 M3)
Discharge Volume	27.66 (MM)	Peak Elevation:	317.400 (M)

APPENDIX E

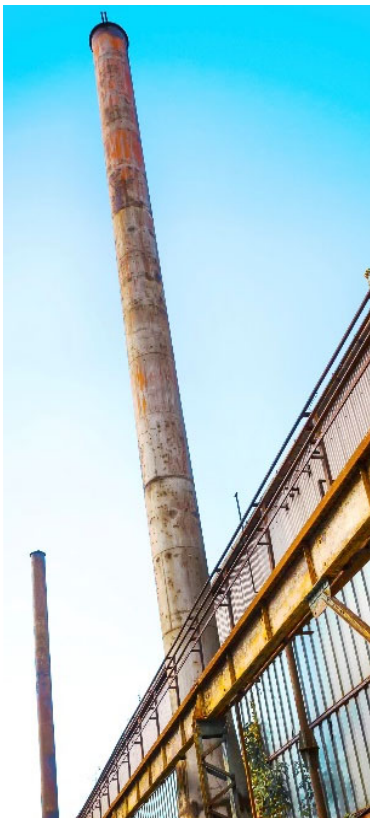
Geotechnical Investigation Report

GHD, October 2019

Geotechnical Investigation Report

Proposed Agricultural Grain Milling Facility
3469 Concession Road 1
Uxbridge, Ontario

Report for
Grainboys Holdings Inc.



Executive Summary

This report presents the results of a geotechnical investigation that was conducted in support of the a proposed Agricultural Grain Milling Facility being considered for a site situated along the east side of Concession Road 1 (also known as York-Durham Line), south of Highway No. 47 near the urban area of Lincolnville, Ontario. The property encompasses and area of approximately 36.3 ha (89.7 acres). The planned development will consist of a main building, numerous storage bins, concrete loading apron, paved access driveway and parking areas. The building will be a two-storey structure without basement, i.e. slab-on-grade foundation. Municipal Servicing is not available to the Site, as such, the development will be privately serviced with a new drilled water well and septic system. GHD Limited (GHD) was retained by Grainboys Holdings Inc. (the Client) to complete this geotechnical investigation which includes a hydrogeologic component. The study has included a site inspection, advancement of boreholes, soil sampling, water level monitoring, a well survey to compliment a review of available Ministry of the Environment, Conservation and Parks (MECP) well records, hydraulic conductivity testing and a water balance evaluation based upon design information.

In summary, the proposed development area is generally comprised of a surficial layer of topsoil underlain by silty sand/sandy silt or clayey silt glacial till. Occasionally, a layer of silty sand was observed between the surficial topsoil layer and the glacial till. A permanent shallow groundwater table was not observed. It is our professional opinion that there will not be significant constraints for the proposed development area from the seasonal variations of groundwater as the water can be handled with appropriate engineering techniques. It is expected that groundwater will generally be below the depth of the future development, although seepage may be encountered in deeper excavations for foundations or services. Seepage is expected to be seasonal in nature. If short-term pumping of groundwater at volumes greater than 50,000 L/day and less than 400,000L/day is required during the construction stage, the EASR must be completed. In summary, the proposed Agricultural Grain Milling Facility is suitable from both a hydrogeologic and geotechnical perspective.

There are minor impacts expected to groundwater and surface water as a result of the future development provided that appropriate planning (i.e. incorporation of LIDs as supported by the water balance calculations), mitigation measures and proper construction techniques are considered. From a geotechnical perspective, the Site is suitable for construction of the proposed development including one to two-storey commercial building, associated servicing and paved access and parking areas.

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Appendix Index

1. Introduction

This report presents the results of a geotechnical investigation that was conducted in support of the a proposed Agricultural Grain Milling Facility being considered for a site situated along the east side of Concession Road 1 (also known as York-Durham Line), south of Highway No. 47 near the urban area of Lincolnville, Ontario. The property encompasses and area of approximately 36.3 ha (89.7 acres). The planned development will consist of a main building, numerous storage bins, concrete loading apron, paved access driveway and parking areas. The building will be a two-storey structure without a basement, i.e. stab-on-grade foundation. Municipal Servicing is not available to the Site, as such the development will be privately serviced with a new drilled water well and septic system. GHD Limited (GHD) was retained by Grainboys Holdings Inc. (the Client) to complete this geotechnical investigation which includes a hydrogeologic component.

The general location of the Site is illustrated on the Vicinity Plan, Figure 1. The location with respect to surrounding roads and land use is depicted on the Property Plan, Figure 2. Specific details of the Site and surrounding properties based on recent aerial photography is presented on the Plot Plan, Figure 3. A preliminary site plan (by Lassing Dibben Consulting Engineers Ltd. (Lassing Dibben)) depicting the proposed development is provided on the Concept Plan, Figure 4. The borehole locations are illustrated on the Test Hole Location Plans, Figures 5A and 5B. These plans and other figures can be reviewed in the Enclosures section.

2. Scope of Investigation

The purpose of the investigation was to define the prevailing hydrogeologic and geotechnical conditions at the Site. The hydrogeologic aspects of the study were completed to investigate the subsurface soil stratigraphy, groundwater movement, to assess groundwater supplies and evaluate potential impacts from the proposed development and related construction. The geotechnical investigation was conducted to provide recommendations relevant to earthwork construction, dewatering, foundation and slab on grade design, buried service installation and pavement structure. The following scope of work was performed to accomplish the foregoing purposes.

1. Reviewed available background information relevant to the Site such as geologic, physiographic and water resources reports and maps.
2. Carried out an inventory of available well record data on file with the Ministry of the Environment, Conservation and Parks (MECP) for the immediate area to evaluate the physical characteristics of the aquifer complexes that underlie the region. A field survey of the general area was carried out to supplement the MECP data.
3. A walkover inspection was conducted to review surficial ground characteristics.

4. The subsurface conditions were explored by advancing, sampling and logging a total of fourteen (14) boreholes (six (6) of which were previously drilled as part of another investigation). The subsurface conditions were recorded and are summarized in detail in Appendix A. The boreholes were advanced to depths ranging from 3.5 to 6.6m. A monitoring well was installed in five (5) of the boreholes to facilitate water level measurements and further testing.
5. Falling and/or rising head (slug) tests were completed at two (2) monitoring well locations to evaluate hydraulic conductivity of the subsoils. The infiltration rate of the upper vadose zone was evaluated based on the soil type observed and in-situ testing.
6. Carried out laboratory analyses of materials encountered including grain size testing and moisture content determinations of representative soil samples.
7. Obtained a representative groundwater sample from two (2) of the monitoring wells that was submitted for chemical testing to determine background chemistry.
8. Completed a water balance that considers pre- and post-development conditions and evaluates groundwater baseflow conditions based on the current design.
9. Prepared a detailed report using engineering analyses of the acquired data outlining our conclusions and recommendations presented herein.

The boreholes were advanced using a track mounted drill rig equipped with continuous flight, solid stem power augers. Representative, disturbed samples of the strata penetrated were obtained using a split-barrel, 50mm outer-diameter (OD) sampler advanced by a 63.5 kg hammer dropping approximately 760 mm. The results of these standard penetration tests (SPT's) are reported as "N" values on the borehole logs at the corresponding depths. Samples were also obtained directly form augers cuttings.

Soil samples obtained from the test holes were inspected in the field immediately upon retrieval for type, texture, and colour. All test holes were backfilled following completion of the fieldwork. All samples were sealed in clean plastic containers and transported to the GHD laboratory for further visual-tactile examination, and to select appropriate samples for laboratory analysis.

3. Project Details

The preliminary conceptual plan is provided as Figure 4 (based on the Preliminary Site Layout provided by Lassing Dibben with electronic title "19-066 Site wContours.dwg"). Site statistics (also provided by Lassing Dibben) indicate that the overall area of the Site is 36.3 ha (89.7 acres). It is GHD's understanding that the proposed development will consist of a main building, numerous storage bins, concrete loading apron, paved access driveway and parking areas. The building will be a two-storey structure without basement, i.e. stab-on-grade foundation. Municipal Servicing is not available to the Site. As such, the development will be privately serviced with a new drilled water well and septic system. The target area of the tile bed for the septic system is illustrated on Figure 4.

4. Site Conditions

4.1 General

The field program consisted of a site inspection, soils investigation, hydraulic testing, and measurement of water levels in the monitoring wells. The boreholes were drilled on June 26 and August 26, 2019. Borehole records and physical test results of representative soil samples are presented in Appendix A. A site reconnaissance was conducted by GHD prior to the subsurface investigation to observe the general surficial characteristics of the Site. The ground surface across the Site is rolling and generally sloping towards the south/southeast. Local relief across the Site is on the order of 25 to 26m.

4.2 Subsurface

4.2.1 Regional Physiography and Geology

The Property is situated in the physiographic region known as the Oak Ridges Moraine (Chapman and Putnam, 1984). The Oak Ridges Moraine is generally hilly, with a knob-and-basin relief typical of an end moraine. Overburden consists of a calcareous sandy till, with some deposits of gravel. As illustrated on the Figure 7, the Site exists within a kame moraine with drumlinized till plains approximately 0.8km further to the south. The surficial geology (Figure 8) can be described as glaciolacustrine-derived silty to clayey till within the Site. Small areas of organics/foreshore–basinal deposits encroach isolated areas near the east end and south-central perimeters of the Site. The Ontario Geological Survey information (Figure 9) indicates that the Quaternary geology for the area is the Halton till which is described as predominantly silt to silty clay matrix, high in matrix carbonate content.

A review of available MECP well records identified six (6) well records on the Site (including two (2) records for observation wells and test holes) and an additional forty-five (45) well records within 500m (including five (5) abandonment records and three (3) records for monitoring wells and test holes). The well records indicate the presence of sand and clay with stones which is interpreted to be glacial till with occasional gravel and/or sand layers. The well records considered are provided and shown in Appendix B. Physical and hydraulic data are presented on some of the MECP well records. The water well information is discussed in Section 5.1. GHD confirms that none of the wells (as published by the MECP website) actually occur within the Site.

4.2.2 Local Geology

The subsurface stratigraphy was investigated by drilling fourteen (14) boreholes on June 26 and August 26, 2019. Monitoring wells were installed in five (5) of these boreholes to facilitate water level measurements and testing. The locations of the boreholes are illustrated on the Test Hole Location Plans, Figures 5A and 5B. Details of the subsurface conditions encountered are graphically presented in Appendix A. It should be noted that the boundaries between the strata have been inferred from the test hole observations and non-continuous samples. They generally represent a transition from one soil type to another, and should not be inferred to represent an exact plane of geological change. Further, conditions may vary between and beyond the test holes.

The soils encountered generally consisted of a surficial layer of topsoil underlain by silty sand/sandy silt till which graded into a clayey silt till at depth. Occasionally, a layer of silty sand/sandy silt was observed between the surficial topsoil layer and the glacial till. Isolated sand seams were encountered within the glacial till sporadically throughout the Site. A surficial layer of fill was encountered in boreholes BH-4 and BH-5. A surficial layer of topsoil was encountered in all boreholes with the exception of boreholes BH-4 and BH-5. Where encountered, the topsoil was observed to range from 200mm to 800mm in thickness. This soil was observed to be in a damp, loose state, with a silty, highly organic content. As such, it is expected to be devoid of any structural engineering properties.

A surficial layer of granular fill was observed in borehole BH-4 extending to 0.3m and was observed to be in a moist and compact in-situ state. An earth fill layer was observed at the surface in in borehole BH-5 and extended to approximately 2.3m. The earth fill generally consisted of silty sand, with gravel. The fill was observed to exist in a moist state with in-situ moisture contents that ranged from 11 to 17% by weight. SPT N values obtained from within the earth fill layers varied from 5 to 12 blows/300mm indicating a loose to compact in-situ state of relative density.

A layer of silty sand/sandy silt was observed below the topsoil in boreholes BH-105 and BH-106. Where penetrated, the silty sand was found to extend to about 1.5m. Moisture content tests conducted on samples of the silty sand yielded values ranging from approximately 4 to 12% moisture by weight indicating that it exists in a moist to wet state. SPT N values obtained from within the silty sand/sandy silt layer varied from 18 to 20 blows/300mm, indicating a compact in-situ state of relative density. A grain size distribution analyses conducted on a representative sample of the silty sand/sandy silt suggests the following composition: 2% gravel, 34% sand, and 64% silt and clay-sized particles (Unified Soil Classification System (USCS)).

Glacial till was encountered in all fourteen (14) boreholes. The till was brown to grey in color and generally consisted of sandy silt or clayey silt containing varying amounts gravel. Occasional cobbles were encountered in the till at some borehole locations. The till exists in a generally moist condition with moisture contents ranging from 4 to 25% moisture by weight. The consistency or density of the till is generally described as stiff to hard or loose to very dense based on SPT N values that ranged from 5 blows/300mm to over 100 blows/300mm. GHD notes that zones of loose till was observed in borehole BH-103 only (within the proposed new development) and it extended to approximately 4.6m depth at this location. Grain size distribution analyses conducted on five (5) representative samples of the till suggests the following compositional ranges: 0 to 8% gravel, 16 to 40% sand, and 53 to 84% silt and clay-sized particles (USCS). Hydrometer analyses conducted on three (3) of these samples suggest that the till contains 41 to 67% particles between 5 and 75 μm in size.

A layer of sand was encountered at depths of 5.0 and 4.0 in boreholes BH-102 and BH-3, respectively. The sand layer extended to the full depth of the investigation in both of these boreholes. The sand layer was observed to be brown to grey in colour and existed in a generally wet condition with moisture contents ranging from 18 to 19% moisture by weight. SPT N values obtained from within the sand layer varied from 11 to 31 blows/300mm, indicating a compact to dense in-situ state of relative density.

A summary of the grain size data obtained from the various strata is presented in Table 4.1.

Table 4.1 Grain Size Distribution Summary

Location	Depth (m)	Grain Size Distribution				Observed Soil Unit
		%Gravel	%Sand	%Fines		
				%Silt	%Clay	
BH-103, SS-6	3.8 – 4.3	6	38	41	15	Sandy Silt Till
BH-104, SS-2	0.8 – 1.4	0	31	53	16	Sandy Silt Till
BH-105, SS-2	0.8 – 1.4	2	34	64		Silty Sand/Sandy Silt
BH-107, SS3	1.5 – 2.0	0	16	67	17	Sandy Silt Till
BH-5, SS-3	1.5 – 2.0	3	40	57		Sandy Silt Fill
BH-6, SS-3	1.5 – 2.0	8	26	66		Sandy Silt Till

Notes: %Fines indicates silt and clay particles; grain size distribution based on Unified Soil Classification System.

4.2.3 Groundwater

Groundwater seepage and/or accumulation was observed in nine (9) of the boreholes at depths ranging from 1.7 to 5.3m during the drilling operations. Monitoring wells were installed in five (5) boreholes (BH-103, BH-107, BH-1, BH-3, and BH-4) in order to facilitate monitoring of groundwater levels. A summary of the monitoring well details is provided in Table 4.2.

Table 4.2 Summary of Monitoring Well Information

Location	Depth of Well (m)	Pipe Stick-Up (m)	Effective Well Screen Interval (m)	Water Seepage Depth (m)
BH-103	5.2	0.84	2.4 – 5.2	3.2
BH-107	6.1	0.93	2.4 – 6.1	--
BH-1	4.6	0.90	3.0 – 4.6	--
BH-3	4.6	1.00	3.0 – 4.6	4.0
BH-4	4.6	0.90	3.0 – 4.6	3.8

Groundwater potentiometric levels were measured on October 11, 2019 in the installed monitoring wells. The data has been plotted on Figure 6 and summarized in Table 4.3.

Table 4.3 Potentiometric Water Level Summary

Location	Ground Elevation (m)*	Water Level (m) October 11, 2019	GW Elevation (m) October 11, 2019
BH-103	320.0	1.7	318.3
BH-107	322.5	5.3	317.2
BH-1	329	Dry	Dry
BH-3	316	0.2	315.8
BH-4	321	2.1	318.9

Notes: m = metres; GW = groundwater; (*) Elevations interpreted from contours on Preliminary Site Layout provided by Lassing Dibben Consulting Engineers Ltd. entitled “19-066 Site wContours.dwg” where available or Google Earth. The elevations provided are for the purposes of evaluating groundwater elevation and flow direction and should not be relied upon as a legal survey or topographic elevation survey.

The potentiometric elevations range from 315.8 to 318.9m indicating a moderate horizontal gradient. Based on the water level data collected and the surrounding topography, the overall shallow groundwater flow direction is to the south. The direction of shallow groundwater movement is illustrated on the Groundwater Elevation plan, Figure 6. It is expected that groundwater seepage will be encountered intermittently at depths ranging from 2.3 to 5.2m (similar to what encountered during the subsurface explorations). It should be noted that groundwater levels are transient and tend to fluctuate with the seasons, periods of precipitation and temperature.

4.2.4 Water Quality

A groundwater sample was collected from the monitoring well installed in BH-103 and BH-107 for the purpose of determining background water quality. The certificate of chemical analysis is presented in Appendix D. The water quality data are summarized and compared with the Ontario Drinking Water Standards (ODWS) in Table 4.4.

Table 4.4 Water Quality Summary

PARAMETER	Monitoring Well		ODWS		
	BH-103	BH-107	MAC	IMAC	AO/OG
Alkalinity (as $CaCO_3$)	239	244	--	--	30 to 500
Ammonia - Total	0.19	0.02	--	--	--
Calcium	95.2	102	--	--	--
Chloride	15.9	17.6	--	--	250
Colour (T.C.U.)	< 2	< 2	--	--	5
Conductivity (mS/cm)	542	607	--	--	--
Copper	< 0.002	< 0.002	--	--	1.0
Fluoride	< 0.1	< 0.1	1.5	--	--
Hardness (as $CaCO_3$)	**315**	**349**	--	--	80 to 100
Iron	< 0.005	0.047	--	--	0.3
Magnesium	18.8	22.9	--	--	--
Manganese	**0.076**	**0.125**	--	--	0.05
Nitrite (N)	< 0.1	< 0.1	1.0	--	--
Nitrate (N)	< 0.1	3.9	10	--	--
pH (units)	8.07	8.06	--	--	6.5 to 8.5
Potassium	2.2	2.8	--	--	--
Sodium	7.8	5.8	--	--	200
Sulphate	42	66	--	--	500
Turbidity (N.T.U.)	**45.2**	**8.9**	1	--	5
Zinc	0.011	< 0.005	--	--	5.0

Notes: All units in mg/L (i.e. parts per million) unless otherwise noted. MAC = maximum acceptable concentration (health related); IMAC = Interim MAC (insufficient data to establish MAC or not feasible to establish MAC to desired level); AO/OG = aesthetic objective or operational guideline (not health related). **Bolded value** exceeds ODWS.

The groundwater beneath the Site is relatively hard which is common in Southern Ontario due to overburden materials containing calcium. Manganese will sorb to soil particles and filtering can lower this parameter (if required). In general, the water quality is relatively good with no indication of organic pollution as evidenced by the lack of nitrite and low concentration of nitrate.

4.2.5 Hydraulic Conductivity

Hydraulic conductivity (K) testing was completed at monitoring wells installed in boreholes BH-103 and BH-107 on September 11, 2019. The testing consisted of falling and/or rising head testing and was completed by introducing a one-metre long slug or adding potable water within the well, and then measuring the water levels using a data logger programmed to record readings at three (3) second intervals. The data was analyzed using AQTESOLV and the Bouwer-Rice solution for each test (see Appendix C for solution data).

The K values for the hydraulic conductivity testing range from on the order of 10^{-5} to 10^{-6} cm/sec. The K values from the test data indicate that the monitoring wells were screened within low hydraulic conductivity units. The hydraulic conductivity testing suggests that excavations within these soils are expected to yield low to little water. However, increased amounts of water may be expected when pockets or layers of sand and/or gravel are intersected.

4.2.6 Infiltration Testing

For purposes of Low Impact Development strategies, infiltration data of the shallow site soils is presented in this section. In-situ constant head permeameter tests were conducted at a nominal depth of 0.6m at three (3) locations near boreholes BH-103, BH-105 and BH-107. The importance of infiltration is for the implementation of low impact development strategies (LIDs) to recharge precipitation into the ground at pre-development or near pre-development values. Infiltration testing was completed using an ETC Pask (constant head well) permeameter.

Based upon the infiltration testing conducted, the upper vadose zone has a field saturated hydraulic conductivity of 10^{-4} cm/sec (Appendix C). The infiltration test results provide preliminary infiltration values for the Site and are indicative of silty sand/sandy silt material. Although LIDs can be applied to any soil type, additional testing should be considered at the detailed design stage when infiltration areas are known.

Based on the Supplementary Guidelines to the Ontario Building Code 2012, this correlates to an infiltration rate in the order of 50 mm/hr. It is noted, however, that slight variations in the soil stratigraphy may cause variations in the permeability of the soil in both vertical and horizontal orientations.

Based on the Low Impact Development Stormwater Management Planning and Design Guide, the infiltration rate used to design the infiltration facility must incorporate a safety correction factor that compensates for potential reductions in soil permeability due to compaction or smearing during construction, gradual accumulation of fine sediments over the lifespan of the infiltration facility and uncertainty in measured values when less permeable horizons exist within 1.5 m below the bottom of the infiltration facility.

5. Hydrogeology

The hydrogeology of the area is characterized by rolling to hilly topography of upper soils that generally consists of silty sand/sandy silt till with occasional layers/seams of sand. Seasonal water is expected to flow within the sandy layers. Limited vertical migration is expected within the till. Only a minor portion of the existing infiltration is expected to recharge the deeper aquifers that are confined below the till. Information regarding groundwater characteristics of the immediate area was obtained from an inventory of well records. A total of forty-five (45) well records were found to be available within 500m of the Site. The well records indicate the presence of sand and clay with stones which is interpreted to be glacial till with occasional gravel and/or sand layers. The well records considered are provided and shown in Appendix B.

5.1 Existing Local Water Supplies

Nearby surrounding lands are generally residential, agricultural (cash crops), agricultural grain processing facility, and undeveloped/treed areas. The compiled MECP information included six (6) abandonment records and three (3) records for monitoring wells/test holes. The well records considered are provided and shown in Appendix B. Physical and hydraulic data are presented on some of the MECP well records.

The well records indicate the presence of sand and clay with stones which is interpreted to be glacial till with occasional gravel and/or sand layers. The information indicates the presence of two (2) principal aquifer systems:

1. An unconfined/partially confined shallow water table system within the shallow sand/till tapped by shallow bored/dug wells in addition to the monitoring wells; and
2. Deeper overburden layers of sand and gravel within the till tapped by numerous drilled wells.

The groundwater was generally described as “fresh” in the well records reviewed (when indicated). The drilled overburden well records indicates that the wells extended to depths ranging from 42.0 to 93.0m and groundwater was encountered at depths ranging from 4.6 to 63.7m. The drilled overburden wells reportedly produce test yields 3.0 to 722.0 L/min. The MECP well data has been summarized in Table 5.1.

Table 5.1 Summary of MECP Water Well Data

Total Number of Wells Inventoried:	45
Dug/Bored Wells:	2 (4%)
Drilled Wells (Overburden):	34 (76%)
Drilled Wells (Bedrock):	0 (0%)
Abandoned or other:	9 (20%)

Parameters	Statistical Summary					
	Dug / Bored Wells		Drilled – Overburden		Drilled – Bedrock	
WELL YIELDS						
Range	7.6 – 37.9 L/min	2.0 – 10 Igpm	11.4 – 2732.8 L/min	3 - 722 Igpm	N/A	N/A
Average	22.7 L/min	6.0 Igpm	330.3 L/min	87.3 Igpm	N/A	N/A
REPORTED YIELDS	Frequency		Frequency		Frequency	
Not Reported	0	0%	5	14%	0	0%
Dry	0	0%	0	0%	0	0%
0 to 1 Igpm	1	50%	0	0%	0	0%
2 to 4 Igpm	0	0%	1	3%	0	0%
5 to 9 Igpm	0	0%	6	17%	0	0%
≥10 Igpm	1	50%	23	66%	0	0%
STATIC WATER LEVELS						
Range	0.6 – 4.6 m	2.0 – 15.0 ft	0.6 – 24.4 m	2.0 – 80.0 ft	N/A	N/A
Average	2.6 m	8.5 ft	13.8 m m	45.2 ft	N/A	N/A
WATER ENCOUNTERED						
Range	7.6 – 8.2 m	25.0 – 27.0 ft	4.6 – 63.7 m	15.0 – 209 ft	N/A	N/A
Average	7.9 m	26.0 ft	32.9 m	108.3 ft	N/A	N/A
WELL DEPTH						
Range	8.8 – 9.1 m	29.0 – 30.0 ft	12.8 - 93 m	42 - 305 ft	N/A	N/A
Average	9.0 m	29.5 ft	38.8 m	127.3 ft	N/A	N/A

Notes: Data based on MECP well record information (see Appendix B). L/m represents litres per minute, Igpm indicates Imperial gallons per minute and m is metres.

The well records indicate that the overburden soils are generally comprised of till with varying amounts of clay, sand, gravel. To supplement the MECP well records reviewed, GHD staff conducted a well survey of the area to investigate where private wells may still be in use (Appendix B). Eleven (11) locations were surveyed as outlined in Appendix B.2.1. There were no drinking water wells identified in the survey of the area.

Information was collected during the survey from a total of eleven (1) homes close to the Site including the identification of five (5) dug/bored wells and three (3) drilled wells. At four (4) homes, no information was gathered. Homeowner interviewed during the well survey reported no water quality or quantity issues. One (1) homeowner reported a former domestic well that was removed in the 1990's.

5.2 Source Water Protection Considerations

Where proposed developments are being planned, it is important to determine the presence of Significant Groundwater Recharge Areas (SGRAs) and Highly Vulnerable Aquifers (HVAs) in the area. These areas are protected under the Clean Water Act (2006). In general, SGRAs are defined as areas where water seeps into an aquifer from rain and melting snow, supplying water to the underlying aquifer. An HVA aquifer occurs where the subsurface material offers limited protection from contamination resulting from surface activities.

GHD considered the potential for SGRAs and HVAs by reviewing the "Source Protection Information Atlas" that is currently available through the MECP website. The published information is dated January 31, 2019. In general, there are no HVAs in close proximity to the Site (see Figure 10). Further, the subsurface investigation by GHD has indicated that the existing glacial till exhibits low hydraulic conductivity indicating that it has a relative lower contribution to underlying aquifer complexes.

As defined in the Clean Water Act (2006), an area is a significant groundwater recharge area if,

- the area annually recharges water to the underlying aquifer at a rate that is greater than the rate of recharge across the whole of the related groundwater recharge area by a factor of 1.15 or more; or,
- the area annually recharges a volume of water to the underlying aquifer that is 55% or more of the volume determined by subtracting the annual evapotranspiration for the whole of the related groundwater recharge area from the annual precipitation for the whole of the related groundwater recharge area.

The Site is within a SGRA with a vulnerability score of 6 (moderate to high) as shown on Figure 10. GHD notes that the planned development will cover a small portion of the Site (approximately 3%). In addition, it is GHD's opinion that based upon the low permeability of the glacial till found at the Site, it should not be a moderate or high SGRA. Nevertheless, the development will consider maintaining pre-development infiltration. Therefore, no impacts are expected to the SGRA.

6. Conclusions and Recommendations

Supporting data upon which our recommendations are based have been presented in the foregoing sections of this report. The following recommendations are governed by the physical properties of the subsurface materials that were encountered at the Site and assume that they are representative of the overall site conditions. It should be noted that these conclusions and recommendations are intended for use by the designers only. Contractors bidding on or undertaking any work at the Site should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of this factual data as it affects their proposed construction techniques, equipment capabilities, costs, sequencing, and the like.

Comments, techniques, or recommendations pertaining to construction should not be construed as instructions to the contractor. Based on the results of the geotechnical investigation, it is our professional opinion that the Site is suitable for the proposed Agricultural Grain Milling Facility and there is low potential for groundwater impact as a result of developing the Site. It is recommended that good construction and mitigation techniques must be used to minimize the potential for impact. Detailed conclusions and recommendations are presented in the following sections regarding the water balance and potential impacts to groundwater and surface water resources.

6.1 Hydrogeology

6.1.1 Water Balance Evaluation

An evaluation of the water balance was completed to compute the potential impacts that may occur in the recharge/discharge characteristics related to the proposed development. This evaluation is based upon a preliminary conceptual plan. The objective of the water balance is to illustrate that post-development infiltration within the developable area can meet or be close to pre-development values. The computations have used detailed parameters such as precipitation, regional evapotranspiration, infiltration and runoff. Weather data from King Smoke Tree weather station was selected as it was the closest weather station to the Site (~21.8km). The detailed calculations can be reviewed in Appendix E. The total Site area is 36.3ha based on information provided. The following is a summary of the expected pre-development water balance values for the proposed residential development based on the current information.

Pre development Water Balance

The pre-development water balance incorporated the existing soils, slope and ground cover areas. The infiltration factor for the area was calculated from the table of values presented in the “Land Development Guidelines” (MOEE, 1995). It is based on three sub-factors which are:

- Topography sub-factor;
- Soil sub-factor; and
- Cover sub-factor.

The slope of the site will be considered as “rolling” (slope of 2.8 to 3.8m per km) to “hilly” (slope of 28m to 47m per km). The soils are generally comprised of sandy silt / silty clay till material and will be considered a medium combination of clay and as per the water balance calculations. Table 6.1 summarizes the expected pre-development water balance values for the Site.

Table 6.1 Pre Development Summary

Total Precipitation (King Smoke Tree):	- 857.7 mm/year
Regional Evapotranspiration:	- 581.6 mm/year
Recharge Available:	- 276.1 mm/year
Area of Recharge Available (Site):	- 363,045 m^2
Total Water Surplus:	- 101,535 m^3/year
Total Estimated Infiltration:	- 51,387 m^3/year
Total Estimated Runoff:	- 50,148 m^3/year

Based upon these values, the Site infiltrates on the order of 51,387m^3 per year (141 mm/year).

Post Development Water Balance (No Enhancements)

The computation of the water budget was repeated for the proposed development assuming no mitigation techniques, that is, runoff from impervious surfaces is unrecoverable and not infiltrated into the ground. The anticipated impact of the development is related to increased runoff from imperious surfaces, such as asphalt surface for the proposed access roads and the building rooftops. These are assumed to be impervious surfaces with zero infiltration capacity in this model. A summary of the computations is provided in Table 6.2.

Table 6.2 Post Development Summary (No Enhancements)

Area of Site:	- 363,045 m^2
Impervious Surfaces:	- 12,390 m^2
Area Available for Infiltration:	- 350,655 m^2
Total Water Surplus:	- 106,016 m^3/year
Total Estimated Infiltration:	- 49,463 m^3/year
Infiltration % Difference (pre- vs. post-):	- (-4%) (decrease)
Total Estimated Runoff:	- 56,553 m^3/year
Runoff % Difference (pre- vs. post-):	- 13% (increase)

The impermeable surface area of proposed paved areas, concrete pads, receiving and scale areas and building rooftops was estimated based on the design drawing presented in Figure 4 and information provided by the Lassing Dibben. Under this scenario, the total infiltration volume decreased by 4% and runoff volume increased by 13%. Within the areas evaluated, the infiltration has reduced and the runoff increased versus the pre-development values. Groundwater base flow would be expected to decrease over time in this scenario. However, recharge via infiltration through the underlying till to the lower aquifer from these lands is expected to be minor. Based upon this scenario, mitigative strategies are required to minimize infiltration losses and reduce storm water runoff. The following section discusses the water balance after considering enhanced infiltration options.

Post Development Water Balance (Enhanced Infiltration)

The post-construction water budget computations were repeated considering enhanced infiltration options which are also known as Low Impact Development (LID) technologies. These technologies include and are not restricted to rainwater harvesting, downspout disconnection, infiltration trenches, vegetated filter strips, bioretention, permeable pavement, enhanced grass swales, dry swales and perforated pipe systems in order to balance the water budget and maintain any wetland features including nearby creeks. The shallow subsurface soils at the Site consist of silty sand / sandy silt / clayey silt till material. It is noted that LIDs can work in any soil type. The primary enhancement for this Site is to promote infiltration and to move water from impervious surfaces to areas where infiltration can occur.

The post-development water balance was modelled to include the disconnection of downspouts from storm sewers and directing water from the proposed building's roof top to sodded areas or undeveloped grass areas. A summary of the post-construction water budget with enhancements for infiltration is presented in Table 6.3.

Table 6.3 Post Development Summary (With Enhanced Infiltration)

Area of Site:	- 363,045 m^2
Total Water Surplus:	- 106,016 m^3/year
Total Estimated Infiltration:	- 51,387 m^3/year
Infiltration % Difference (pre- vs. post-):	- (0%) (nil)
Total Estimated Runoff:	- 54,628 m^3/year
Runoff % Difference (pre- vs. post-):	- 9% (increase)

Under this scenario, the total infiltration volume is maintained and runoff volume increased by 9% compared to pre development values. Within the areas evaluated, the infiltration and runoff amounts have improved compared to post development (no mitigation) numbers. However, a runoff volume increase of 9% is still present. Runoff increase compared with the pre-development conditions will need to be managed as per the storm water management plan.

It is expected that recharge via infiltration through the till to the lower aquifers is a small component and impacts to the groundwater aquifer are expected to be insignificant. It is our professional opinion that there would be minimal impact to the local groundwater regime and minimal impact to the down-gradient surface water regime from a quantity perspective.

6.1.2 Impact on Groundwater Baseflow

The importance of the groundwater baseflow is that it provides discharge to water bodies, wells and may have some hydraulic functionality with the on-site features. Water balance calculations suggest that the infiltration to the subsurface can be kept near pre-development values if appropriate LID technologies are used. It is GHD's professional opinion that there is not expected to be a significant impact to the shallow groundwater baseflow that may be supplying baseflow to the down-gradient wetlands to the southeast of the Site.

6.1.3 Impact on Surface Water Bodies

The impacts to surface water bodies are related to the reduction of the groundwater baseflow and water quality concerns related to human activities such as salting of paved areas, minor fuel and oil leaks, fertilizer application, etc. It is expected that there will be minor impacts to groundwater and neighbouring surface water bodies. Runoff from the development will be collected by an internal storm sewer system and treated using a stormwater management pond or other LID strategies. Further details are provided within the Functional Servicing Report regarding the stormwater management.

6.1.4 Mitigation Measures

Several mitigative techniques have been recommended in order to address concerns relating to the potential for impact to the base flow. The impact and mitigation measures can be arranged into two (2) distinct categories: construction phase and operational phase. Prior to construction, storm water management techniques should be incorporated to control additional surface water runoff and permit enhanced infiltration into the surrounding ground. Storm water management techniques will minimize the potential for groundwater impact and also minimize the amount of silt or other fine-grained soil particles becoming mobile and entering into down-gradient areas.

The installation of strategically placed silt fences will filter any excess storm water runoff prior to entering the infiltration areas.

During the operational phase of the development, it is expected that storm water excess will be controlled as indicated in the Functional Servicing Report. It is recommended that all roof leader drains of the proposed building be allowed to drain onto the ground surface for infiltration. Swales may be required in some areas to divert the runoff water where required. Other LIDs will be required to reduce storm water runoff and will be evaluated by the detailed design.

6.1.5 Servicing

Private services for water and septic disposal will be required for this Site. The following sections discuss water supply and septic waste disposal.

6.1.5.1 Water Supply

Groundwater Availability

For residential developments, minimum well yield requirements are defined in MOE Procedure D-5-5. For this proposed commercial development, the Ontario Building Code will be used to estimate the design flows and well yield requirements. A constant rate pump test is recommended for this Site to confirm sufficient groundwater is available and that the water well does not interfere with other local users.

Production Well Requirements

It is recommended that the proposed development be serviced by a properly constructed drilled well. The drilled well is expected to be constructed at depths ranging from about 15m to nearly 50m. Large diameter (300 mm or greater) wells are not considered suitable as a source of water supply for this Site. The well installed should be in accordance with Regulation 903 of the Ontario Water Resources Act and incorporate the following design specifics.

1. The well must be developed by conventional techniques to obtain a minimum of 70% efficiency. It is recommended that a statement be provided that indicates the well is essentially sand-free (i.e. less than 5 mg/L sand). In addition, the statement should also include that the total drawdown in the well, comprising the pumping level plus the mutual interference from the other wells, is within a reasonable tolerance of the available drawdown.

2. A water sample must be collected from the new well and analyzed for the following (minimum) test parameters to meet the ODWS.

-Iron	-Manganese	-Nitrate
-Sodium	-Hardness	-Turbidity
-Total Coliform	-E. *coli*	-Fecal Coliform
-Chloride	-Total dissolved solids	-Fluoride

3. It is recommended that the new, properly constructed well be pump tested by qualified hydrogeologic personnel prior to issuance of a building permit. The well should be pump tested to determine a safe long-term yield and short-term capacity to ensure uninterrupted water supply for the development and to ensure that adjacent properties will not be impacted. A report should be prepared by a Professional Engineer or Professional Geoscientist verifying individual pump testing data.

The use of a properly constructed drilled well that is adequately sealed and certified by qualified hydrogeological personnel should be sufficient to provide ample quantities of potable water while preserving the long term water quality of the existing aquifer complexes. Any existing wells on the Site including monitoring wells that will not be used should be abandoned in accordance with Regulation 903.

The use of groundwater heat pumps that extract water from the aquifer is not recommended. Geothermal drilling is unregulated and there are no mandatory requirements to seal boreholes that are drilled through or into aquifers. Therefore, unsealed or improperly sealed boreholes into the aquifer could put the water supply at risk.

6.1.5.2 Septic Waste Disposal

General

The Preliminary Site Plan (by Lassing Dibben) indicates that a septic system will be installed for the planned building. In addition, Lassing Dibben have indicated that the planned development will generate less than 10,000 L/day of septic effluent per day. A detailed assessment of the suitability of the septic system is required to determine the potential impact of the sewage systems at the Site on groundwater resources. The Site is not considered to be hydrogeologically sensitive (Procedure D-5-4, MOE, 1996). The MECP dilution model was used to confirm that the projected post-development nitrate concentration meets the drinking water standard of 10 mg/L for nitrate. It is our professional opinion that the Site is suitable for the construction of the planned septic waste disposal system.

The overburden materials were investigated during the advancement of the 17 test holes. The boreholes generally encountered a surficial layer of topsoil, over till, generally consisting of sandy silt or silty sand and occasionally clayey silt. Minimal groundwater seepage and / or accumulation was observed in the boreholes during the drilling operations. In addition, bedrock was not encountered. The T-time of the underlying soil is estimated to be between 30 and 50 min/cm. Based upon the subsurface soils in the area of the proposed leaching bed, it is recommended that the waste disposal system be designed as a fully raised bed. A detailed review of the expected waste disposal impacts and recommendations are presented in the following sections.

Developmental Impact

For the purposes of calculating the potential impact of the planned development, the Ontario Building Code (OBC) was consulted to evaluate the design septic effluent loading rate. Based upon discussions with the Client, it is estimated that there will be up to twenty (20) employees involved in the proposed development. The OBC indicates an effluent flow generated for each employee of 75 L/day. Therefore, the proposed development will generate about 1,500 L/day. Based upon this calculation, the planned septic system is well below 10,000 L/day and would not require a MECP environmental compliance approval (ECA). The anticipated water use is expected to be at least ½ of the design criteria.

For the purposes of calculating the potential impact of the proposed commercial development, the estimated 1,500 L/day was used as the septic effluent loading rate for the Site. While most constituents in septic effluent are usually removed within a short distance of movement within soil, mobile constituents such as chlorides and nitrates will require sustained dilution to meet the drinking water standards of 10 mg/L N for nitrate. The MECP normally considers sewage from a Class 4 waste disposal system will contain 40 mg/L of nitrate. For the purpose of assessing the impact of projected nitrate loading, the dilution requirement of 4:1 was utilized in the impact computations.

A summary of the applicable parameters that were considered in the waste disposal evaluation and the computation of the projected nitrate concentration are presented below in Table 6.4. Sandy silt typically infiltrates on the order of 150 to 200 mm/year. A median value of 175 mm/year was selected for this nitrate impact assessment. The average background nitrate concentration (2.00 mg/L) as determined from monitoring wells at BH-103 and BH-107 was used in the nitrate impact assessment.

Using dilution only, the projected nitrate concentration generated from sewage at the Site is calculated to be 0.34 mg/L. The nitrate impact assessment indicates that nitrate impacts from septic effluent will not be an issue. The proposed development meets the 10 mg/L drinking water standard for nitrate.

Table 6.4 Nitrate Impact Assessment Summary

1.	Recharge rate (sandy silt)	175 mm/year
2.	Development area	36.3 hectares
3.	Background nitrate	2.00 mg/L
4.	Nitrate loading (40 mg/L x 1,500 L/day)	60,000 mg/day
5.	Projected nitrate concentration	0.34 mg/L

Waste Disposal Requirements

Based on the results of this assessment, the Site is suitable for a private septic waste disposal system. Fill may be required and drainage patterns and storm drainage will be re-directed and controlled as part of the storm water management plan. It is recommended that the septic system use a fully raised absorption trench leaching bed. The waste disposal system should meet Ontario Regulation 350/06 made under the Building Code Act, 1992 and incorporate the following design features.

1. Organics should be stripped from the area of the leaching bed and down-gradient mantle.
2. The exposed subgrade below the tile bed should be trimmed and scarified, and provided with a gentle slope of 0.5% in the direction of the mantle.
3. The tile bed should be constructed as a fully raised leaching type bed to the full height of at least 1m above existing grade. The raised bed should consist of clean, granular fill capable of providing an in-place percolation rate (T-time) of 4 to 8 min/cm.
4. The mantle should be constructed along the down-gradient margin of the raised bed. The mantle should extend along the full width of the bed and for a minimum of 15m down-gradient from the bed. The mantle should consist of similar granular fill raised to a minimum of 250mm above the surrounding grade. Surface runoff should be diverted away from the leaching bed by means of proper site drainage.
5. The waste disposal system should be kept clear of surface drainage swales, roof leader drains, and other sources of surface water.
6. The tile bed should be kept away from shade trees and a healthy cover of vegetation should be developed and maintained over the bed to promote evapotranspiration.
7. When sighting tile bed on sloping ground, it is recommended that procedures outlined in the Building Code be followed closely.
8. Minimum set back distances from septic tank (plus 2 times height raised):

   -Building – 1.5m
   -Property line – 3m
   -Drilled well – 15m
   -Open water course – 15m

9. Minimum set back distances from septic tile bed (plus 2 times height raised):

   -Building – 5m
   -Property line – 3m
   -Drilled well, properly sealed – 15m
   -Open water course – 15m
   -Shallow well – 30m

10. The layout, design and construction of the waste disposal bed should be subject to inspection by experienced hydrogeologic personnel.

New technologies are available that can reduce the size of the footprint of the conventional septic system (if required). If other new technology septic system is incorporated into the design, it is recommended that the system be installed as per the Ontario Building Code.

6.1.6 Dewatering for Construction

Based on groundwater-related observations and the depth of excavations expected for this development, it is generally anticipated that groundwater seepage will be encountered. It is expected that pumping from collection sumps to an acceptable outlet will control this expected groundwater infiltration. However, should any excavations require more intensive dewatering or groundwater control, the use of filtered sumps, or other suitable method of dewatering and/or sheet piling is recommended.

For dewatering purposes, hydraulic conductivities on the order of about 10^{-5} to 10^{-6} cm/sec may be expected for the subgrade soils encountered in our boreholes. It should be noted that hydraulic conductivities can vary over a vertical and horizontal extent, and may be outside the stated range if pockets or seams of soils with different grain size (e.g. sand seams) are encountered. If short-term pumping of groundwater at volumes greater than 50,000 L/day and less than 400,000 L/day is required during the construction stage, the Environmental Activity Sector Registry (EASR) must be completed. The EASR streamlines the process and water pumping may begin once the EASR registration is completed, the fee paid and supporting document prepared. If water taking in excess of 400,000 litres/day is required, a Permit to Take Water (PTTW) must be obtained in advance. PTTW applications may take up to 90 working days for the MECP to review and approve. The actual rate of groundwater taking performed during construction will be a function of the final design, time of year, and the contractor's schedule, equipment, and techniques.

6.2 Geotechnical

Supporting data upon which our recommendations are based have been presented in the foregoing sections of this report. The following recommendations are governed by the physical properties of the subsurface materials that were encountered and assume that they are representative of the overall Site conditions. It should be noted that these conclusions and recommendations are intended for use by the designers only. Contractors bidding on or undertaking any work at the Site should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of this factual data as it affects their proposed construction techniques, equipment capabilities, costs, sequencing, and the like. Comments, techniques, or recommendations pertaining to construction should not be construed as instructions to the contractor. It should be noted that where the Municipality has design standards that apply to specific aspects of this project, such standards shall take precedence over any corresponding dissimilar recommendations contained herein.

The soils encountered generally consisted of a surficial layer of topsoil underlain by silty sand/sandy silt or clayey silt glacial till. Occasionally, a layer of silty sand was observed between the surficial topsoil layer and the glacial till. Isolated sand seams were encountered within the glacial till sporadically throughout the Site. Groundwater seepage and/or accumulation was observed in nine (9) of the boreholes at depths ranging from 1.7 to 5.3m during the drilling. Groundwater level measurements obtained from the installed monitoring wells on October 11, 2019, ranged from 0.2 to 5.3 m (315.8 to 318.9 masl). The monitoring well installed in boreholes BH-1 was measured to be dry on October 11, 2019.

6.2.1 Site Preparation and Excavation

Any and all topsoil, vegetation, fill, disturbed earth, organic and organic-bearing material is to be stripped and removed from the access roads and building envelope areas (including floor slab areas) prior to commencing earthwork construction. Overly loose, organic, or otherwise deleterious materials will require removal and replacement with an approved backfill material. The subexcavated surface must be proof rolled and/or approved by a member of GHD prior to placement of fill or foundations. Excavations should be carried out to conform to the manner specified in Ontario Regulation 213/91 and the Occupational Health and Safety Act and Regulations for Construction Projects (OHSA).

All excavations above the water table not exceeding 1.2 m in depth may be constructed with vertical, unsupported slopes. The soils encountered during this investigation are generally classed by OHSA as Type 3. As such, unsupported / unshored walls of excavations in these soils must be sloped to the bottom of the excavation, with a slope having a gradient of 1 horizontal to 1 vertical (1H:1V) or flatter, or be retained using a suitably designed shoring system.

It is expected that some of the excavation spoils may be suitable for reuse as trench and/or pavement subgrade backfill provided they are free of organics and at a moisture content that will permit adequate compaction (may require prior processing such as aeration to lower the moisture content). A final review and approval to reuse any soils should be made at the time of construction.

Prior to removing any excess soils from the Site, it is recommended that such materials be subjected to chemical testing to characterize the excess soils for handling and disposal purposes.

6.2.2 Service Installation

The materials encountered during this investigation at the typical service invert elevation generally consist of silty sand/sandy silt or clayey silt glacial till. As such, normal compacted bedding material, placed in the Class “B” or Class “C” arrangement, is recommended for all underground services. The recommended bedding material is Granular “A” or 19 mm crusher run (angular) stone, as per Ontario Provincial Standard Specifications (OPSS). The minimum recommended bedding thickness for the underground services is 150mm. All bedding materials should be compacted to 98% of their Standard Proctor Maximum Dry Density (SPMDD).

It is recommended that cover backfilling of the underground services be accomplished using Granular “A”, sand, or other suitable material as allowed by the Municipality’s standards, to a minimum of 300mm above the pipe.

Compaction of this material should attain 100% SPMDD. It is expected that some of the excavated soils may be suitable for reuse as trench backfill, conditional upon suitable moisture content (within 2% of optimum), final review and approval by an experienced geotechnical engineer at the time of construction, and regular monitoring and inspection of such reuse throughout construction. Compaction of any native soil in service trenches is recommended to be a minimum of 98% of its SPMDD. The soils observed may require processing (such as aeration) to lower the moisture content to appropriate levels prior to being considered as backfill material.

6.2.3 Foundation Design

Relevant information for final design purposes including proposed final grades, finished floor elevations, and proposed underside of foundations were not available to GHD at the time of writing this report. As such, the recommendations contained in this Foundation section must be reviewed by GHD’s geotechnical engineers once such development design parameters become available. Structural loading for the proposed agricultural grain milling facility building may be supported on strip and spread footings. The footings should be placed on the undisturbed, compact to very dense native soils or on engineered fill place directly on the undisturbed, compact to very dense native soils. Table 6.5 summarizes the depths to suitably competent native soil encountered in each borehole advanced within the proposed development area.

Table 6.5 Depth to Competent Bearing Native Soil

Borehole ID	Depth (m to Competent Native Soil	Borehole ID	Depth (m) to Competent Native Soil
BH-101	0.9	BH-105	0.9
BH-102	1.5	BH-106	0.9
BH-103	0.9	BH-107	0.3
BH-104	0.9	BH-108	0.9

It is noted that a pockets of soft or loose soils were observed in borehole, BH-103 and may be present at other locations. If such soils are encountered at the foundation subgrade level, they must be subexcavated and replaced with engineered fill. For preliminary design purposes, it is recommended that footings constructed on compact to very dense native soils or engineered fill be proportioned and designed using the following bearing capacities presented in Table 6.6.

Table 6.6 Preliminary Bearing Pressures for Foundation Design

Parameter	Bearing Pressure			
	Firm to Hard Undisturbed Native Soils	Engineering Fill		
		Rock-based Fill(2)	Granular Fill(3)	Earth Borrow Fill(3)
Factored Bearing Capacity at ULS (1)	130 kPa	210 kPa	170 kPa	130 kPa
Bearing Capacity at SLS	90 kPa	150 kPa	120 kPa	90 kPa

Notes: (1) Resistance factor Φ =0.5 applied to the ULS bearing pressure for design purposes.
(2) At least 1m of Rock-based fill. Quality of material is to be approved prior to use as engineered fill.
(3) At least 0.3m of Granular or Earth Borrow fill. Quality of material is to be approved prior to use as engineered fill.

Any engineered fill upon which foundations are placed must be a minimum thickness corresponding to the notes that accompany the above table. Rock-based fill must be completely encapsulated with suitable filter fabric to minimize any migration of fine-grained particles from surrounding soils into the voids within the rock fill. Footings (and foundation walls) placed on engineered fill must be suitably reinforced; as a minimum, and where not already specified in the design drawings, this reinforcing should use 2 continuous runs of 15M rebar throughout the footings, and 2 runs of 15M rebar throughout near the top and bottom of the foundation walls. The following is recommended for the construction of any engineered fill for the footings:

1. Remove any and all existing vegetation, topsoil, fill, organics, and organic-bearing soils to the competent, undisturbed native soil from within the area of the proposed engineered fill.
2. The area of the engineered fill should extend horizontally 1m beyond the outside edge of the building foundations and then extend downward at a 1:1 slope to the competent native soil.

3. The base of the engineered fill area must be approved by a member of GHD prior to placement of any fill, to ensure that all unsuitable materials have been removed, that the materials encountered are similar to those observed, and that the subgrade is suitable for the engineered fill.

4. All engineered fill material is to be approved by GHD at the time of construction. Place approved engineered fill, in maximum 300 mm lifts, compacted to 100% of its SPMDD. Any fill material placed under sufficiently wet conditions should consist of an approved, rock-based fill, with the inclusion of appropriate geotextile fabric around the rock-based fill should the rock fill contain enough voids to warrant.

5. Full time testing and inspection of the engineered fill will be required, to ensure compliance with material and compaction specifications.

All exterior foundations and/or foundations in unheated areas, should be founded at least 1.2 m below the final adjacent grade for frost protection. Foundations and walls exposed to frost action should be backfilled with non-frost susceptible granular material, and positive drainage away from the structure should be ensured.

Under no circumstances should the foundations be placed above organic materials, loose, frozen subgrade, construction debris, or within ponded water. Prior to forming, all foundation excavations must be inspected and approved by a member of GHD's geotechnical group. This will ensure that the foundation bearing material has been prepared properly at the foundation subgrade level and that the soils exposed are similar to those encountered during this investigation.

For design purposes this site is conservatively classed as Site Class D for Seismic Site Response, in accordance with the Ontario Building Code.

For foundations constructed in accordance with the foregoing manner, total and differential settlements are estimated to be less than 25mm.

6.2.4 Slab on Grade

The floor of the proposed building may be constructed as a normal slab-on-grade, on granular fill over native, inorganic subsoils. The floor slab should be formed over a base course consisting of at least 150 mm of Granular "A" material, compacted to a minimum of 100 % of its SPMDD. All grade increases or infilling below the Granular "A" should be constructed in accordance with the engineered fill steps provided in this report. All fill placed as engineered fill must be inspected, approved and compaction verified by personnel from GHD.

6.2.5 Retaining Walls

It is recommended that free draining backfill to earth retaining walls be provided. The following soil parameters are recommended for purposes of retaining wall design.

Table 6.7 Parameters for Lateral Earth Pressure Design

Soil Type	Unit Weight (kN/m^3)	Angle of Internal Friction (ϕ)	Active Earth Pressure Coefficient (K_a)	Passive Earth Pressure Coefficient (K_p)	At-rest Earth Pressure Coefficient (K_o)
Compact Sand Fill	20	32	0.31	3.2	0.47
Till	19	30	0.33	3.0	0.50

The recommended value for the coefficient for sliding friction between the soil and the concrete is 0.4. In addition to the above, hydrostatic forces must be taken into account in the design where the walls extend below the groundwater table. Also, any additional surcharge loading that will influence the wall must be taken into account in its design.

For earth retaining walls, it is recommended that for drainage purposes, perimeter drains be installed about the structures. The subdrains would serve to drain seepage water that infiltrates the backfill, intersect the groundwater and any seepage related to surficial-related water, and help relieve hydrostatic pressures due to high groundwater levels. The drains should consist of a perforated pipe, at least 150 mm in diameter, surrounded by crushed clear stone and suitable filter protection. The drain should discharge to a positive sump or other permanent frost free outlet.

6.2.6 Pavement Design

Based on the results of this investigation, we would recommend the following procedures be implemented to prepare the proposed asphalt paved access way and parking areas for its construction.

1. Remove all asphalt, topsoil, fill, organics, organic-bearing materials and other deleterious materials from the planned pavement areas.
2. Inspect and proof roll the subgrade for the purpose of detecting possible zones of overly wet or soft subgrade. Any deleterious areas thus delineated should be replaced with approved granular material compacted to a minimum of 98% of its SPMDD.
3. Contour the subgrade surface to prevent ponding of water during the construction and to promote rapid drainage of the sub-base and base course materials.
4. To maximize drainage potential, 150mm diameter perforated pipe subdrains should be installed below any curb lines. The pipe should be encased in filter fabric and surrounded by clear stone aggregate. It is recommended that the subdrains discharge to a suitable, frost-free outlet.
5. Construct transitions between varying depths of granular base materials at a rate of 1:25 minimum.

The subgrade materials in the proposed pavement areas will generally consist of silty sand/sandy silt till, depending on the preferred method of construction and corresponding depths of subexcavation. The frost susceptibility of these soils is assessed as being generally moderate. The following minimum flexible pavement structures are recommended for new road construction.

Table 6.8 Pavement Structure

Profile	Material	Thickness (mm)		In Conformance with OPSS Form
		Light Duty	Heavy Duty	
Asphalt Surface	H.L.3	40	40	1150
Asphalt Base	H.L.8	50	50	
Granular Base	Granular "A"	150	150	1010
Granular Subbase	Granular "B"	300	450	

The following steps are recommended for optimum construction of paved areas:

1. The Granular "A" and "B" courses should be compacted to a minimum 100 percent of their respective SPMDD's.
2. All asphaltic concrete courses should be placed, spread and compacted conforming to OPSS Form 310 or equivalent. All asphaltic concrete should be compacted to a minimum 92.0 percent of their respective laboratory Maximum Relative Densities (MRD's).
3. Adequate drainage should be provided to ensure satisfactory pavement performance.

It is recommended that all fill material be placed in uniform lifts not exceeding 200mm in thickness before compaction. It is suggested that all granular material used as fill should have an in-situ moisture content within 2 percent of their optimum moisture content. All granular materials should be compacted to 100 percent SPMDD. Granular materials should consist of Granular "A" and "B" conforming to the requirements of OPSS Form 1010 or equivalent.

The performance of the pavement structure is highly dependent upon the subgrade support conditions. Stringent construction control procedures should be maintained to ensure that uniform subgrade moisture and density conditions are achieved as much as practically possible. It is noted that the above recommended pavement structures are for the end use of the project. The most severe loading conditions on pavement areas and the subgrade may occur during construction. As such, during construction of the project the recommended granular depths may not be sufficient to support loadings encountered. Consequently, special provisions such as restricted lanes, half-loads during paving, etc. may be required, especially if construction is carried out during unfavorable weather.

6.2.7 Stormwater Management Pond Design

It is GHD's understanding that the Storm Water Management (SWM) pond for the Site is targeted near the southern limits of the proposed development area as shown on Figure 4. Based on the soil conditions encountered during the investigation, it is expected that the bottom of the SWM pond will consist of native soils generally consisting of sandy silt / clayey silt till. Gradation testing on samples of these soils suggest the following compositional ranges: 0 to 8% gravel, 16 to 40% sand, and 53 to 84% silt and clay-sized particles (USCS). Hydrometer analyses conducted on three (3) these samples suggest that the till contains 41 to 67% particles between 5 and 75 μm in size. Based on gradation results the hydraulic conductivity of such soils is expected to be on the order of about of 10^{-5} to 10^{-6} cm/sec. It is noted, however, that slight variations in the soil stratigraphy may cause variations in the permeability of the soil in both vertical and horizontal orientations.

Based on the soils observed, and depending on the final base elevation, it appears that construction of the SWM ponds in the glacial till may be feasible. Appropriate measures should be taken during construction to minimize any overland or near-surficial flow of water into the area. Groundwater seepage and/or accumulation was observed in nine (9) of the boreholes at depths ranging from 1.7 to 5.3m during the drilling operations. Groundwater level measurements obtained from the installed monitoring wells on October 11, 2019, ranged from 0.2 to 5.3 m (315.8 to 318.9 masl). Groundwater and surficial water inflow into the open SWM pond excavations is expected. However, this is generally expected to be controlled by pumping from within the excavation, along with further measures (if required) including up-gradient cutoff trenching with appropriate drainage outletting.

It is recommended that the SWM pond subgrade surfaces be proof rolled, and a representative of GHD approve the subgrade prior to construction of the berms. Construction of the berms may utilize excess site soils having a hydraulic conductivity of 10^{-5} cm/sec (or less). Such operations should place soils in lifts no thicker than 150mm prior to compaction, and compacted to at least 95% SPMDD. The native, undisturbed till soils consisting predominantly of silt and clay would have a sufficiently low permeability where they could substitute for a liner.

Regardless, an inspection of the excavated and exposed SWM pond surfaces should be performed at the time of construction, to assess whether any discrete or localized areas of increased hydraulic conductivity are present within the exposed soils, in which case such areas may be lined with a more suitable (i.e., less hydraulically conductive) material or an impermeable geosynthetic membrane.

For the purpose of the proposed SWM pond, the soils observed should be stable from slip circle failure if sloped at 3 horizontal to 1 vertical (3H:1V) or flatter in the long term both above and below the water table. Between the stable water level and the expected high water level, it is recommended that the slopes be lessened to 4H:1V (or flatter) to guard against erosion by wavelet action. The native material will require vegetative root mass (or otherwise suitable erosion protection) to minimize erosional forces on exposed slopes.

Slopes and berms of the SWM pond should be constructed so as to reduce or eliminate the effects of surficial erosion. Features to do so may include slope vegetation, installation of erosion or gabion mats, rip rap, and/or other acceptable stabilizing features.

It is recommended that a regular maintenance program for the SWM Pond include monitoring of it for any potential slope erosion, degradation, or otherwise undesirable structural conditions. Should any such conditions become evident, immediate mitigative actions must be performed.

6.2.8 General Recommendations

Wells

Any decommissioning of wells on-site must be performed by an appropriately licensed and experienced well contractor in compliance with Ontario Regulation 903.

Test Pit During Tendering

It is strongly recommended that test pits be excavated at representative locations of this Site during the tendering phase, with mandatory attendance of interested contractors. This will allow them to make their own assessments of the groundwater and soil conditions at the Site and how these will affect their proposed construction methods, techniques and schedules.

Subsoil Sensitivity

The native subsoils are susceptible to strength loss or deformation if saturated or disturbed by construction traffic. Therefore, where the subgrade consists of approved soil, care must be taken to protect the exposed subgrade from excess moisture and from construction traffic.

Winter Construction

The subsoils encountered across the site are frost-susceptible and freezing conditions could cause problems for the following reasons.

1. During winter construction, exposed surfaces intended to support foundations must be protected against freezing by means of loose straw and tarpaulins, heating, etc.
2. Care must be exercised so that any sidewalks and/or asphalt pavements do not interfere with the opening of doors during the winter when the soils are subject to frost heave. This problem may be minimized by any one of several means, such as keeping the doors well above outside grade, installing structural slabs at the doors, and by using well-graded backfill and positive drainage, etc.
3. Because of the frost heave potential of the soils during winter, it is recommended that the trenches for exterior underground services be excavated with shallow transition slopes in order to minimize the abrupt change in density between the granular backfill, which is relatively non-frost susceptible, and the more frost-susceptible native soils.

Design Review and Inspection

Due to the preliminary nature of the design details at the time of this report, we recommend that our firm be retained to review the foundation design and grading proposals when they are available. Geotechnical inspection and compaction testing must be carried out to ensure compliance with our recommendations.

6.3 Summary Conclusions

In summary, the proposed development area is generally comprised of a surficial layer of topsoil underlain by silty sand/sandy silt or clayey silt glacial till. Occasionally, a layer of silty sand was observed between the surficial topsoil layer and the glacial till. A permanent shallow groundwater table was not observed. It is our opinion that there will not be significant constraints for the proposed development area from the seasonal variations of groundwater as the water can be handled with appropriate engineering techniques. It is expected that groundwater will generally be below the depth of the future development, although seepage may be encountered in deeper excavations or foundations.

Seepage is expected to be seasonal in nature. If short-term pumping of groundwater at volumes greater than 50,000 L/day and less than 400,000L/day is required during the construction stage, the EASR must be completed. In summary, the proposed Agricultural Grain Milling Facility is suitable from both a hydrogeologic and geotechnical perspective. The MECP well records indicate that wells in the area consist of both dug/bored and drilled types. The well survey in the immediate vicinity also confirmed dug/bored and drilled wells are in use. Impacts to existing domestic wells in the area are not expected based upon the proposed development and the large area of the Site (36.3ha).

There are minor impacts expected to groundwater and surface water as a result of the future development provided that appropriate planning (i.e. incorporation of LIDs as supported by the water balance calculations), mitigation measures and proper construction techniques are considered. From a geotechnical perspective, the Site is suitable for construction of the proposed development including one to two-storey commercial building, associated servicing and paved access and parking areas. Detailed recommendations are provided in previous sections of this report.

The following Statement of Limitations should be read carefully and is an integral part of this report. We trust this report meets your immediate needs. Should any questions arise regarding any aspect of our report, please contact our office.

Sincerely,

Leandro Ramos, P.Eng.

David Workman, P.Geo.

Nyle McIlveen, P.Eng

lr//dw/nm

7. References

Chapman and Putnam, 1966. The Physiography of Southern Ontario, 2nd Edition. University of Toronto Press.

Chapman and Putnam, 1984. The Physiography of Southern Ontario, 3rd Edition. Ministry of Natural Resources.

City of Toronto, November 2006. Wet Weather Flow Management Guidelines.

Credit Valley Conservation and Toronto and Region Conservation Authority. Low Impact Development Stormwater Management Planning and Design Guide. Version 1.0. 2010.

Freeze, R. Allan and Cherry, John A. 1979. Groundwater.

Ministry of the Environment, Conservation and Parks, January 31, 2019. Source Protection Information Atlas, available online at www.ontario.ca.

8. Statement of Limitations

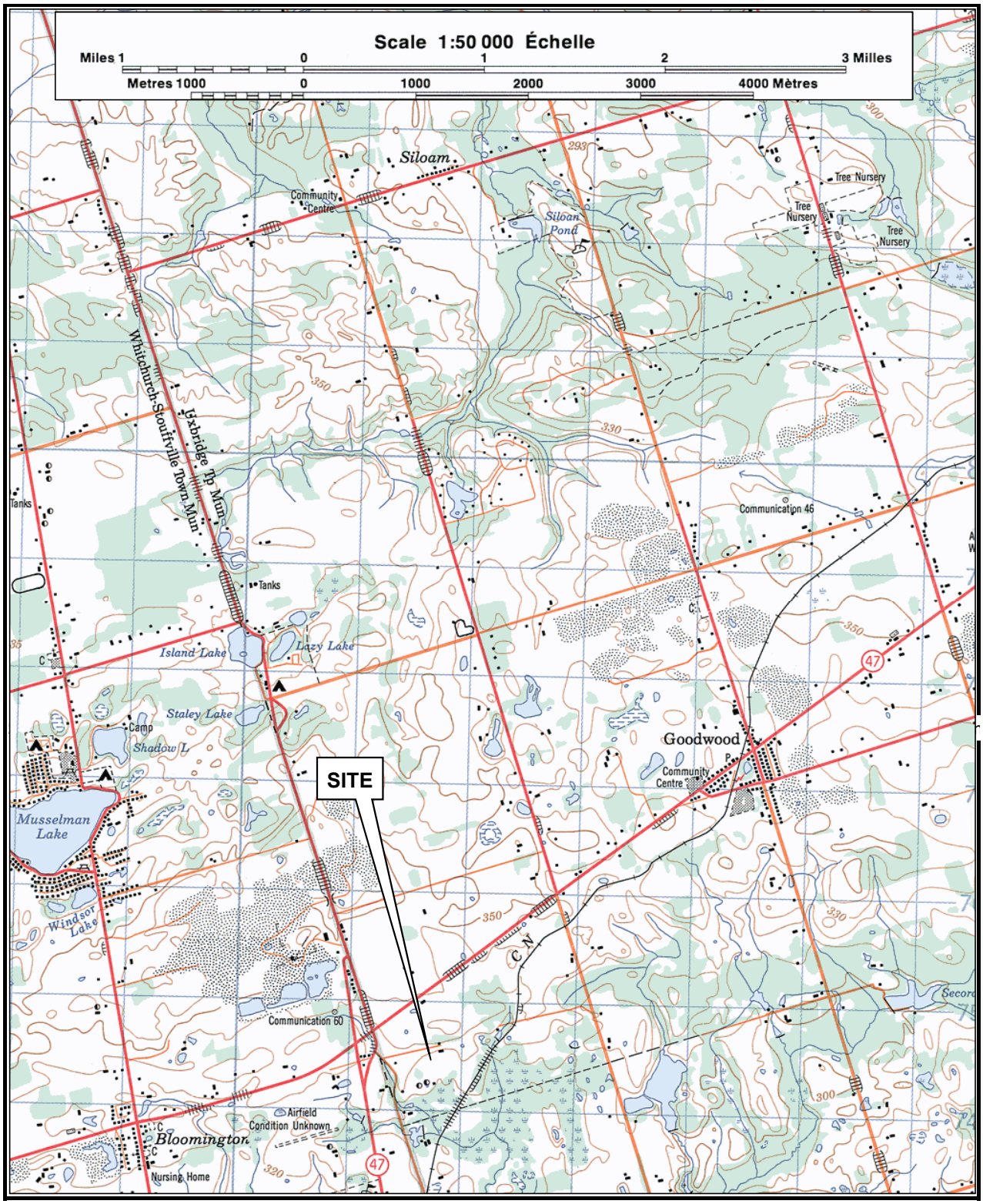
This report is intended solely for Grainboys Holdings Inc. in assessing the geotechnical and hydrogeologic aspects of the lands situated along the east side of Concession Road 1 (also known as York-Durham Line), south of Highway No. 47 near the urban area of Lincolnville, Ontario and is prohibited for use by others without GHD's prior written consent. This report is considered GHD's professional work product and shall remain the sole property of GHD. Any unauthorized reuse, redistribution of or reliance on the report shall be at the Client and recipient's sole risk, without liability to GHD. Client shall defend, indemnify and hold GHD harmless from any liability arising from or related to Client's unauthorized distribution of the report. No portion of this report may be used as a separate entity; it is to be read in its entirety and shall include all supporting drawings and appendices.

The recommendations made in this report are in accordance with our present understanding of the project, the current site use, ground surface elevations and conditions, and are based on the work scope approved by the Client and described in the report. The services were performed in a manner consistent with that level of care and skill ordinarily exercised by members of hydrogeological engineering professions currently practicing under similar conditions in the same locality. No other representations, and no warranties or representations of any kind, either expressed or implied, are made. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

All details of design and construction are rarely known at the time of completion of a geotechnical or hydrogeological study. The recommendations and comments made in the study report are based on our subsurface investigation and resulting understanding of the project, as defined at the time of the study. We should be retained to review our recommendations when the drawings and specifications are complete. Without this review, GHD will not be liable for any misunderstanding of our recommendations or their application and adaptation into the final design.

It is important to emphasize that a soil investigation is, in fact, a random sampling of a site and the comments included in this report are based on the results obtained at the test hole locations only. The subsurface conditions confirmed at the test hole locations may vary at other locations. The subsurface conditions can also be significantly modified by the construction activities on site (ex. excavation, dewatering and drainage, blasting, pile driving, etc.). These conditions can also be modified by exposure of soils or bedrock to humidity, dry periods or frost. Soil and groundwater conditions between and beyond the test locations may differ both horizontally and vertically from those encountered at the test locations and conditions may become apparent during construction which could not be detected or anticipated at the time of our assessment. Should any conditions at the site be encountered which differ from those found at the test locations, we request that we be notified immediately in order to permit a reassessment of our recommendations. If changed conditions are identified during construction, no matter how minor, the recommendations in this report shall be considered invalid until sufficient review and written assessment of said conditions by GHD is completed.

Enclosures



Base map complied from Energy, Mines and Resources Canada Map 30M/15 published 1999. Air photography boundaries current as of 1996.

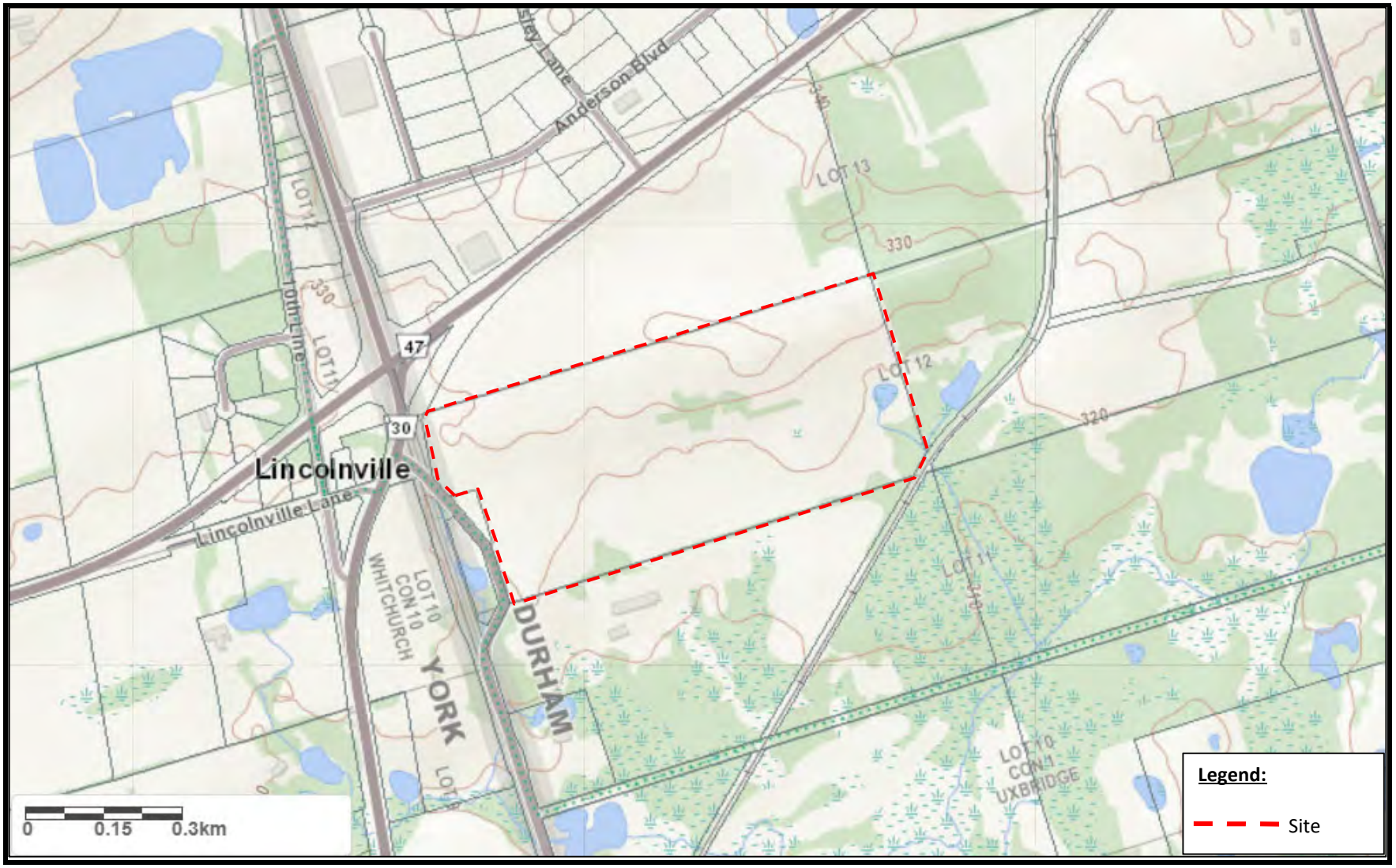
Scale:
1:50000
Coordinate System
NAD 1983 UTM
Zone 17

Grainboys Holdings Inc.
3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

11197394-02
October 2019

Vicinity Plan

FIGURE 1



Source: Ministry of Natural Resources and Forestry, online (www.giscoeapp.lrc.gov.on.ca) © Queen's Printer for Ontario, 2019. Note: Boundaries are not a legal survey.

Scale:
Refer to Scale Bar
Coordinate System:
NAD 1983 UTM Zone 17

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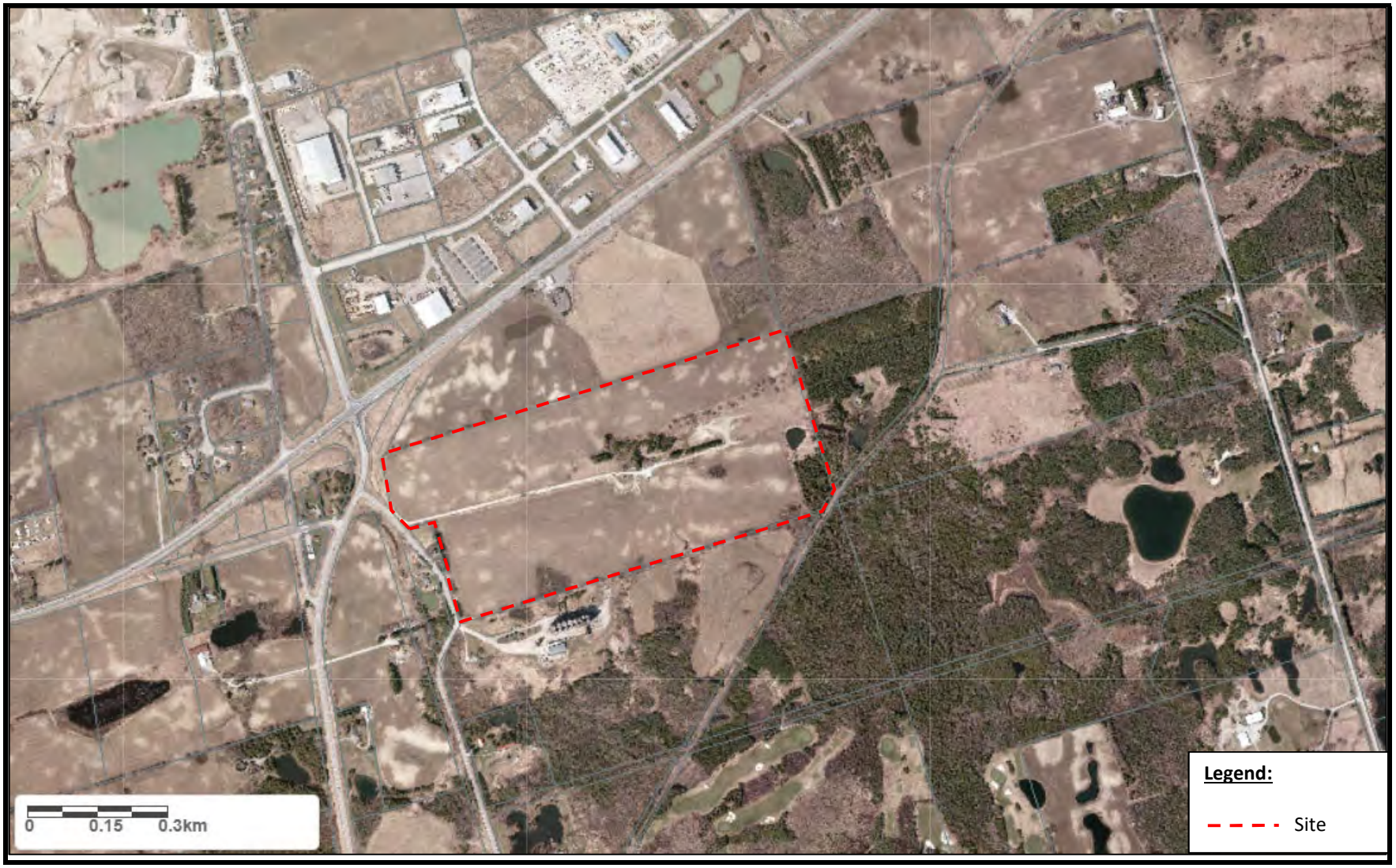
Property Plan

FIGURE 2



Source: Ministry of Natural Resources and Forestry, online (www.giscoeapp.lrc.gov.on.ca) © Queen's Printer for Ontario, 2019. Note: Boundaries are not a legal survey.

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Coordinate System:
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Geotechnical Investigation

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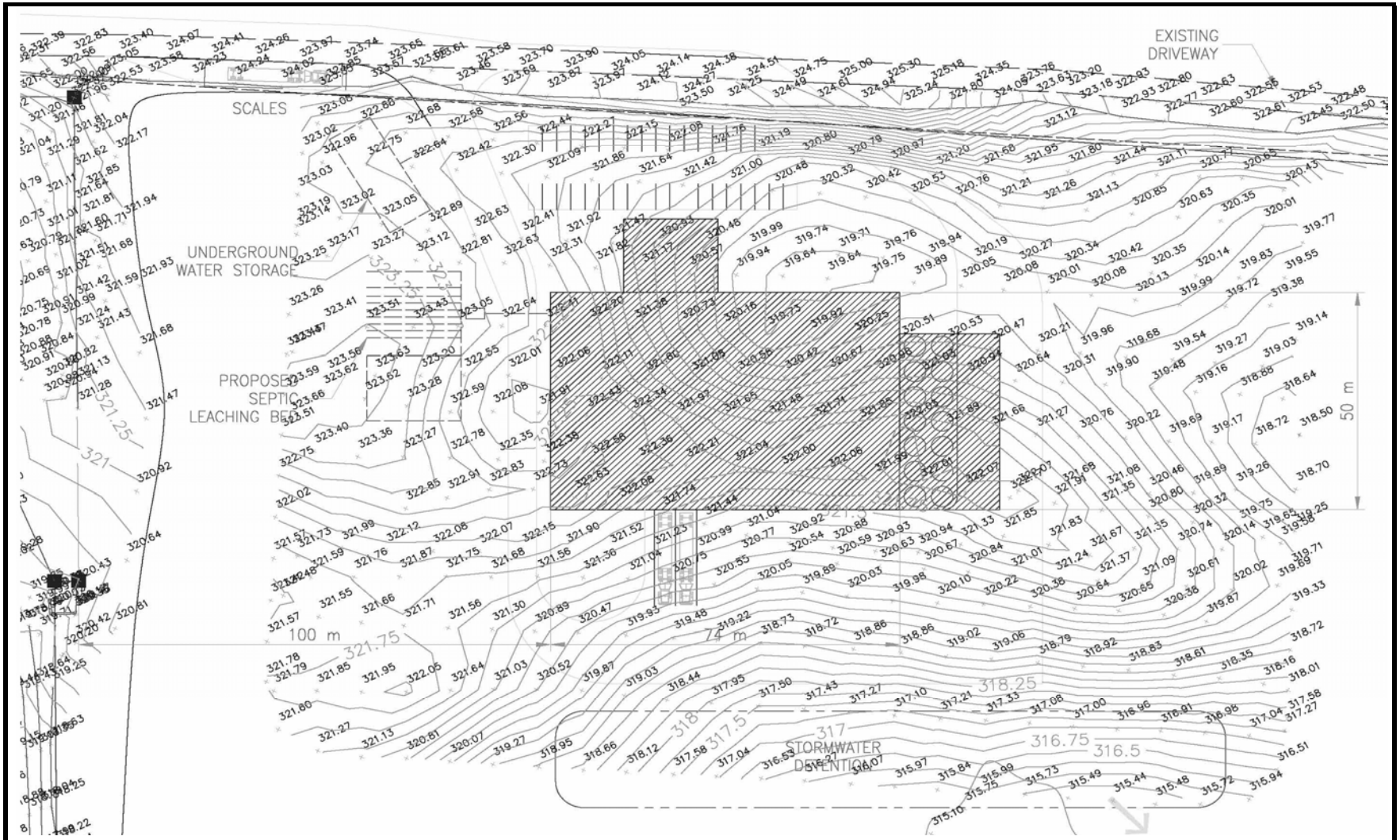
Plot Plan

FIGURE 3



Source: Preliminary Site Layout provided by Lassing Dibben Consulting Engineers Ltd. with electronic title "19-066 Site wContours.dwg"

Scale:
Not Determined
Coordinate System:
NAD 1983 UTM Zone 17

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Geotechnical Investigation

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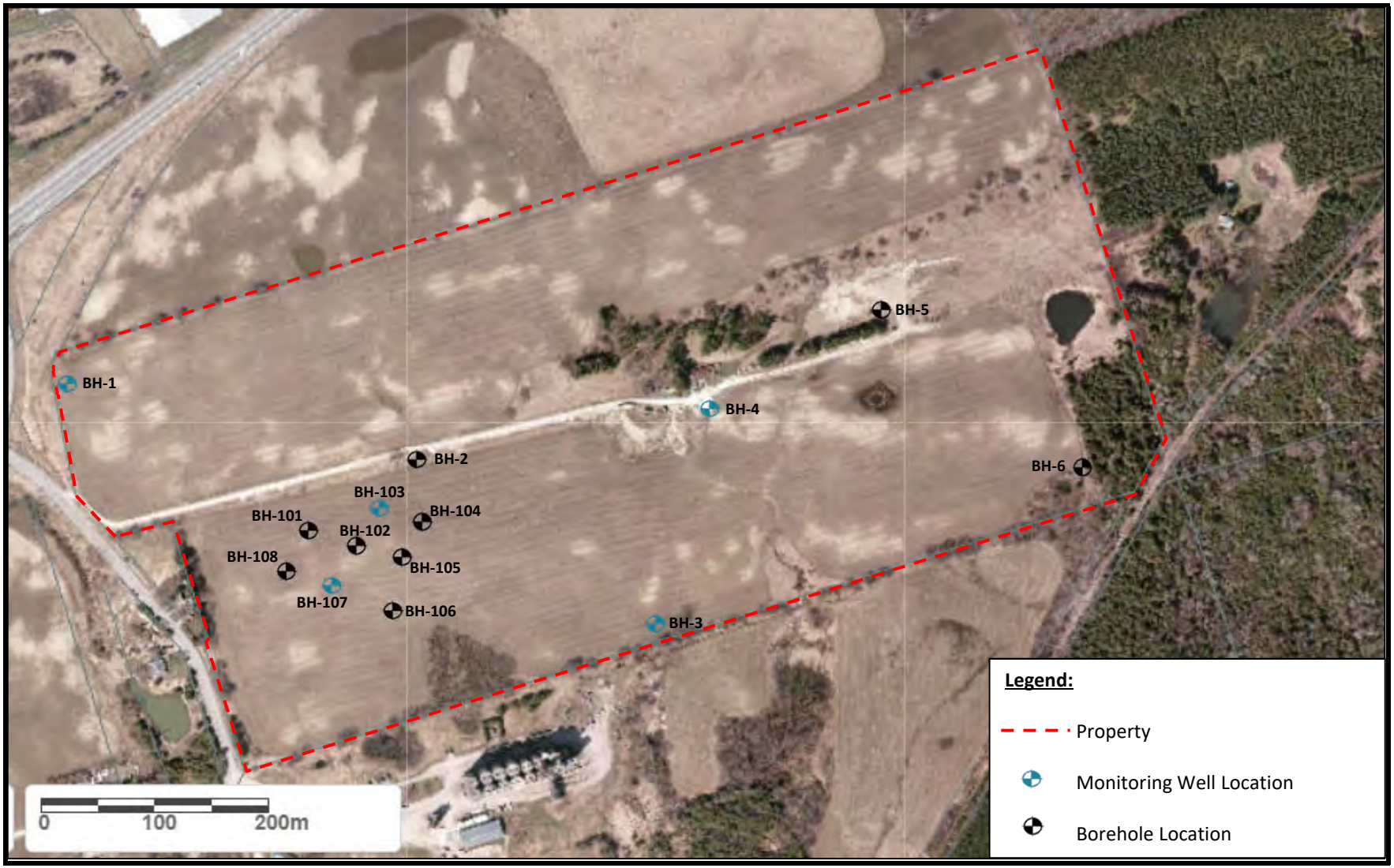
October 2019

Concept Plan

FIGURE 4



Source: Ministry of Natural Resources and Forestry, online (www.giscoeapp.lrc.gov.on.ca) © Queen's Printer for Ontario, 2019. Note: Boundaries are not a legal survey.

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Coordinate System:
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3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

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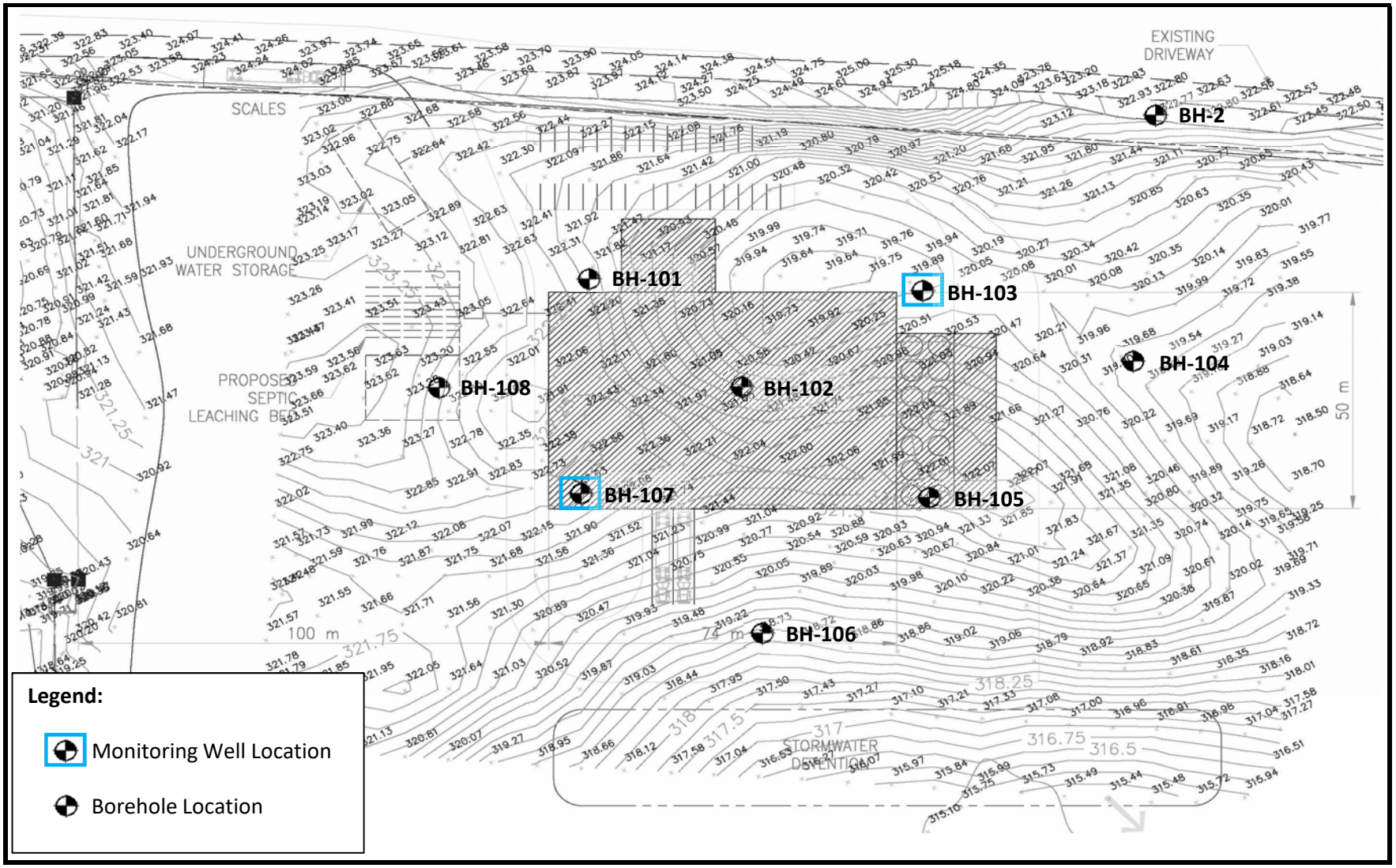
October 2019

Test Hole Plan - Site

FIGURE 5A



Source: Preliminary Site Layout provided by Lassing Dibben Consulting Engineers Ltd. with electronic title "19-066 Site wContours.dwg"

Scale:
Not Determined
Coordinate System:
NAD 1983 UTM Zone 17

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Test Hole Plan - Proposed Building

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FIGURE 5B

Source: Ministry of Natural Resources and Forestry, online (www.giscoeapp.lrc.gov.on.ca) © Queen's Printer for Ontario, 2019. Note: Boundaries are not a legal survey.

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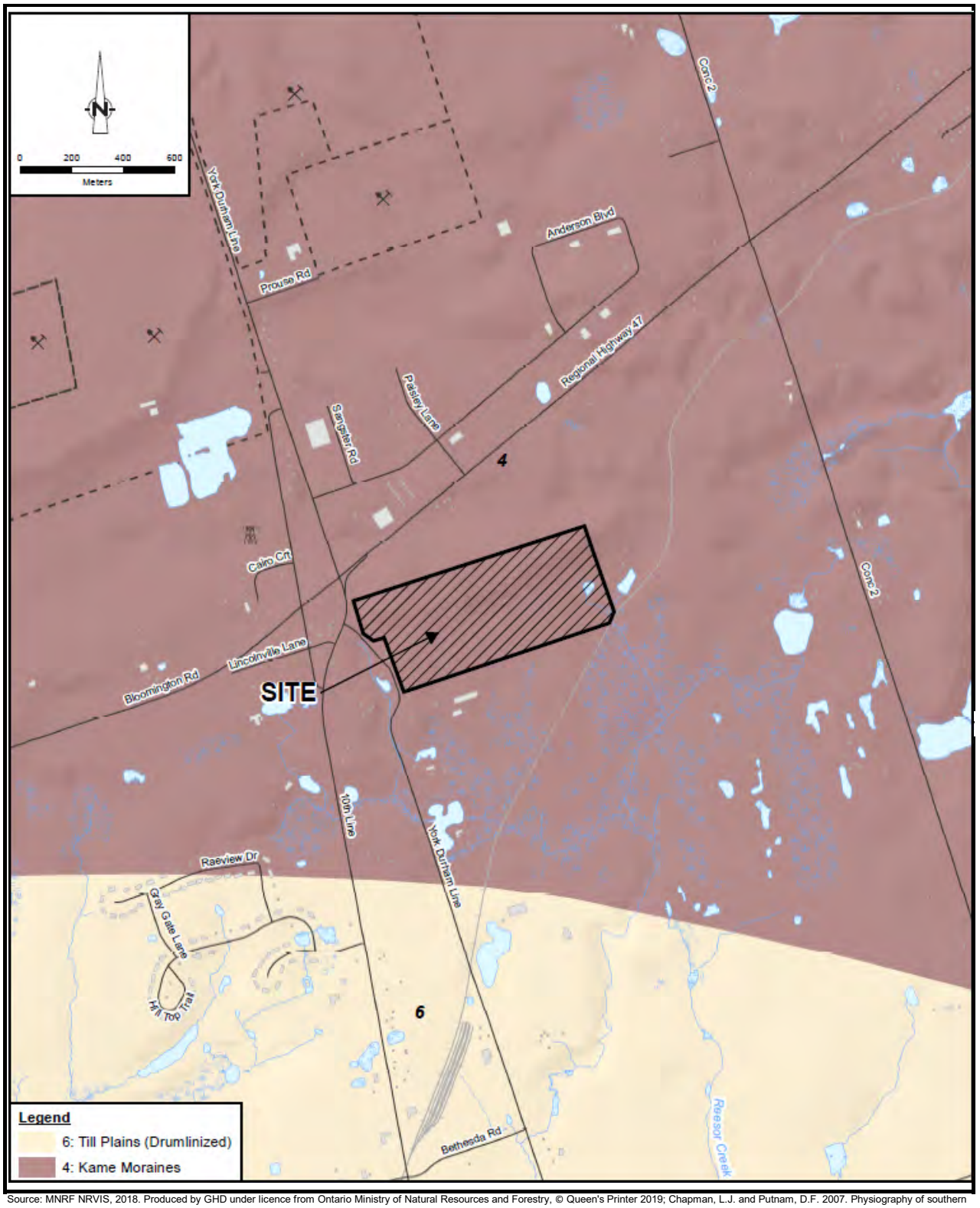
Groundwater Elevation

FIGURE 6



Source: MNRF NRVIS, 2018. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019; Chapman, L.J. and Putnam, D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey, Misc. Release --Data 228.

Scale:
Refer to Scale Bar
Coordinate System
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Zone 17N

Grainboys Holdings Inc.
3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

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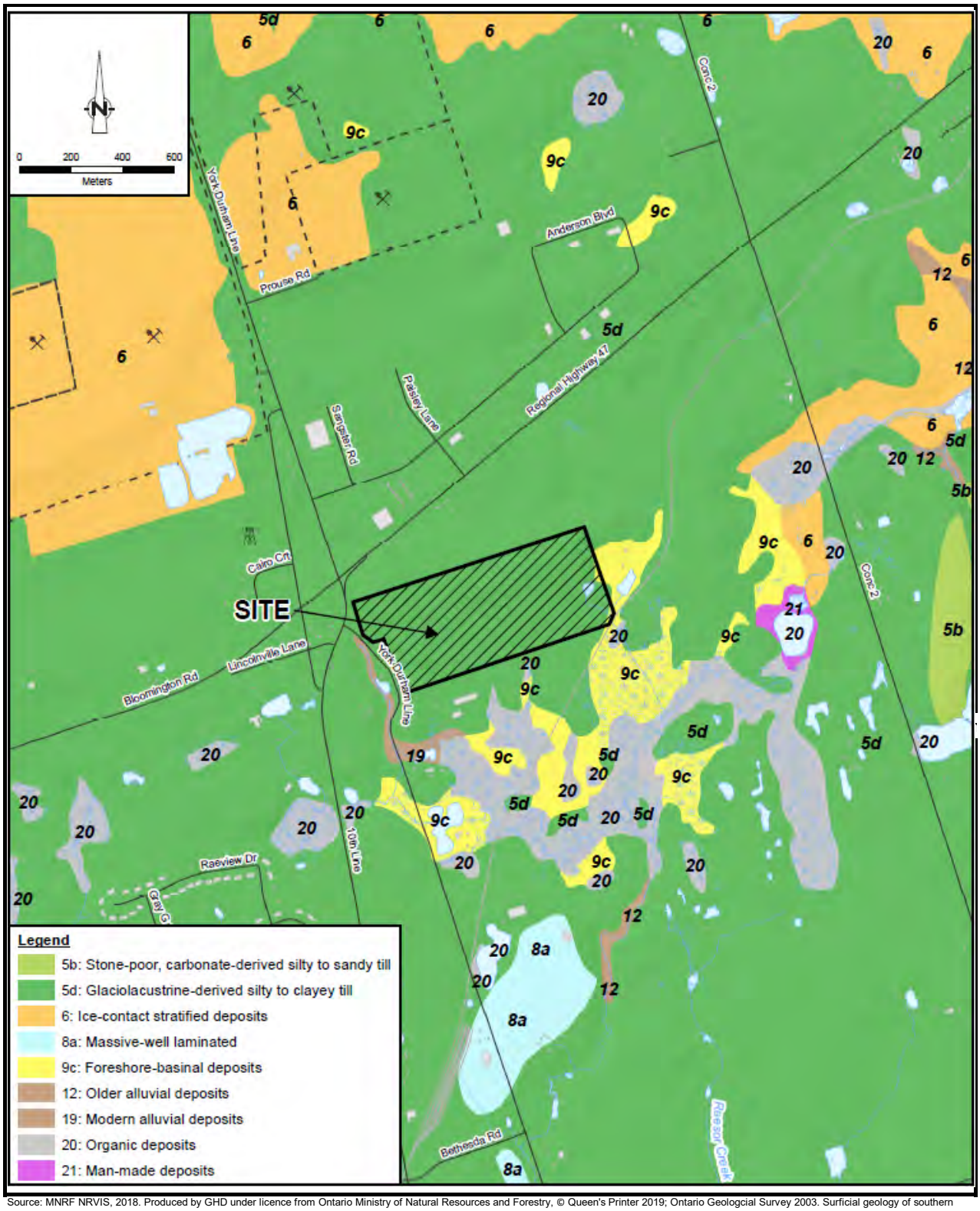
Physiography

FIGURE 7



Source: MNRF NRVIS, 2018. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019; Ontario Geologcial Survey 2003. Surficial geology of southern Ontario: Ontario Geological Survey, Misc. Release --Data 128.

Scale:
Refer to Scale Bar
Coordinate System
NAD 1983 UTM
Zone 17N

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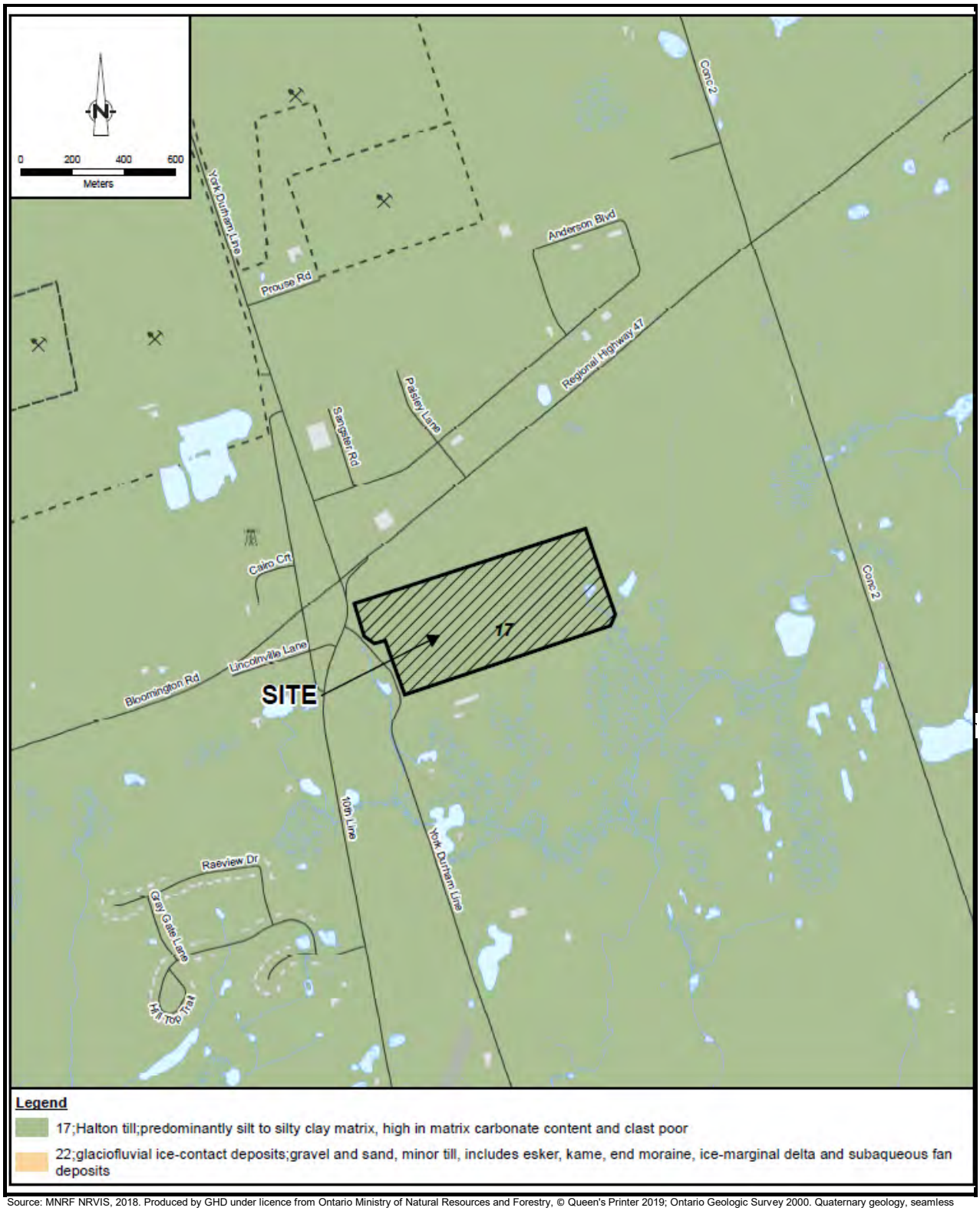
3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

11197394-02
October 2019

Surficial Geology FIGURE 8



Source: MNRF NRVIS, 2018. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019; Ontario Geologic Survey 2000. Quaternary geology, seamless coverage of the Province of Ontario; Ontario Geological Survey, Misc. Release --Data set 14--Revised.

Scale:
Refer to Scale Bar
Coordinate System
NAD 1983 UTM
Zone 17N

Grainboys Holdings Inc.
3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

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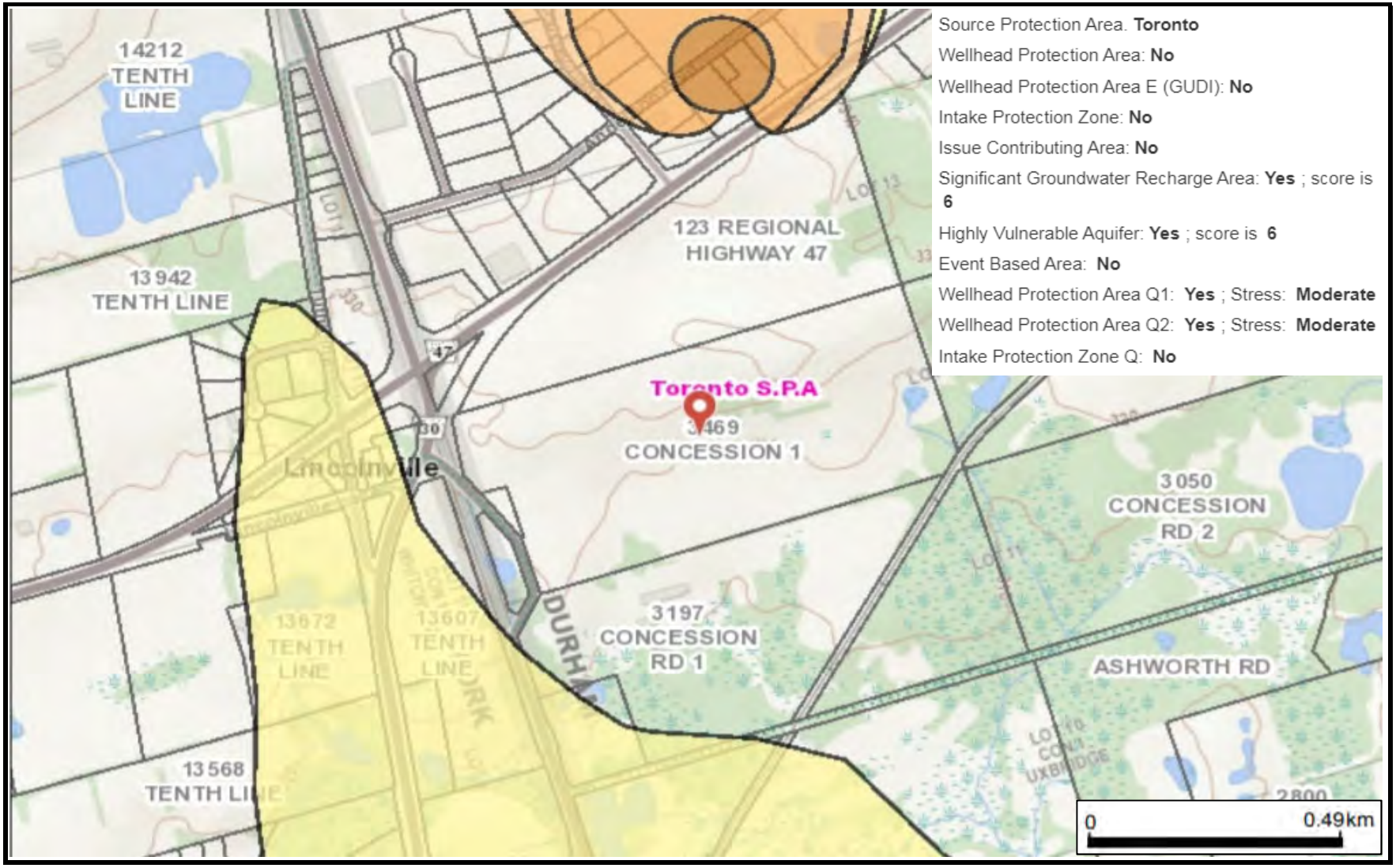
Quaternary Geology

FIGURE 9



Source: Source Protection Information Atlas, Ministry of the Environmental, Conservation and Parks, © Queen's Printer for January 31, 2019.

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Refer to Scale Bar
Coordinate System:
NAD 1983 UTM Zone 17

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3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

11197394-02
October 2019

Source Water Protection Map

FIGURE 10

Appendix A
Soil Exploration Data

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-1

BOREHOLE No.: BH-101
ELEVATION: 322.0 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.

PROJECT: 3469 Concession Road 1, Township of Uxbridge

LOGGED BY: E. Wierdsma DATE: 26 August 2019

DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons

NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 649134E 4921219N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (600 mm)	SS-1	25	10	4 5 7 10	12	Borehole Open Upon Completion
		0.6		**TILL** - Light Brown Silty Sand With Gravel, Moist, Compact	SS-2	50	11	4 5 8	13	
	1.0				SS-3	50	10	5 6 4	10	
	2.0			- Grading Sand Seam at 2.1 m	SS-4	90	17	5 5 7	12	
	3.0				SS-5	100	12	3 5 10	15	
	4.0									
		4.6		Grey Clayey Silt, Very Stiff	SS-6	75	16	7 11 12	23	▼ WL - 5.2 m 8/26/2019 (Upon completion of drilling)
	5.0									
	6.0									
		6.1		Trace Sand and Gravel	SS-7	90	13	5 9 20	29	
		6.6		END OF BOREHOLE						

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m)
◆ RQD
◎ CONE

10 20 30 40 50 60 70 80 90

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-2

BOREHOLE No.: BH-102
ELEVATION: 320.8 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 August 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 649141E 4920725N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
1				**TOPSOIL** (600 mm)	SS-1	50	13	2 3 4 5	7	Borehole Open Upon Completion
2		0.6		**TILL** - Light Brown Silty Sand with Gravel, Moist, Loose						
3	1.0				SS-2	90	12	2 4 4	8	
4										
5		1.5		Compact						
6					SS-3	100	12	3 6 8	14	
7	2.0									
8					SS-4	90	12	7 8 9	17	
9										
10	3.0									
11		3.4		Grey	SS-5	100	11	8 11 16	27	
12										
13	4.0									
14										
15		4.6		Clayey Silt With Sand, Very Stiff						
16					SS-6	100	15	4 9 17	26	
17	5.0	5.0		**SAND** - Brown Sand, Wet, Compact						▼ WL - 5.0 m 8/26/2019 (Upon completion of drilling)
18										
19										Groundwater seepage first encountered at 5.2 m
20	6.0	6.1		Dense						
21					SS-7	100	19	8 11 20	31	
22		6.6		END OF BOREHOLE						

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m)
◆ RQD
◎ CONE

10 20 30 40 50 60 70 80 90

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-3

BOREHOLE No.: BH-103
ELEVATION: 320.0 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 August 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 648923E 4920861N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N
		0.0		GROUND SURFACE					
				TOPSOIL (600 mm)	SS-1	25	16	3 4 6 7	10
		0.6		**TILL** - Light Brown to Grey Sandy Silt With Clay, Moist, Compact	SS-2	100	18	3 4 6	10
		1.2		Wet					
		1.5		Trace Gravel, Moist	SS-3	100	16	2 5 5	10
		2.3		Loose, Wet	SS-4	100	14	1 2 6	8
		3.0		Grey Sandy Silt With Clay, Trace Gravel, Loose	SS-5	5	15	3 1 4	5
					SS-6	100	12	1 2 5	7
					SS-7	100	10	5 2 7	9
		5.3		Very Stiff	SS-8	75	12	3 5 7	12
					SS-9	100	12	6 10 18	28
		6.6		END OF BOREHOLE					

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m) ◆ RQD ◎ CONE

10 20 30 40 50 60 70 80 90

COMMENTS

— m
— 0.84 m

WL - 1.7 m
09/11/2019

BH-103, SS-6:
6% Gravel
38% Sand
56% Silt and Clay
41% between 5-75 µm

Groundwater seepage first encountered at 3.2 m
Borehole cave in to 3.2 m

50 mm diameter monitoring well installed to 5.2 m

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-4

BOREHOLE No.: BH-104
ELEVATION: 319.6 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.

PROJECT: 3469 Concession Road 1, Township of Uxbridge

LOGGED BY: E. Wierdsma DATE: 26 August 2019

DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons

NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 648750E 4920942N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Shear test (Cu) / Sensitivity (S) / Water content (%) / Atterberg limits (%) / "N" Value (blows / 0.3 m) / RQD / CONE	COMMENTS
		0.0		GROUND SURFACE							
				TOPSOIL (600 mm)	SS-1	75	10	2 4 5 5	9		
		0.6		**TILL** - Light Brown Sandy Silt, With Clay, Moist, Compact	SS-2	75	16	3 5 7	12		**BH-104, SS-2:** 0% Gravel 31% Sand 69% Silt and Clay 53% between 5-75 µm
	1.0				SS-3	100	15	6 9 7	16		
	2.0	2.3		Grey, Mottled	SS-4	100	11	5 9 11	20		
	3.0				SS-5	100	10	2 6 6	12		
		3.5		END OF BOREHOLE							Borehole Open and Dry Upon Completion
	4.0										
	5.0										
	6.0										

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-5

BOREHOLE No.: BH-105
ELEVATION: 321.8 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 August 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 648932E 4821260N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (800 mm)	SS-1	25	9	4 5 6 6	11	Borehole Open and Dry Upon Completion
		0.8		**SILTY SAND** - Light Brown Silty Sand, Moist, Compact	SS-2	100	12	1 5 13	18	
		1.5		**TILL** - Light Brown Silty Sand With Gravel, Trace Clay, Moist, Compact	SS-3	100	7	9 6 6	12	
					SS-4	100	11	4 7 11	18	
					SS-5	100	11	6 8 18	26	**BH-105, SS-2:** 2% Gravel 34% Sand 64% Silt and Clay
				- Grading Sand Seam at 3.5 m						
		4.9		Trace Gravel, Dense	SS-6	80	12	5 12 22	34	
		6.2		Grey Clayey Silt With Sand, Moist, Hard	SS-7	100	14	22 37 34	72	
		6.6		END OF BOREHOLE						

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-6

BOREHOLE No.: BH-106
ELEVATION: 318.7 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 August 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 648843E 4921149N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (800 mm)	SS-1	100	10	3 4 4 3	8	Borehole Open Upon Completion
		0.8		**SILTY SAND** - Light Brown Silty Sand, Moist, Compact	SS-2	80	4	2 8 12	20	
		1.5		**TILL** - Light Brown Silty Sand With Gravel, Trace Clay, Moist, Compact	SS-3	100	10	5 6 7	13	
				- Grading Sand Seam at 2.3 m	SS-4	90	18	5 8 9	17	
		3.0		Grey, Wet	SS-5	100	10	4 11 13	24	▼ WL - 3.0 m 8/26/2019 (Upon completion of drilling)
		3.5		END OF BOREHOLE						

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m)
◆ RQD
◎ CONE

10 20 30 40 50 60 70 80 90

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-7

BOREHOLE No.: BH-107
ELEVATION: 322.5 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 August 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 648706E 4921331N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Shear test (Cu) / Sensitivity (S) / Water content (%) / Atterberg limits (%) / "N" Value (blows / 0.3 m) / Field / Lab / RQD / CONE (10 20 30 40 50 60 70 80 90)	COMMENTS
		0.0		GROUND SURFACE							
		0.2		**TOPSOIL** (200 mm)							
1				**TILL** - Light Brown Sandy Silt, With Gravel, Moist, Compact	SS-1	50	4	2 9 17 12	26	○ ×	Borehole Open and Dry Upon Completion
2											
3	1.0				SS-2	10	9	3 5 6	11	○ ×	
4											
5					SS-3	75	16	4 11 14	25	○ ×	**BH-107, SS-3:** 0% Gravel 16% Sand 84% Silt and Clay 67% between 5-75 µm
6	2.0										
7				- Grading Sand Seam at 2.3 m							
8					SS-4	100	12	4 7 8	15	○ ×	
9											
10	3.0	3.0		Mottled							
11					SS-5	100	14	8 11 15	26	○ ×	
12		3.7		Cobbles and Boulders (Inferred from Augers Grinding)							
13	4.0										
14											
15											
16		4.9		Grey, Dense	SS-6	100	8	9 16 22	37	○ ×	WL - 5.3 m 09/11/2019
17	5.0										
18											
19											
20	6.0										
21					SS-7	100	13	8 19 22	41	○ ×	50 mm diameter monitoring well installed to 6.1 m
22		6.6		END OF BOREHOLE							

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

REFERENCE No.: 11197394-02 ENCLOSURE No.: A-8

BOREHOLE No.: BH-108
ELEVATION: 322.8 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.

PROJECT: 3469 Concession Road 1, Township of Uxbridge

LOGGED BY: E. Wierdsma DATE: 26 August 2019

DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons

NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

UTM: +/- 17T 648690E 4921084N

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	COMMENTS
		0.0		GROUND SURFACE						
				TOPSOIL (600 mm)	SS-1	50	14	2, 6, 7, 8	13	Borehole open upon completion
		0.6		**TILL** - Light Brown Silty Sand With Gravel, Compact, Moist	SS-2	100	10	4, 5, 6	11	
	1.0				SS-3	100	13	3, 6, 11	17	
	2.0	2.3		With Clay, Wet	SS-4	100	17	5, 6, 5	11	▼ WL - 2.4 m 8/26/2019
	3.0	3.5		END OF BOREHOLE	SS-5	100	14	3, 5, 9	14	Groundwater seepage first encountered at 2.3 m (Upon completion of drilling)
	4.0									
	5.0									
	6.0									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m)
◆ RQD
◎ CONE

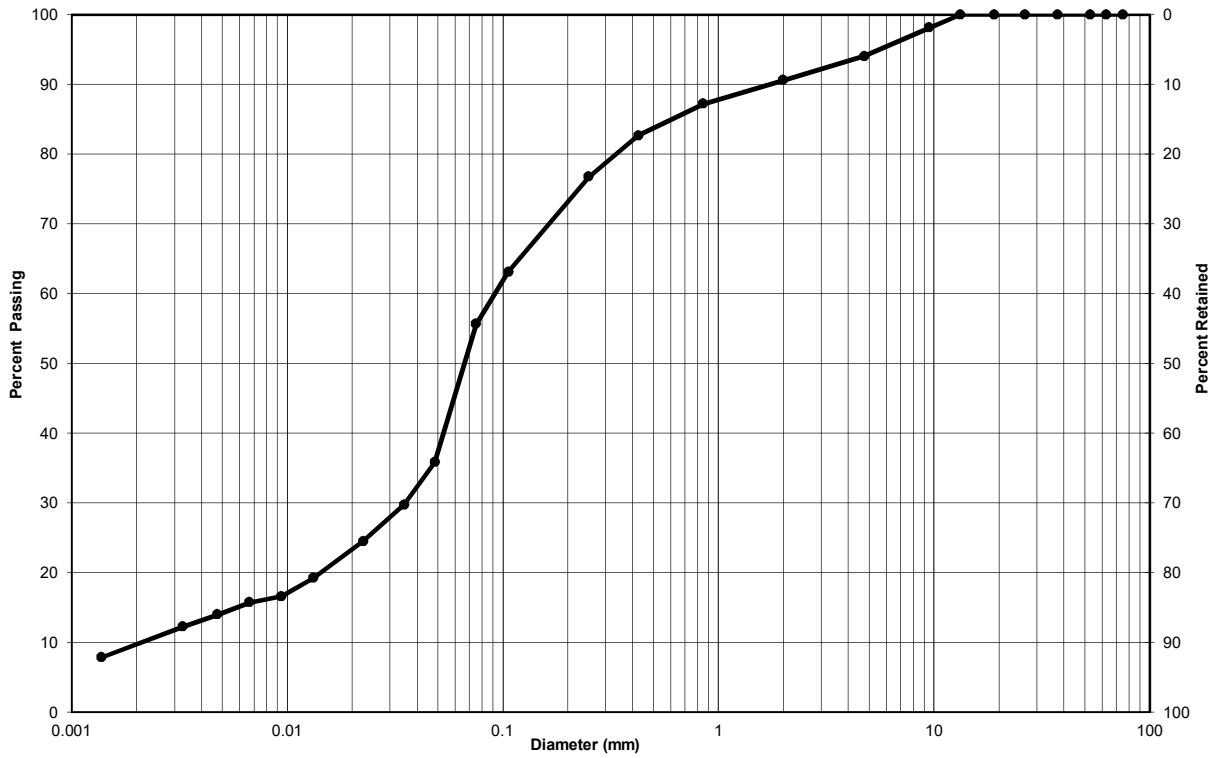
10 20 30 40 50 60 70 80 90

BOREHOLE LOG GEOTECH 11197394-02-FLD-19-10-11-GINT BH LOGS, EW,LR JK.GPJ GEOLOGIC.GDT 18/10/19

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Grainboys Holdings Inc	**Lab no.:**	SS-19-79
Project/Site:	3469 Concession Rd 1, Uxbridge , Ontario	**Project no.:**	11197394-02

Borehole no.:	BH-103	Sample no.:	SS-6
Depth:	3.8-4.3m	Enclosure:	A-9



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	6	38	56

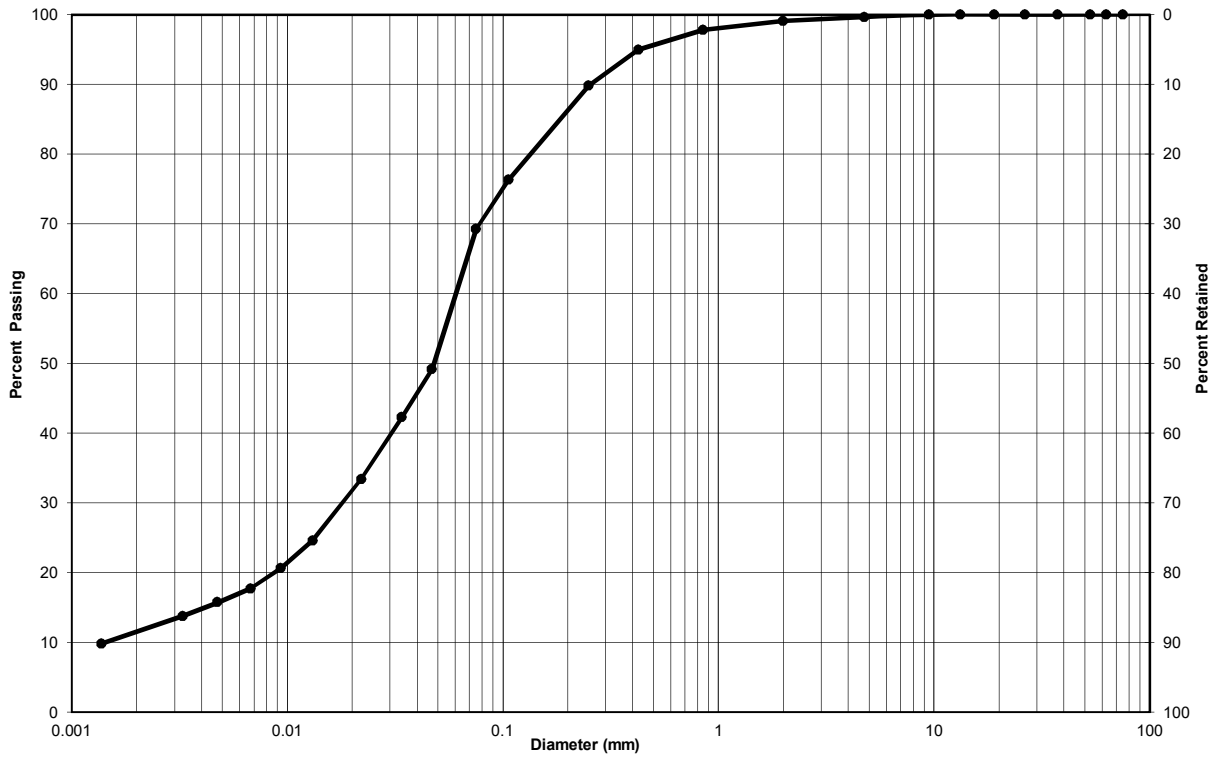
Remarks:

Performed by:	Zoe Mathurin	**Date:**	September 4, 2019
Verified by:		**Date:**	September 6, 2019

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Grainboys Holdings Inc	**Lab no.:**	SS-19-79
Project/Site:	3469 Concession Rd 1, Uxbridge , Ontario	**Project no.:**	11197394-02

Borehole no.:	BH-104	Sample no.:	SS-2
Depth:	0.8-1.4m	Enclosure:	A-10



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	0	31	69

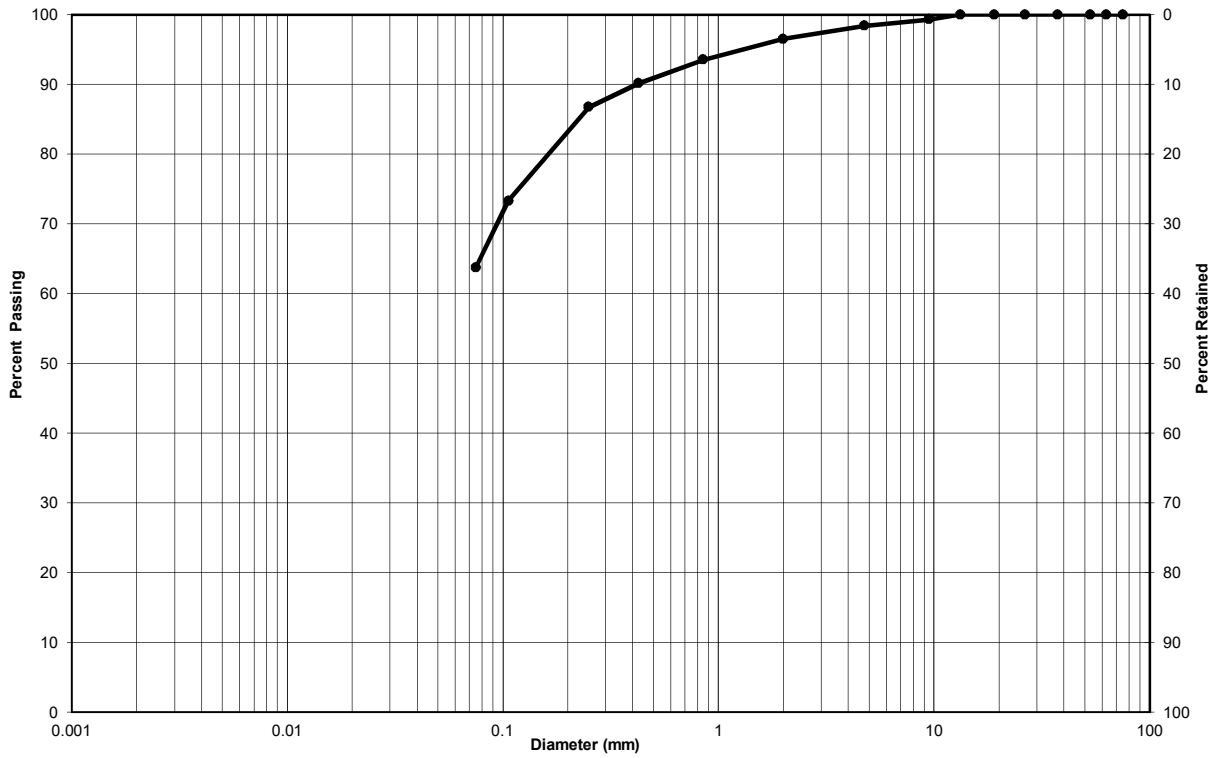
Remarks:

Performed by:	Zoe Mathurin	**Date:**	September 4, 2019
Verified by:		**Date:**	September 6, 2019

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Grainboys Holdings Inc.	**Lab no.:**	SS-19-79
Project/Site:	3469 Concession Road 1, Uxbridge, ON	**Project no.:**	11197394-02

Borehole no.:	BH-105	Sample no.:	SS-2
Depth:	0.8-1.2m	Enclosure:	A-11



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	2	34	64

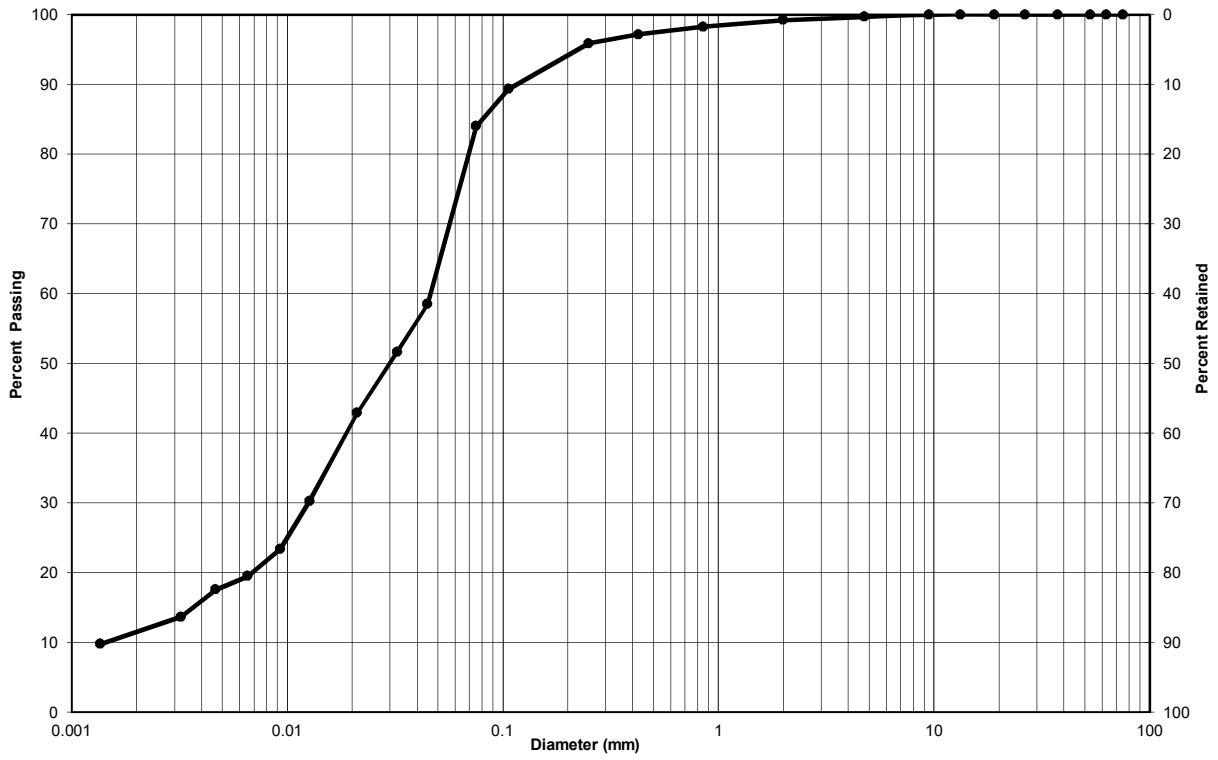
Remarks:

Performed by:	Zoe Mathurin	**Date:**	October 17, 2019
Verified by:		**Date:**	October 18, 2019

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Grainboys Holdings Inc	**Lab no.:**	SS-19-79
Project/Site:	3469 Concession Rd 1, Uxbridge , Ontario	**Project no.:**	11197394-02

Borehole no.:	BH-107	Sample no.:	SS-3
Depth:	1.5-2.0m	Enclosure:	A-12



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	0	16	84

Remarks:

Performed by:	Zoe Mathurin	**Date:**	September 4, 2019
Verified by:		**Date:**	September 6, 2019

REFERENCE No.: 11197394-01 ENCLOSURE No.: A-13

BOREHOLE No.: BH-1
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 June 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N
		0.0		GROUND SURFACE					
1				**SILTY SAND** - Dark Brown Silty Sand, Moist, Compact	SS-1	60	18	1 2 3 4	5
2		0.6		**TILL** - Light Brown Sandy Silt with Gravel and Clay, Moist, Compact					
3	1.0				SS-2	90	11	3 3 6 10	9
4									
5					SS-3	90	14	8 7 7 10	14
6	2.0								
7					SS-4	100	11	9 11 11 10	22
8									
9	3.0				SS-5	70	12	6 9 9 9	18
10									
11		3.7		Occasional Cobbles					
12	4.0								
13					SS-6	100	7	21 13 25	38
14									
15	5.0	5.0		END OF BOREHOLE					
16									
17									
18	6.0								
19									
20									
21									
22									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m) ◆ RQD ◎ CONE

10 20 30 40 50 60 70 80 90

COMMENTS

— m
— 0.90 m

Dry on 07/04/2019

Dry on 09/11/2019

End of Borehole open and dry after drilling

BOREHOLE LOG GEOTECH 11197394-01-FLD-PHASE 2 BH LOGS EW JK.GPJ GEOLOGIC.GDT 16/10/19

REFERENCE No.: 11197394-01 ENCLOSURE No.: A-14

BOREHOLE No.: BH-2
ELEVATION: 322.8 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 June 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES: Ground surface elevation interpolated from preliminary site plan, electronic title "19-066 Site wContours.dwg"

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth ft	Depth m	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Shear test (Cu) △ Field / Sensitivity (S) □ Lab; ○ Water content (%); Atterberg limits (W_p W_l) (%); × "N" Value (blows / 0.3 m); ◆ RQD; ◎ CONE (10 20 30 40 50 60 70 80 90)	COMMENTS
		0.0		GROUND SURFACE							
		0.2		**TOPSOIL** - Topsoil with Rootlets							
1				**SILTY SAND** - Dark Brown Silty Sand, Moist, Compact	SS-1	60	9	4 15 8 7	23	× ○	
2		0.8									
3	1.0			**TILL** - Light Brown Sandy Silt with Gravel and Clay, Moist, Loose	SS-2	60	22	3 3 4 3	7	× ○	
4											
5					SS-3	75	23	2 3 4 4	7	× ○	
6	2.0										
7					SS-4	60	25	2 2 5 10	7	× ○	
8											
9											
10	3.0	3.0		Mottling	SS-5	75	10	10 6 8 6	14	⊗ ×	
11											
12											
13	4.0										
14											
15		4.6		Wet							
16	5.0				SS-6	100	11	4 9 6 8	15	⊗ ×	Borehole open to 4.6 m after drilling. Water up to 4.3 m after drilling.
17		5.2		END OF BOREHOLE							
18											
19											
20	6.0										
21											
22											

BOREHOLE LOG GEOTECH 11197394-01-FLD-PHASE 2 BH LOGS EW JK.GPJ GEOLOGIC.GDT 16/10/19

REFERENCE No.: 11197394-01 ENCLOSURE No.: A-15

BOREHOLE No.: BH-3
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 June 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth (ft)	Depth (m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N
		0.0		GROUND SURFACE					
1				**SILTY SAND** - Dark Brown Silty Sand, Moist, Loose	SS-1	60	29	0 1 3 1	4
2		0.6		**TILL** - Light Brown Sandy Silt with Gravel and Clay, Moist, Compact					
3	1.0				SS-2	100	15	2 4 4 6	8
4									
5									
6	2.0				SS-3	100	13	6 9 11 12	20
7									
8		2.4		Grey	SS-4	100	15	5 9 11 13	20
9									
10	3.0								
11					AS-5		14		
12									
13	4.0	4.0		**SAND** - Grey Fine Sand, Wet, Compact					
14									
15									
16					SS-6	100	18	3 4 7 7	11
17	5.0	5.0		END OF BOREHOLE					
18									
19									
20	6.0								
21									
22									

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
Atterberg limits (%) W_p W_l
× "N" Value (blows / 0.3 m) ◆ RQD ◎ CONE

10 20 30 40 50 60 70 80 90

COMMENTS

— m
— 1.00 m

WL - 0.2 m
9/11/2019

Water level within stick-up on 07/04/2019

Borehole open after drilling

BOREHOLE LOG GEOTECH 11197394-01-FLD-PHASE 2 BH LOGS EW JK.GPJ GEOLOGIC.GDT 16/10/19

REFERENCE No.: 11197394-01 ENCLOSURE No.: A-16

BOREHOLE No.: BH-4
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 June 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth (ft / m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N
0.0	0.0		GROUND SURFACE					
1 / 0.3	0.3		**FILL** - Brown Sand and Gravel, Moist, Compact	SS-1	50	14	6, 5, 4, 4	9
2 / 0.6	0.6		**SILTY SAND** - Grey Silty Sand with Gravel, Moist, Compact					
3 / 1.0			**TILL** - Light Brown Sandy with Gravel and Clay, Moist, Compact	SS-2	40	14	2, 3, 5, 5	8
6 / 2.0				SS-3	60	13	6, 9, 6, 10	15
7 / 2.3	2.3		Mottling					
8 / 3.0				SS-4	40	12	12, 14, 20, 19	34
11 / 3.4	3.4		Grading Grey	SS-5	100	8	13, 16, 23, 24	39
12 / 3.7	3.7		Occasional Cobbles					
13 / 4.0	3.8		Wet	SS-6	70	10	19, 45, 32	77
16 / 5.0	5.0		END OF BOREHOLE	SS-7	100	10	7, 15, 50=5"	100+

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
× "N" Value (blows / 0.3 m) ◆ RQD ◎ CONE

10 20 30 40 50 60 70 80 90

COMMENTS

— m
— 0.90 m

WL - 2.1 m
7/04/2019

WL - 2.02 m
09/11/2019

Borehole open after drilling.

BOREHOLE LOG GEOTECH 11197394-01-FLD-PHASE 2 BH LOGS EW JK.GPJ GEOLOGIC.GDT 16/10/19

REFERENCE No.: 11197394-01 ENCLOSURE No.: A-17

BOREHOLE No.: BH-5
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 June 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES:

LEGEND

- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth (ft / m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Shear test (Cu) / Sensitivity (S) / Water content (%) / Atterberg limits (%) / "N" Value (blows / 0.3 m) / RQD / CONE	COMMENTS
0	0.0		GROUND SURFACE							
1			**FILL** - Brown Silty Sand with Gravel, Moist, Compact	SS-1	60	11	2 5 7 6	12		
2										
3 – 1.0				SS-2	60	17	3 2 3 4	5		
4	1.2		Dark Brown Sandy Silt							
5	1.5		with Clay, trace Gravel							
6 – 2.0				SS-3	90	12	2 2 4 6	6		**BH-5, SS-3** 3% Gravel 40% Sand 57% Silt and Clay
7	2.3		**TILL** - Light Brown Sandy Silt with Gravel and Clay, Mottling, Moist, Compact							
8				SS-4	100	12	5 12 11 17	23		
9										
10 – 3.0				SS-5	100	11	9 13 16 15	29		
11										
12	3.7		END OF BOREHOLE							Borehole open after drilling.
13 – 4.0										
14										
15										
16 – 5.0										
17										
18										
19										
20 – 6.0										
21										
22										

BOREHOLE LOG GEOTECH 11197394-01-FLD-PHASE 2 BH LOGS EW JK.GPJ GEOLOGIC.GDT 16/10/19

REFERENCE No.: 11197394-01 ENCLOSURE No.: A-18

BOREHOLE No.: BH-6
ELEVATION: Existing Grade

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Grainboys Holdings Inc.
PROJECT: 3469 Concession Road 1, Township of Uxbridge
LOGGED BY: E. Wierdsma DATE: 26 June 2019
DRILLING COMPANY: Strong Soil Search Inc. METHOD: Solid Stem Augers and Split Spoons
NOTES:

LEGEND

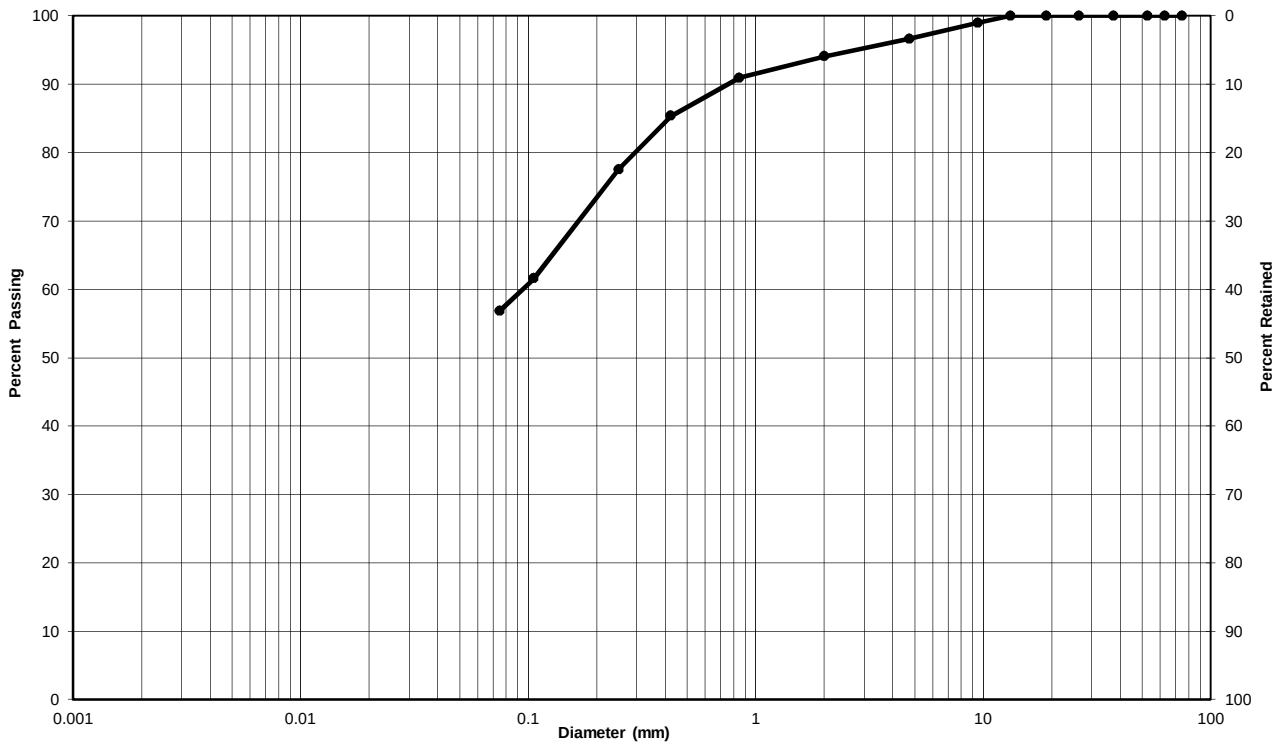
- SS - SPLIT SPOON
- AS - AUGER SAMPLE
- ST - SHELBY TUBE
- CS - CORE SAMPLE
- ▼ - WATER LEVEL

Depth (ft / m)	m Below Existing Grade	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	Type and Number	Recovery %	Moisture Content %	Blows per 6 in. / 15 cm	Penetration Index N	Shear test (Cu) / Sensitivity (S) / Water content (%) / Atterberg limits (%) / "N" Value (blows / 0.3 m) / RQD / CONE (△ Field, □ Lab)	COMMENTS
ft / m	0.0		GROUND SURFACE		%	%		N	10 20 30 40 50 60 70 80 90	
1			**SILTY SAND** - Dark Brown Silty Sand, Loose, Moist	SS-1	40	28	1 1 2 3	3		
2	0.6		**TILL** - Light Brown Sandy Silt with Gravel and Clay, Mottling, Moist, Compact							
3 – 1.0				SS-2	90	12	1 3 6 7	9		
4										
5							3			
6 – 2.0				SS-3	90	13	8 11 13	19		**BH-6, SS-3** 8% Gravel 26% Sand 66% Silt and Clay
7										
8	2.4		Grading Grey				6			
9				SS-4	100	13	8 10 10	18		
10 – 3.0										
11				SS-5	100	14	8 13 14	27		
12	3.5		END OF BOREHOLE							End of Borehole open and dry
13 – 4.0										
14										
15										
16 – 5.0										
17										
18										
19										
20 – 6.0										
21										
22										

BOREHOLE LOG GEOTECH 11197394-01-FLD-PHASE 2 BH LOGS EW JK.GPJ GEOLOGIC.GDT 16/10/19

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Grainboys Holdings Inc.	**Lab no.:**	SS-19-52
Project/Site:	3469 Concession Rd. 1, Township of Uxbridge	**Project no.:**	11197394-01
Borehole no.:	BH-5	Sample no.:	SS-3
Depth:	1.5-2.1m	Enclosure:	A-19



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

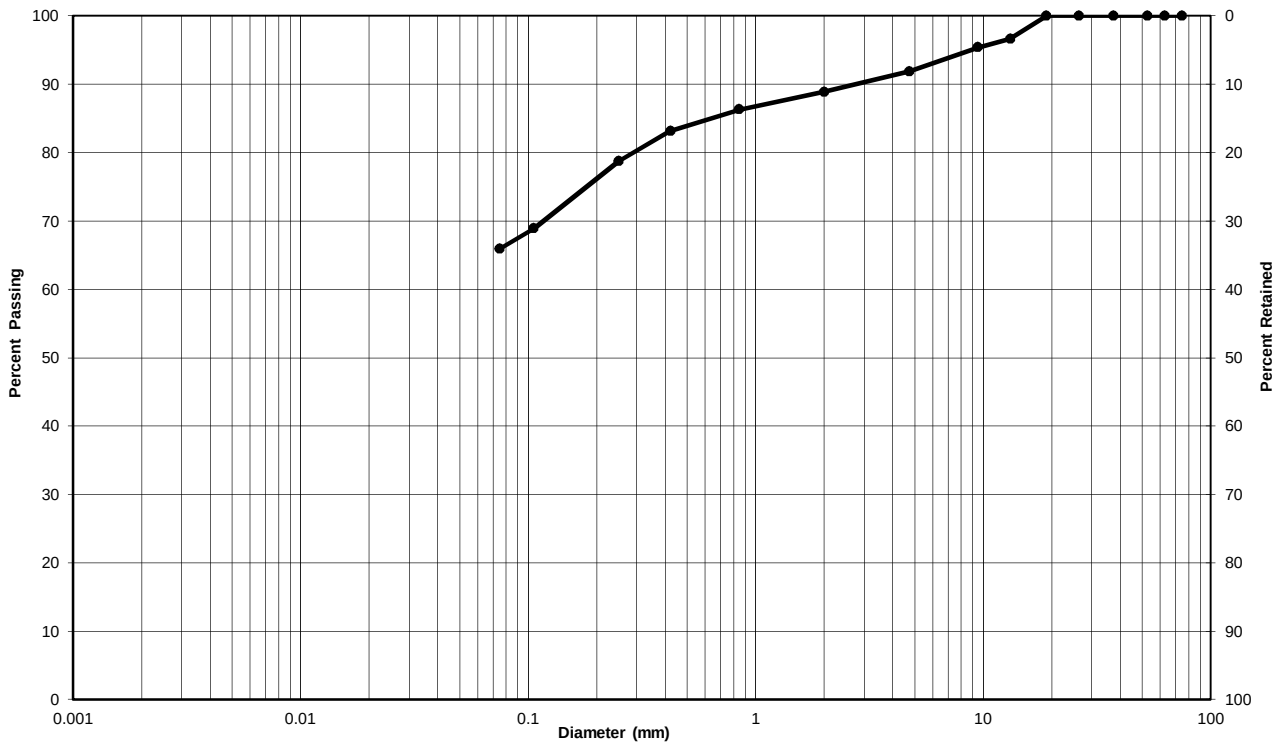
Soil Description	Gravel	Sand	Clay & Silt
	3	40	57

Remarks:

Performed by:	Josh Sullivan	**Date:**	July 10, 2019
Verified by:		**Date:**	July 10, 2019

Particle-Size Analysis of Soils (Geotechnical) (USCS) (ASTM D422)

Client:	Grainboys Holdings Inc.	**Lab no.:**	SS-19-52
Project/Site:	3469 Concession Rd 1, Township of Uxbridge	**Project no.:**	11197394-01
Borehole no.:	BH-6	Sample no.:	SS-3
Depth:	1.5-2.1m	Enclosure:	A-20



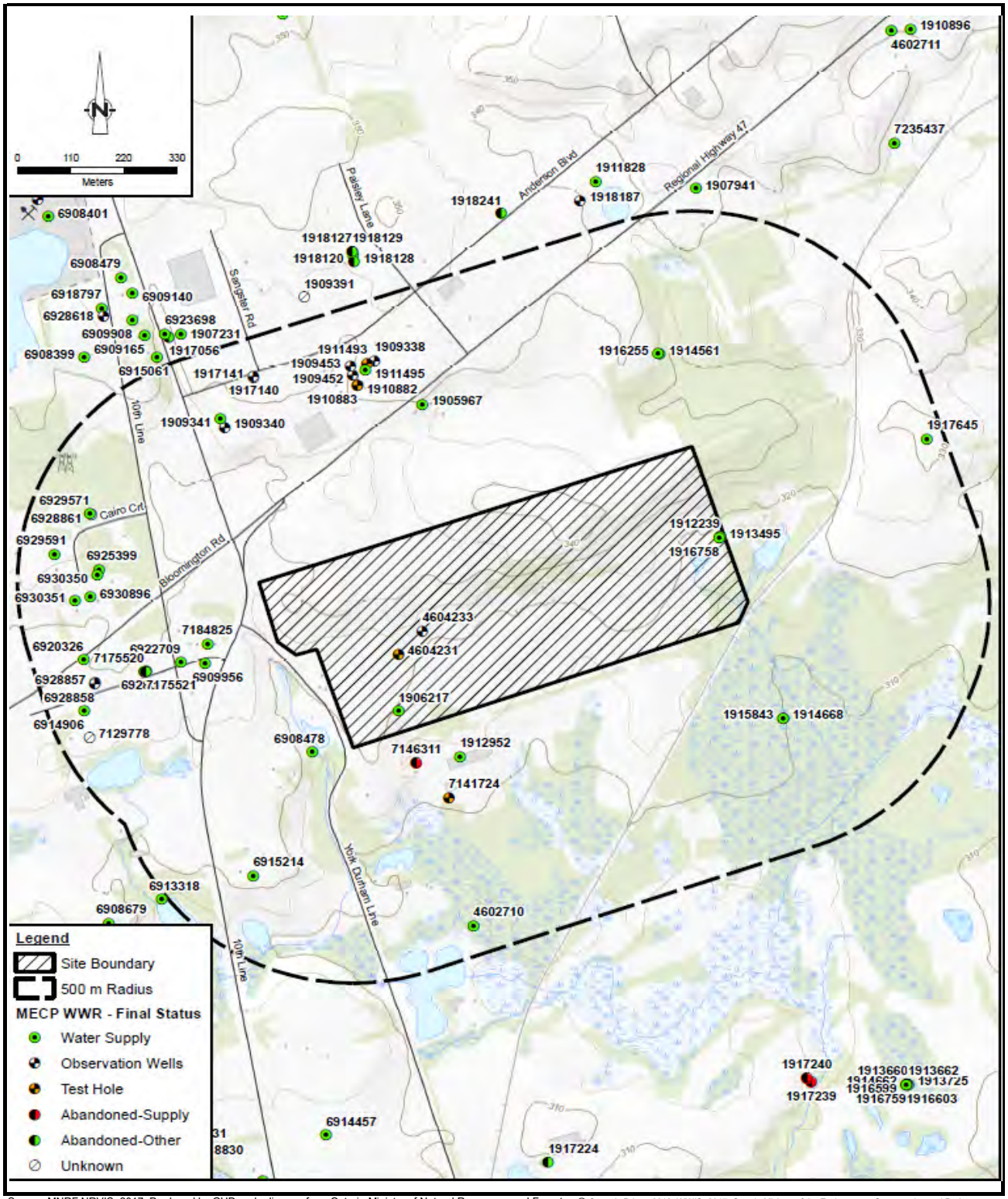
Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Unified Soil Classification System					

Soil Description	Gravel	Sand	Clay & Silt
	8	26	66

Remarks:

Performed by:	Josh Sullivan	**Date:**	July 10, 2019
Verified by:		**Date:**	July 10, 2019

Appendix B
MECP Well Records and Well Survey



Source: MNRF NRVIS, 2017. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019; WWIS, 2017. Ontario Ministry of the Environment, Conservation and Parks. (Accessed January 2017).

Scale:
Refer to Scale Bar
Coordinate System:
NAD 1989 UTM Zone 17N

Grainboys Holdings Inc.
3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

MECP Well Inventory Map

11197394-02
October 2019

FIGURE B.1

APPENDIX B.2: WELL SUMMARY - BORED / DUG WELLS

Well Record Summary

Project No.: 11197394-02

3469 Concession Road 1, Township of Uxbridge, Ontario

MECP Well No.	Well Use	Water Found		Static Level		Pump Rate		Well Depth		Comments
		Feet	Metres	Feet	Metres	Igpm	L/min	Feet	Metres	
1912952	Domestic	27	8.2	2	0.6	10	37.9	30	9.1	clay to 27', sand to 30'
6908478	Domestic	25	7.6	15	4.6	2	7.6	29	8.8	Topsoil to 1', sandy clay to 22', gravel to 25', clay to 29'

Number of wells = 2

	Water Found		Static Level		Pump Rate		Well Depth	
	Feet	Metres	Feet	Metres	Igpm	L/min	Feet	Metres
AVERAGE	26.0	7.9	8.5	2.6	6.0	22.7	29.5	9.0
MAXIMUM	27.0	8.2	15.0	4.6	10.0	37.9	30.0	9.1
MINIMUM	25.0	7.6	2.0	0.6	2.0	7.6	29.0	8.8

APPENDIX B.3: WELL SUMMARY - DRILLED OVERBURDEN WELLS

Well Record Summary
Project No.: 11197394-02
3469 Concession Road 1, Township of Uxbridge, Ontario

MECP Well No.	Well Use	Water Found Feet	Water Found Metres	Static Level Feet	Static Level Metres	Test Rate Igpm	Test Rate L/min	Well Depth Feet	Well Depth Metres	Comments
1905967	Livestock	60.0	18.3	58.0	17.7	6.0	22.7	78.0	23.8	Clay with stones to 44', sand to 78'
1906217	Commercial	79.0	24.1	79.0	24.1	8.0	30.3	92.0	28.0	Clay and sand to 12', sand and silt to 29', clay till to 36', sand ans stones to 92'
190938	Industrial	156.0	47.5	--	--	--	--	214.0	65.2	sandy clay to 23', sand and stones to 137', sabdy clay to 143', sand to 156', stones with sand to 214'
1909340	Commercial	209.0	63.7	80.0	24.4	25.0	94.6	222.0	67.7	Sand and silt to 9', clay and sand to 12', sand and stones to 119', clay to 161', sand and stones to 222'
1909341	Commercial	201.0	61.3	80.0	24.4	18.0	68.1	222.0	67.7	Sand and silt to 9', clay and sand to 12', sand and stones to 119', clay to 161', sand and stones to 222'
1909452	Not Used	196.0	59.7	--	--	10.0	37.9	214.0	65.2	sand with stones and clay to 137', clay and tones to 156', stones with sand to 214'
1909453	Not Used	196.0	59.7	--	--	10.0	37.9	215.0	65.5	sand with stones and clay to 137', clay and tones to 156', stones with sand to 215'
1910882	Industrial	170.0	51.8	69.0	21.0	535.0	2025.0	197.0	60.0	Topsoil to 1', clay to 33', silty gravel to 112', gravel to 118', clay to 182', sand stones to 192', gravel to 197'
1911495	Industrial	153.0	46.6	70.0	21.3	722.0	2732.8	200.0	61.0	clay and stones to 31', gravel to 44', sand and stones to 84', gravel to 194', clay and stones to 198', silty gravel to 200'
1912239	Domestic	115.0	35.1	33.0	10.1	15.0	56.8	118.0	36.0	clay to 15', sand to 60', gravel to 67', sand to 118'
1913495	Domestic	114.0	34.7	60.0	18.3	9.0	34.1	118.0	36.0	Topsoil to 2', clay with sand and stones to 52', sand and gravel to 58', silty clay to 95', silt to 114', sand to 118'
1914668	Domestic	81.0	24.7	6.0	1.8	20.0	75.7	88.0	26.8	clay to 81', sand to 88'
1915843	Domestic	156.0	47.5	40.0	12.2	15.0	56.8	158.0	48.2	Topsoil to 2', clay till to 75', clayey silt to 154', clay to 156', sand to 158'
1916255	Domestic	89.0	27.1	50.0	15.2	10.0	37.9	89.0	27.1	clayey sand to 40', sand to 89'
1916758	Domestic	146.0	44.5	37.0	11.3	12.0	45.4	154.0	46.9	sandy clay to 28', sand to 3', sandy clay to 48', silty sand with stones to 96', clay to 133', sand and stones to 154'
4602710	Domestic	82.0	25.0	17.0	5.2	3.0	11.4	82.0	25.0	clay and stones to 18', clay to 42', sand and clay to 70', sand to 82'
4604231	Not Used	15.0	4.6	--	--	--	--	140.0	42.7	well abandonded due to artisian conditions
4604233	Not Used	34.0	10.4	2.0	0.6	--	--	305.0	93.0	Clay to 11', sand to 34', clay to 253', gravely clay to 305'
6909956	Domestic	39.0	11.9	40.0	12.2	8.0	30.3	50.0	15.2	clay to 18', sandy gravel to 39', sand to 50'
6914906	Domestic	40.0	12.2	--	--	5.0	18.9	60.0	18.3	clay to 15', gravel to 30', sand to 60'
6915214	Domestic	100.0	30.5	16.0	4.9	5.0	18.9	138.0	42.1	dug well to 30', sand to 35', clayey gravel to 42', sandy clay to 130', sand to 138'
6920326	Domestic	80.0	24.4	54.0	16.5	15.0	56.8	93.0	28.3	clay to 6', sand to 32', clay to 80', sand to 93'
6922709	Domestic	51.0	15.5	30.0	9.1	10.0	37.9	64.0	19.5	sandy clay to 18', sand to 32', gravel to 37', sand to 64'
6925399	Domestic	100.0	30.5	55.0	16.8	10.0	37.9	100.0	30.5	Topsoil to 1', clay to 21', gravel to 24', sandy clay to 50', gravel to 58', sandy clay to 74', silt to 100', sand to 108'
6928857	Not Used	--	--	--	--	--	--	137.0	41.8	well not used
6928858	Not Used	--	--	--	--	--	--	65.0	19.8	Topsoil to 2', silty clay and gravel to 38', sand and gravel to 65'
6928861	Unknown	--	--	--	--	452.0	1710.8	60.0	18.3	Gravel to 1', silt sand to 3', silty sand and gravel to 50', gravel to 60'
6929571	Unknown	--	--	--	--	618.0	2339.1	65.0	19.8	gravel to 3', topsoil to 5', silty clay to 15', silty sand and gravel to 53', gravel to 65'
6929591	Domestic	170.0	51.8	--	--	10.0	37.9	170.0	51.8	sand to 10', clay to 25', sand and gravel to 170'
6930350	Domestic	111.0	33.8	--	--	12.0	45.4	115.0	35.1	Topsoil to 1', silty sand to 24', clay to 33', sand and gravel to 115'
6930351	Domestic	111.0	33.8	--	--	12.0	45.4	115.0	35.1	Topsoil to 1', silty sand to 24', clay to 33', sand and gravel to 115'
6930896	Domestic	112.0	34.1	--	--	12.0	45.4	116.0	35.4	Topsoil to 1', silty sand to 24', clay to 33', sand and gravel to 116'
7129778	Domestic	45.0	13.7	40.0	12.2	7.0	26.5	45.0	13.7	clay to 32', gravely sand to 45'
6930350	Domestic	111.0	33.8	--	--	12.0	45.4	115.0	35.1	Topsoil to 1', silty sand to 24', clay to 33', sand and gravel to 115'
7184825	Domestic	36.0	8.8	34.0	10.4	12.0	45.4	42.0	12.8	sand and clay to 4', clay and gravel to 21', gravel and sand to 36', sand to 42'

Number of wells: 35

	Water Found Feet	Water Found Metres	Static Level Feet	Static Level Metres	Pump Rates gpm	Pump Rates L/min	Well Depth Feet	Well Depth Metres
AVERAGE	108.3	32.9	45.2	13.8	87.3	330.3	127.3	38.8
MAXIMUM	209.0	63.7	80.0	24.4	722.0	2732.8	305.0	93.0
MINIMUM	15.0	4.6	2.0	0.6	3.0	11.4	42.0	12.8

APPENDIX B.4: WELL SUMMARY - DRILLED OVERBURDEN WELLS

Well Record Summary
Project No.: 11197394-02
3469 Concession Road 1, Township of Uxbridge, Ontario

MECP Well No.	Well Use	Water Found Feet	Water Found Metres	Static Level Feet	Static Level Metres	Test Rate Igpm	Test Rate L/min	Well Depth Feet	Well Depth Metres	Comments
1910883	Test Hole	--	--	--	--	--	---	240.0	73.2	Topsoil to 1', clay to 33', silty gravel to 112', gravel to 118', clay to 182', sand stones to 192', gravel to 197'
1911493	Test Hole	--	--	--	--	--	---	225.0	68.6	Clay with stones to 31', gravel to 44', sand and stones to 84', gravel to 194', clay and stones to 198', silty gravel to 204', clay and silt to 225'
1917140	Abandonded	--	--	--	--	--	---	222.0	67.7	Abandonment record
1917141	Abandonded	--	--	--	--	--	---	122.0	37.2	Abandonment record
1917645	Abandonded	--	--	--	--	--	---	162.0	49.4	Abandonment record
6928859	Abandonded	--	--	--	--	--	---	529.0	161.2	Abandonment record
7141724	Monitoring Well	--	--	--	--	--	---	28.0	8.5	Fill to 4', clay to 28'
7146311	Abandonded	--	--	--	--	--	---	98.0	29.9	Abandonment record

Number of wells: 8

	Water Found Feet	Water Found Metres	Static Level Feet	Static Level Metres	Pump Rates gpm	Pump Rates L/min	Well Depth Feet	Well Depth Metres
AVERAGE	0.0	0.0	0.0	0.0	0.0	0.0	203.3	62.0
MAXIMUM	0.0	0.0	0.0	0.0	0.0	0.0	529.0	161.2
MINIMUM	0.0	0.0	0.0	0.0	0.0	0.0	28.0	8.5

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

3103

Ontario

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

(11) 1905967 MUNICIP. 19012 CON. CON 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Durham	Uxbridge	1	013

[redacted] RR3 Stouffville — DATE COMPLETED DAY 15 MO. 09 YR. 80

UTM ZONE 275000 RC 5 ELEVATION 1100 RC 5 BASIN CODE 21

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	with stones		0	14
Brown	clay gravel			14	15
Brown	clay	with stones		15	44
Brown	sand			44	78

(31) 0014605/12 0015611 0044605/12 0078628

(32)

(4) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060	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
02	1 ☐ STEEL; 2 ☑ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	1/4	0	0074
	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.) 060 — DIAMETER 00250 INCHES — LENGTH 05 FEET

MATERIAL AND TYPE: stainless — DEPTH TO TOP OF SCREEN 0073 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 0006 GPM — DURATION OF PUMPING 01 HOURS 15 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
058 FEET	Dried FEET	how? FEET	FEET	ups FEET	FEET

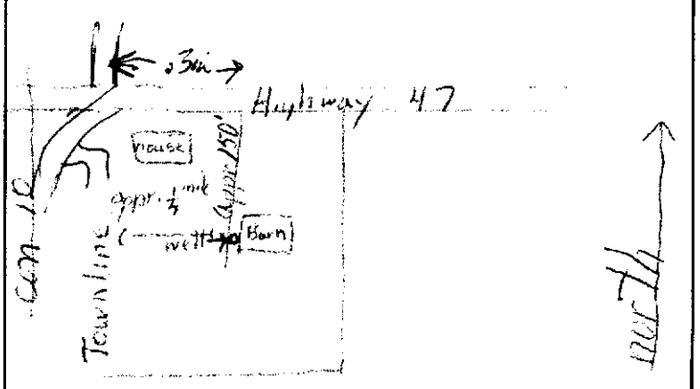
IF FLOWING GIVE RATE: GPM — PUMP INTAKE SET AT: 72 FEET — WATER AT END OF TEST: 1 ☑ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☑ DEEP — RECOMMENDED PUMP SETTING 072 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:

FINAL STATUS OF WELL (54) 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 (55-56) 02

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: Feckler Brothers — LICENCE NUMBER 2218

ADDRESS: RR4 Stouffville Box 6E

NAME OF DRILLER OR BORER: David Feckler — LICENCE NUMBER 2218

SIGNATURE OF CONTRACTOR: David Feckler — SUBMISSION DATE DAY 17 MO. April YR. 80

OFFICE USE ONLY

DATA SOURCE (58) 1 — CONTRACTOR (59-62) 2218 — DATE RECEIVED (63-66) 090381

DATE OF INSPECTION — INSPECTOR

REMARKS: Ice early 08/2/60 — P — WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

3103

WATER WELL RECORD

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

(11) 1906217 MUNICIP. 19012 CON. CON 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	Uxbridge	Con 1	012

[redacted] Stouffville — DATE COMPLETED 02 09 81

[redacted] 874350 RC. 5 ELEVATION 1025 RC 5 BASIN CODE 24

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	sand		0	12
Brown	sand	stones & silt		12	29
Blue	clay	sand & silt		29	36
Brown	sand	stones & silt		36	57
Grey	sand	stones & silt		57	62
Grey	sand	stones	clean	62	84
Grey	sand	stones & silt		84	92

(31) 0012 0528 | 0029 6281206 | 0036 3052806 | 0057 6281206 | 0062 2281206 | 0084 2281262 | 1
(32) 0092 2281206

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0079	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
06¼	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188		0079
	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
018	06000 INCHES	03 FEET

MATERIAL AND TYPE: SS — DEPTH TO TOP OF SCREEN: 0079 FEET

61 PLUGGING & SEALING RECORD

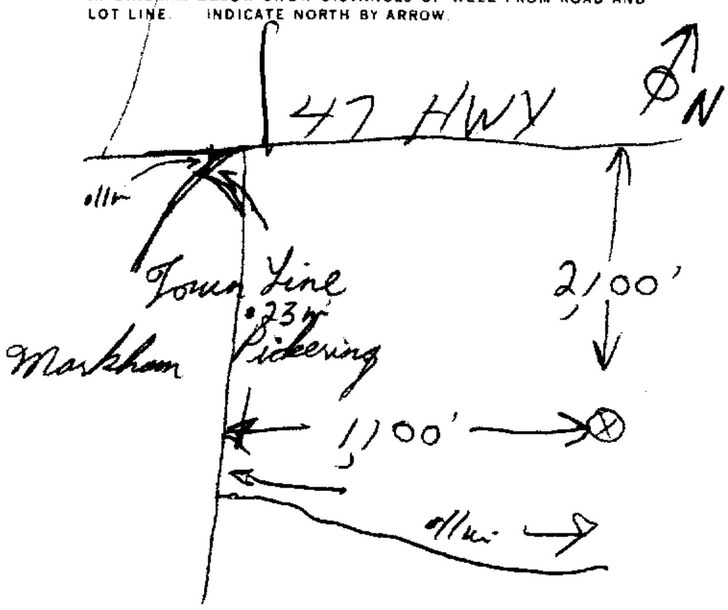
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

(71) PUMPING TEST

PUMPING TEST METHOD	AIR — 1 ☑ PUMP 2 ☐ BAILER
PUMPING RATE	0010 GPM
DURATION OF PUMPING	03 HOURS 00 MINS
STATIC LEVEL	+02 FEET
WATER LEVEL END OF PUMPING	079 FEET
WATER LEVELS DURING	1 ☑ PUMPING 2 ☐ RECOVERY
15 MINUTES	079 FEET
30 MINUTES	079 FEET
45 MINUTES	079 FEET
60 MINUTES	079 FEET
IF FLOWING, GIVE RATE	0002 GPM
PUMP INTAKE SET AT	79 FEET
WATER AT END OF TEST	1 ☑ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE	☐ SHALLOW ☑ DEEP
RECOMMENDED PUMP SETTING	070 FEET
RECOMMENDED PUMPING RATE	0008 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 05
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: Wilson Water Wells Ltd — LICENCE NUMBER 5459
ADDRESS: RR 4 Stouffville Ont
NAME OF DRILLER OR BORER: J. Adcock — LICENCE NUMBER
SIGNATURE OF CONTRACTOR: William Wilson — SUBMISSION DATE DAY ___ MO ___ YR ___

OFFICE USE ONLY

DATA SOURCE 1 — CONTRACTOR 5459 — DATE RECEIVED [illegible] 85
DATE OF INSPECTION — INSPECTOR
REMARKS: loc only 06/7/82 — CSS.S8

MINISTRY OF THE ENVIRONMENT COPY

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 — 1909338 — MUNICIP 19012 — CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
DURHAM	UXBRIDGE	CON 1	13

OWNER (SURNAME FIRST): A+S CONSTUCTION — ADDRESS: RR#2 STOUFFVILLE — DATE COMPLETED: DAY 23 MO 9 YR 88

21 — UTM: ZONE — EASTING — NORTHING — BC. — ELEVATION — RC — BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	clay	sandy		0	23
Brown	sand	stones		23	61
Brown	sand			61	87
Brown	sand	stones		87	137
Grey	clay	sandy & stony		137	143
Brown	sand			143	156
Grey	stones	sand & white clay		156	214

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
156	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/8	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	189
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
30	6 INCHES	20 FEET

MATERIAL AND TYPE: 55 — DEPTH TO TOP OF SCREEN: 189 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER — AIR — PUMPING RATE: 4 GPM — DURATION OF PUMPING: 4 HOURS 30 MINS

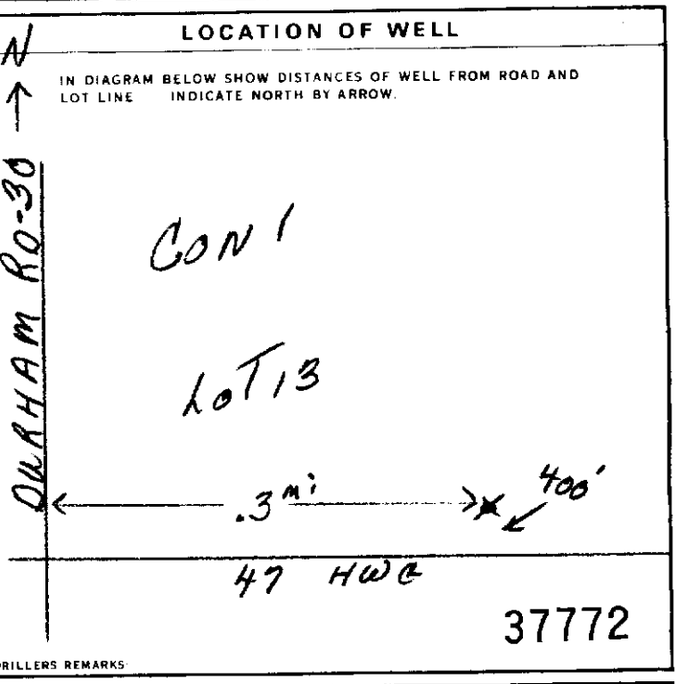
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☑ PUMPING 2 ☐ RECOVERY — 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
FEET	189 FEET	189 FEET	189 FEET	189 FEET	189 FEET

IF FLOWING GIVE RATE: GPM — PUMP INTAKE SET AT: 189 FEET — WATER AT END OF TEST: 1 ☑ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP — RECOMMENDED PUMP SETTING: FEET — RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

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



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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 9 ☐ DEWATERING
WATER USE	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 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: Wilson Water Wells Ltd — WELL CONTRACTOR'S LICENCE NUMBER: 5459

ADDRESS: RR#4 Stouffville Ont

NAME OF WELL TECHNICIAN: Paddock — WELL TECHNICIAN'S LICENCE NUMBER: 0234

SIGNATURE OF TECHNICIAN/CONTRACTOR: William Wilson — SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR: 5459 — DATE RECEIVED: SEP 27 1988

DATE OF INSPECTION — INSPECTOR

REMARKS

CSS. SS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 — 1909340 — MUNICIP 1,9,0,1,2 — CON.

COUNTY OR DISTRICT: Durham
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Uxbridge
CON., BLOCK, TRACT, SURVEY, ETC.: con 1
LOT: 13
OWNER (SURNAME FIRST): A+S Const.
ADDRESS: RR#2 Stouffville
DATE COMPLETED: DAY 14 MO 9 YR 88

21 — ZONE — EASTING — 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
Brown	soil	silty		0	9
Brown	clay	sandy		9	12
Brown	sand	stoney silty		12	119
Grey	clay	sandy		119	134
Grey	clay	silty		134	161
Brown	sand	stones		161	201
Grey	sand	stones		201	222

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
209	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
6 5/8	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	209
	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.): 20 — DIAMETER: 6 INCHES — LENGTH: 6 FEET
MATERIAL AND TYPE: SS — DEPTH TO TOP OF SCREEN: 209 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

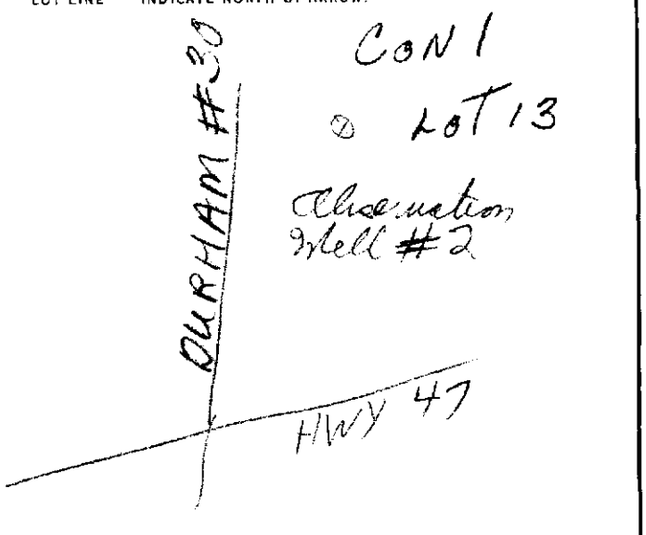
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER — A/R
PUMPING RATE: 25 GPM
DURATION OF PUMPING: 4 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☑ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
80 FEET	209 FEET		209 FEET	209 FEET	209 FEET	209 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: 209 FEET
WATER AT END OF TEST: 1 ☑ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: FEET
RECOMMENDED PUMPING RATE: 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 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

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: Wilson Waterwells Ltd — LICENCE NUMBER: 5459
ADDRESS: RR 4 Stouffville Ont
NAME OF DRILLER OR BORER: Paddock — LICENCE NUMBER: 0234
SIGNATURE OF CONTRACTOR: William Wilson — SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR: 5459 — DATE RECEIVED: SEP 22 1988
DATE OF INSPECTION — INSPECTOR
REMARKS

CSS-25

MINISTRY OF THE ENVIRONMENT COPY

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 1909341 MUNICIP 19012 CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
DURHAM	UXBRIDGE	CON 1	13

[redacted] RR#2 Stouffville — DATE COMPLETED DAY 12 MO 9 YR 88

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	sand	silty		0	9
Brown	clay	sandy		7	12
Brown	sand	stone & silty		12	119
Grey	clay	sandy		119	134
Grey	clay	silty		134	161
Brown	sand	stone		161	201
Grey	sand	stone		201	222

31 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
201	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
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	201
	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
20	6 INCHES	20 FEET

MATERIAL AND TYPE: 55 — DEPTH TO TOP OF SCREEN: 201 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 — AIR

PUMPING RATE: GPM — DURATION OF PUMPING: 7 HOURS 30 MINS

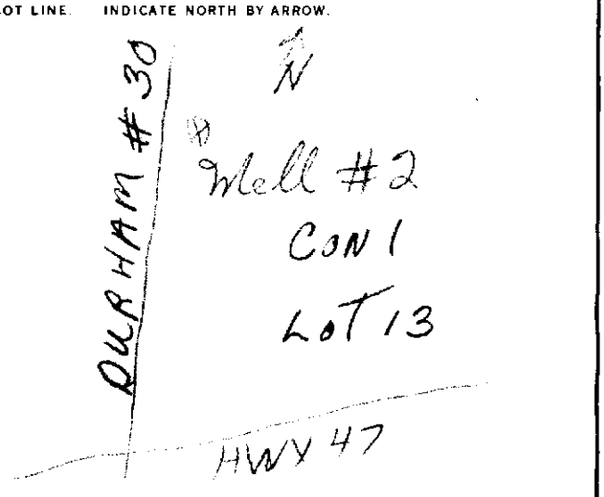
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
80 FEET	201 FEET		201 FEET	201 FEET	201 FEET	201 FEET

IF FLOWING, GIVE RATE: GPM — PUMP INTAKE SET AT: 201 FEET — WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP — RECOMMENDED PUMP SETTING: 180 FEET — RECOMMENDED PUMPING RATE: 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 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

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: Wilson Lake Wells Ltd — LICENCE NUMBER: 5459

ADDRESS: RR4 Stouffville Ont

NAME OF DRILLER OR BORER: D Paddock — LICENCE NUMBER: 0234

SIGNATURE OF CONTRACTOR: William Wilson — SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR: 5459 — DATE RECEIVED: SEP 22 1988

DATE OF INSPECTION — INSPECTOR

REMARKS

CSS-GS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

Observation # 1

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 1909452 | MUNICIP 19012 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
DURHAM	UXBRIDGE	CON I	13

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
454790 Ont. Ltd.	STOUFFVILLE	DAY 4 MO 11 YR 88

21 | 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 & clay		0	23
Brown	sand	stones		23	61
Brown	sand	stones & rocks		61	137
Grey	clay	stones		137	156
Grey	stones	sand & white clay		156	214

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
196	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
2"	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC		0	196
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
25	2 INCHES	8 FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN
SS	196 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	PUMPING RATE	DURATION OF PUMPING
AIR (1 ☐ PUMP 2 ☐ BAILER)	10 GPM	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
FEET	196 FEET	FEET	FEET	FEET	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

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
9 ☐ DEWATERING

WATER USE

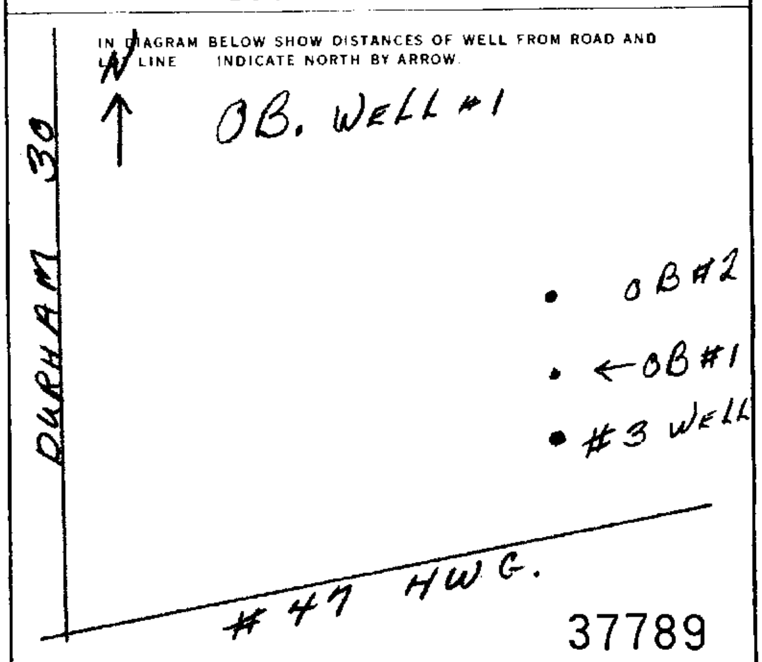
1 ☐ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☑ NOT USED

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

LOCATION OF WELL

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



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DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
Wilson's Water Wells Limited	5459

ADDRESS: R. R. # 4, Stouffville, Ontario L4A 7X5

NAME OF WELL TECHNICIAN: *[signature]* | WELL TECHNICIAN'S LICENCE NUMBER: 0237

SIGNATURE OF TECHNICIAN/CONTRACTOR: *William Wilson* | SUBMISSION DATE: DAY MO YR.

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
	5459	NOV 16 1988

DATE OF INSPECTION | INSPECTOR

REMARKS

CSS. ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

Observation #2

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

11 — 1909453 — MUNICIP 1912 — CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON	BLOCK, TRACT, SURVEY, ETC	LOT
DURHAM.	UXBRIDGE	CON I		13

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
454790 Ont Ltd.	STOUFFVILLE	DAY 8 MO 11 YR 88

21 — ZONE — EASTING — NORTHING — OC — ELEVATION — OC — BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	sand	stones & clay		0	19
Brown	sand	stones		19	57
Brown	sand	rocks & stones		57	129
Grey	clay	stones		129	152
Grey	stones	sand & white clay		152	215

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
196	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
2	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC		0	196
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
25	2 INCHES	8 FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN
55	196 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☑ BAILER — AIR

PUMPING RATE: 10 GPM — DURATION OF PUMPING: 1 HOURS ___ MINS

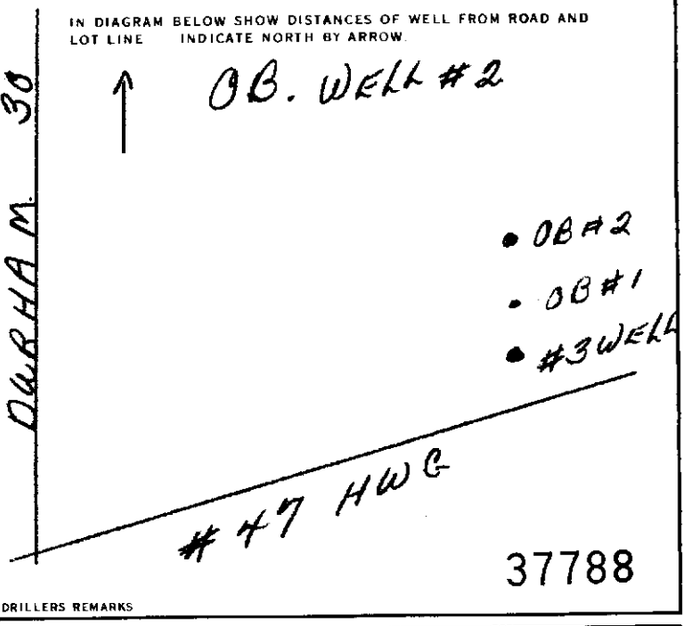
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY			
FEET	196 FEET	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
		FEET	FEET	FEET	FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☐ DEEP	FEET	GPM

LOCATION OF WELL

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



37788

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 9 ☐ 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	WELL CONTRACTOR'S LICENCE NUMBER
Wilson's Water Wells Limited	5459

ADDRESS: R. R. # 4 Stouffville, Ontario L4A 7X5

NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER
K. Sadrook	0294

SIGNATURE OF TECHNICIAN/CONTRACTOR: William Wilson — SUBMISSION DATE: DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR 5459 — DATE RECEIVED NOV 16 1988

DATE OF INSPECTION — INSPECTOR

REMARKS

ccs. ES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 (1-2) 1910882 MUNICIP 19012 (10-14) CON. CON 91 (15-22-23-24)

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON BLOCK, TRACT, SURVEY, ETC	LOT (25-27)
Durham	Uxbridge	con. 1	13

OWNER (SURNAME FIRST) (28-47)	ADDRESS	DATE COMPLETED (48-53)
454790 Ontario Ltd.	R.R.#2, Stouffville, Ontario	DAY 01 MO 08 YR 90

21 (1-2) UTM ZONE (10) EASTING (12-17) NORTHING (18-24) RC (25) ELEVATION (26-29) RC (30) BASIN CODE (31-47) I II III IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Top soil			0	1
Brown	Clay			1	10
Gray	Clay	stones		10	33
Gray	Gravel	silty		33	44
Gray	Silty Sand	stones		44	112
Gray	Gravel			112	118
Gray	Clay	stones, silt, gravel		118	182
Gray	Sand stones			182	192
Gray	Gravel			192	197
		Finished depth 197 ft.			

31 (1-2)
32 (10-14-15-21-32-43-54-65-75-80)

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
170-195½ (10-13)	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 5 ☐ GAS (14) UNTESTED
(15-18)	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (19)
(20-23)	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (24)
(25-28)	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (29)
(30-33)	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS (34) (80)

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
(10-11) 10	(12) 1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.250	+ 2	169½ (13-16)
(17-18)	(19) 1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			(20-23)
(24-25)	(26) 1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			(27-30)

SCREEN

SIZE(S) OF OPENING (SLOT NO.) (31-33)	DIAMETER (34-38)	LENGTH (39-40)
13' #25, 12' #50	10 INCHES	25 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN (41-44)	(80)
S.S.	166 11" FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
35 (10-13)	30 (14-17)	Hole Plug
30 (18-21)	2 (22-25)	Neat cement
2 (26-29)	1 (30-33) (80)	Clay fill

71 PUMPING TEST

PUMPING TEST METHOD (10)	PUMPING RATE (11-14)	DURATION OF PUMPING (15-16 HOURS, 17-18 MINS)
1 ☒ PUMP 2 ☐ BAILER	535 GPM	72 HOURS

STATIC LEVEL (19-21)	WATER LEVEL END OF PUMPING (22-24)	WATER LEVELS DURING (25)	15 MINUTES (26-28)	30 MINUTES (29-31)	45 MINUTES (32-34)	60 MINUTES (35-37)
69.30 FEET	118.50 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	111.14 FEET	111.30 FEET	111.60 FEET	111.72 FEET

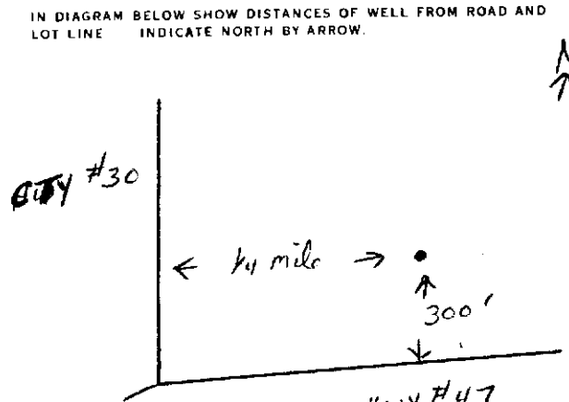
IF FLOWING, GIVE RATE (38-41)	PUMP INTAKE SET AT	WATER AT END OF TEST (42)
GPM	154 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (43-45)	RECOMMENDED PUMPING RATE (46-49)
☐ SHALLOW ☒ DEEP	154 FEET	GPM

(50-53)

LOCATION OF WELL

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



DRILLERS REMARKS: See Test Well #1, on Record #87096

87163

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 ☐ DEWATERING
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
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 ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Hart & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Charlie Duggan
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR: Charlie Duggan
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE (58)
CONTRACTOR (59-62): 2662
DATE RECEIVED (63-68): NOV 30 1990 (80)
DATE OF INSPECTION:
INSPECTOR:
REMARKS:
CSS.GS

FORM NO. 0506 (11/86) FORM 9

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Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
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11 1910883 MUNICIP 1901 2 CON. CON 91

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	ge (TW#1)	con. 1	13

DATE COMPLETED: DAY 17 MO 07 YR 90

[redacted].#2, Stouffville, Ontario

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Top Soil			0	1
Brown	Clay			1	10
Gray	Clay	Stones		10	33
Gray	Gravel silty			33	44
Gray	Silty Sand	Stones		44	112
Gray	Gravel			112	118
Gray	Clay stones silty			118	182
Gray	Sand Stones			182	192
Gray	Gravel			192	207
Gray	Clay	Stones	Hard drilling layers clay stones	207	238
Gray	Stones			238	240

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
15-18	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
20-23	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
25-28	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
30-33	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
10-11	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			13-16
17-18	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			20-23
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 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
FEET	FEET	FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: FEET

WATER AT END OF TEST: 1 ☐ CLEAR 2 ☐ CLOUDY

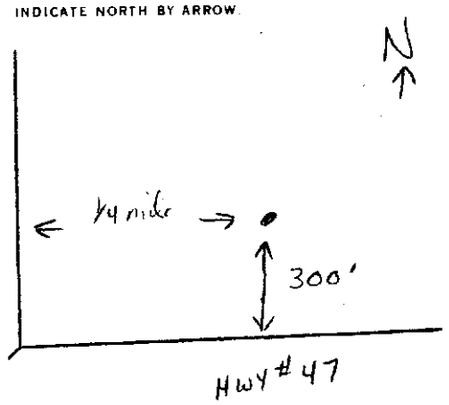
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP

RECOMMENDED PUMP SETTING: FEET

RECOMMENDED PUMPING RATE: GPM

LOCATION OF WELL

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



see #87163 for finished hole 87096

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: G. Hart & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Charlie Duggan
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR: Clark Waters
SUBMISSION DATE: DAY MO YR

OFFICE USE ONLY

DATA SOURCE
CONTRACTOR 2662
DATE RECEIVED NOV 30 1990
DATE OF INSPECTION
INSPECTOR
REMARKS
CSS. GS

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Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1911493

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11

MUNICIP 19012 CON. CON 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
Durham	Uxbridge (TW#2)	con. 1	13

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
454790 Ontario Ltd.	R.R.#2, Stouffville, Ontario	DAY 20 MO 07 YR 90

21 ZONE EASTING 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
Brown	Clay	Stones & Boulders		0	31
Brown	Gravel			31	44
Brown	Sand	Stones		44	84
Brown	Gravel		Dry	84	160
Brown	Gravel		Water Bearing	160	184
Brown	Gravel		Water Bearing cloudy	184	194
Gray	Clay stones			194	198
Gray	Gravel silty		Water Bearing	198	204
Gray	Clay Silt	Stones		204	224
Gray	Clay	Stones		224	225

31 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
15-18	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
20-23	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
25-28	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
30-33	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
10-11	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			13-16
17-18	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			20-23
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
10-13	14-17	
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

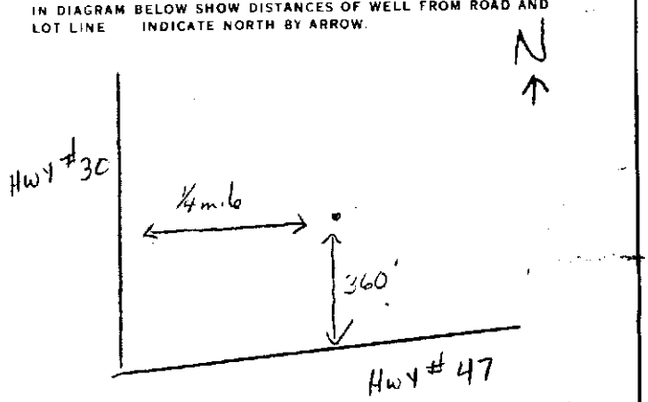
STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY	15 MINUTES FEET	30 MINUTES FEET	45 MINUTES FEET	60 MINUTES FEET
19-21	22-24		26-28	29-31	32-34	35-37

IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST 1 ☐ CLEAR 2 ☐ CLOUDY
38-41		42

RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
50-53	43-45	46-49

LOCATION OF WELL

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



87121

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 ☐ DEWATERING

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

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 ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: G. Hart & Sons Well Drilling Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 2662
ADDRESS: Box 850, R.R.#1, Fenelon Falls, Ontario
NAME OF WELL TECHNICIAN: Charlie Duggan
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY MO YR

OFFICE USE ONLY

DATA SOURCE 58
CONTRACTOR 59-62: 2662
DATE RECEIVED 63-66: JUL 06 1992
DATE OF INSPECTION
INSPECTOR
REMARKS

CSS.GS

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FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 — 1911495 — MUNICIP. 1,9,0,1,2 — CON. CON 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Durham	Uxbridge	con.1	13

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
454790 Ontario Ltd.	R.R.#2, Stouffville, Ontario	DAY 24 MO 09 YR 91

21 — UTM ZONE — EASTING — 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
Brown	Clay	Stones & Boulders		0	31
Brown	Gravel			31	44
Brown	Sand	Stones		44	84
Brown	Gravel			84	160
Brown	Gravel		water bearing	160	184
Brown	Gravel			184	194
Gray	Clay Stones			194	198
Gray	Gravel Silty			198	200
		* Production Well			

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
153	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 5 ☐ GAS — UNTESTED
200	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 5 ☐ GAS — UNTESTED
	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
20	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.250	+ 1	152
12	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.250	+ 2	152
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
32	12 INCHES	47 FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN
S.S.	153 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	150	Cement Grout

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	722 GPM	24 HOURS ____ MINS

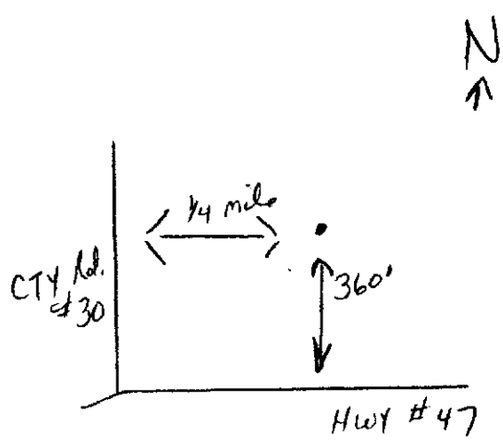
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
69.30 FEET	134.48 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	131.06 FEET	131.58 FEET	132.28 FEET	132.28 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	141.30 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	141.30 FEET	722 GPM

LOCATION OF WELL

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



*See Well Record#87121 TW2

DRILLERS REMARKS

116920

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	WELL CONTRACTOR'S LICENCE NUMBER
G. Hart & Sons Well Drilling Ltd.	2662

ADDRESS: Box#850, R.R.#1, Fenelon Falls, Ontario

NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER
Cecil Johnston	T-0275

SIGNATURE OF TECHNICIAN/CONTRACTOR: Claude Johnston

SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
	2662	JUL 06 1992

DATE OF INSPECTION | INSPECTOR

REMARKS

CSS: GS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 1912239 | MUNICIP. 19012 | CON. CON. | LOT 01

COUNTY OR DISTRICT: DURHAM REGION
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: UXBRIDGE TWP. (Uxbridge)
CON. BLOCK, TRACT, SURVEY ETC.: CON. 1 PLAN40R-1326 PT. 6
LOT: 12
[redacted]
2ND CON. RD.
DATE COMPLETED: DAY 19 MO 10 YR 94
RC | ELEVATION | RC | BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	CLAY			0	15
BROWN	SAND		LOOSE	15	60
GRAY	GRAVEL		PACKED	60	67
GRAY	SAND		FINE	67	115
GRAY	SAND		MED.	115	118

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
115-118	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	107
5	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	107	115
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.): # 12 | DIAMETER: 5 INCHES | LENGTH: 3 FEET
MATERIAL AND TYPE: STAINLESS STEEL | DEPTH TO TOP OF SCREEN: 115 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

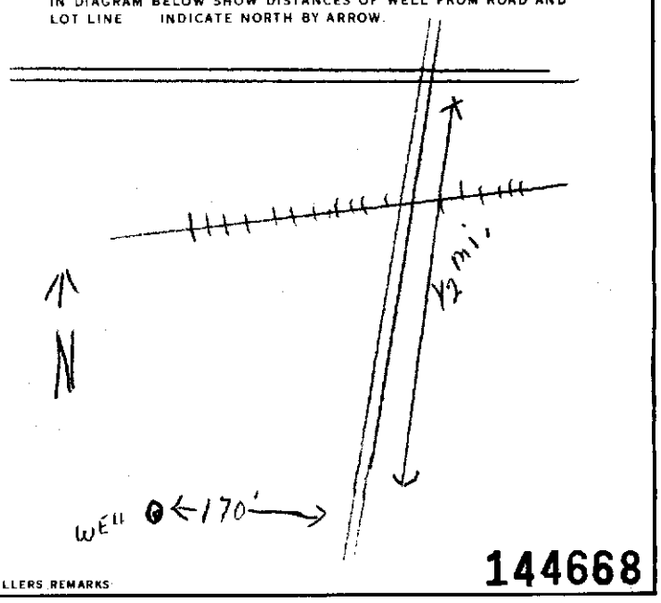
PUMPING TEST METHOD: AIR (1 ☐ PUMP 2 ☐ BAILER)
PUMPING RATE: 20 GPM
DURATION OF PUMPING: 1 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
33 FEET	117 FEET		117 FEET	117 FEET	117 FEET	117 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: 117 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 80-100 FEET
RECOMMENDED PUMPING RATE: 0-15 GPM

LOCATION OF WELL

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



DRILLERS REMARKS: 144668

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: E.S. WELL DRILLING
WELL CONTRACTOR'S LICENCE NUMBER: 4738
ADDRESS: GOODWOOD ONT.
NAME OF WELL TECHNICIAN: EARL SAUDER
WELL TECHNICIAN'S LICENCE NUMBER: T-0016
SIGNATURE OF TECHNICIAN/CONTRACTOR: Earl Sauder
SUBMISSION DATE: DAY 19 MO 10 YR 94

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR: 4738 | DATE RECEIVED: DEC 16 1994
DATE OF INSPECTION | INSPECTOR
REMARKS: CSC.ES

MINISTRY OF THE ENVIRONMENT COPY

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 1912952

Municipality 19012 Con. CON 01

County or District [redacted]

Township/Borough/City/Town/Village: Uxbridge

Con block tract survey, etc.: Con 1

Lot: 12

Address: Townline

Date completed: 28 day 8 month 96 year

21 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	clay		soft	0	27
Grey	sand		med	27	30

31

32

41 WATER RECORD

Water found at – feet	Kind of water
27	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 1/4	1 ☑ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	27
	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
14	6 inches	3 feet

Material and type: SS

Depth at top of screen: 27 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	18	Kolaplug

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☑ Bailer

Pumping rate: 30 GPM

Duration of pumping: 2 Hours 30 Mins

Static level: 2 feet

Water level end of pumping: 10 feet

Water levels during: 1 ☐ Pumping 2 ☐ Recovery

15 minutes	30 minutes	45 minutes	60 minutes
5 feet	10 feet	10 feet	10 feet

If flowing give rate: GPM

Pump intake set at: 20 feet

Water at end of test: ☐ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☑ Deep

Recommended pump setting: 20 feet

Recommended pump rate: 10 GPM

LOCATION OF WELL

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

166905

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: Wilson's Water Wells Ltd. Well Contractor's Licence No.: 5459

Address: 143241 Kennedy Rd

Name of Well Technician: Norm Rennie Well Technician's Licence No.: T0339

Signature of Technician/Contractor: Peter Wilson Submission date: 28 day 8 mo 96 yr

MINISTRY USE ONLY

Data source: Contractor 5459 Date received: SEP 11 1996

Date of inspection: Inspector

Remarks: CBS. BS

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0506 (07/94) Front 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) **1913495**

Municipality 19012 (10–14) Con. CON (15–22) 01 (23–24)

County or District [redacted]

Township/Borough/City/Town/Village: Uxbridge

Con block tract survey, etc.: Con 1

Lot: 12 (25–27)

Address: 2nd Con

Date completed (48–53): 25 day 11 month 97 year

Northing RC Elevation RC Basin Code (i 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
Black	Top Soil			0	2
Brown	Clay	Sand + Stones		2	20
Brown	Clay	Sandy		20	52
Brown	Sand + Gravel			52	58
Brown	Clay	Sand + Stones		58	65
Grey	Clay	Silty		65	95
Grey	Silt			95	114
Grey	Sand		Fine	114	118
Grey	Silt			118	

31
32

41 WATER RECORD

Water found at – feet	Kind of water
114 (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
6 5/8 (10–11)	1 ☑ Steel (12) 2 ☑ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	115 (13–16)
(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)
10	6 inches	3 feet

Material and type: S.S.

Depth at top of screen (41–44): 115 feet (30)

61 PLUGGING & SEALING RECORD

☑ Annular space ☐ Abandonment

Depth set at – feet From	Depth set at – feet To	Material and type (Cement grout, bentonite, etc.)
0 (10–13)	20 (14–17)	Benseal
(18–21)	(22–25)	
(26–29)	(30–33) (80)	

71 PUMPING TEST

Pumping test method (10): 1 ☐ Pump 2 ☑ Bailer

Pumping rate (11–14): 9 GPM

Duration of pumping (15–16) 3 Hours (17–18) ..... Mins

Static level (19–21): 60 feet

Water level end of pumping (22–24): 100 feet

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

15 minutes (26–28)	30 minutes (29–31)	45 minutes (32–34)	60 minutes (35–37)
100 feet	100 feet	100 feet	100 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

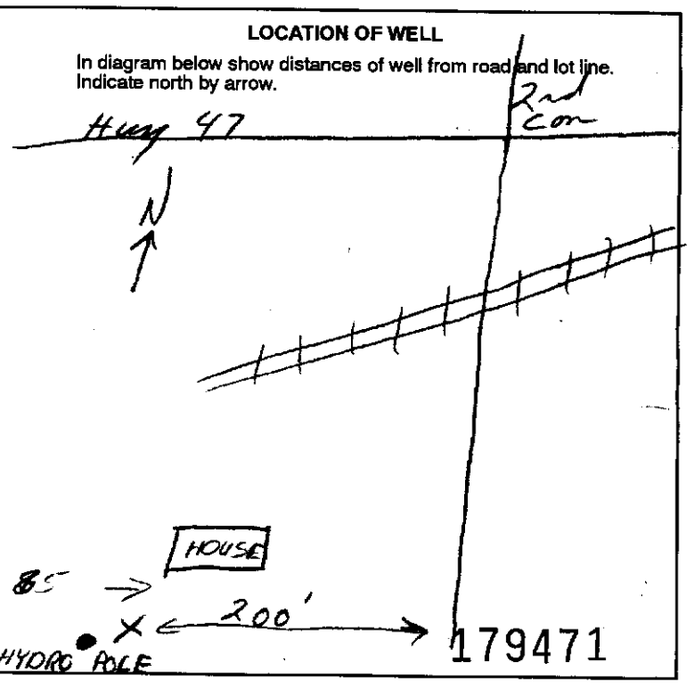
Recommended pump setting (43–45): 110 feet

Recommended pump rate (46–49): 9 GPM

(50–53)

LOCATION OF WELL

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



FINAL STATUS OF WELL (54)

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

WATER USE (55 56)

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

METHOD OF CONSTRUCTION (57)

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

Name of Well Contractor: Wilson Water Wells Ltd. — Well Contractor's Licence No.: 5459

Address: R.R. 4 Stouffville Ont.

Name of Well Technician: [signature] — Well Technician's Licence No.: 95-83

Signature of Technician/Contractor: Peter Wilson — Submission date: 5 day 1 mo 98 yr

MINISTRY USE ONLY

Data source (58) — Contractor: 5459 (59–62) — Date received (63–68): JAN 09 1998 (80)

Date of inspection — Inspector

Remarks

CSS.S8

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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 **1914668** Municipality 19012 Con. CON 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	Uxbridge	Con 1	11

Address: 2829 Townline — Date completed: 9 day, 8 month, 00 year

21 — 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	clay			0	18
Gray	"		soft	18	45
"	"		hard	45	58
"	"		soft	58	81
Brown	sand		coarse	81	88

31

32

41 WATER RECORD

Water found at - feet	Kind of water
81	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	82
	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 #14	6 inches	6 feet

Material and type: SS — Depth at top of screen: 82 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	20	Bentplug

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☒ Bailer — Pumping rate: 20 GPM — Duration of pumping: 1 Hours 30 Mins

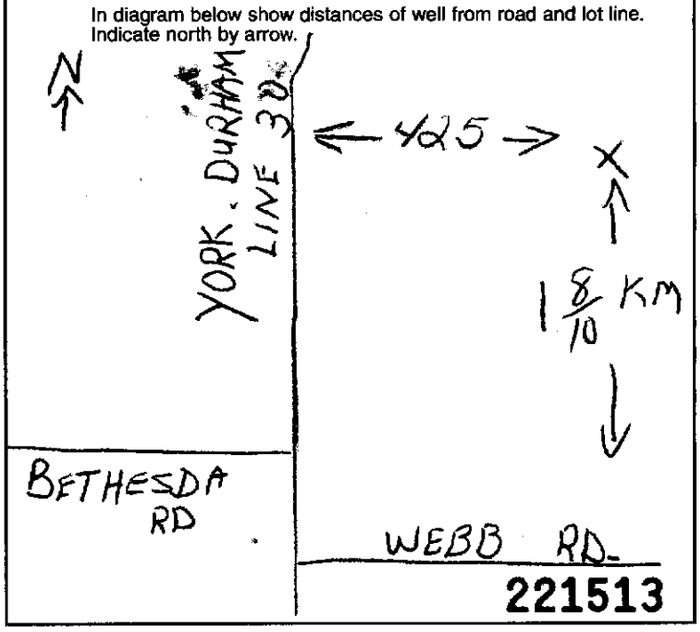
Static level	Water level end of pumping	Water levels during: 1 ☒ Pumping 2 ☐ Recovery — 15 minutes	30 minutes	45 minutes	60 minutes
6 feet	55 feet	45 feet	55 feet	55 feet	55 feet

If flowing give rate: GPM — Pump intake set at: 60 feet — Water at end of test: ☐ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep — Recommended pump setting: 60 feet — Recommended pump rate: 20 GPM

LOCATION OF WELL

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



221513

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 use 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.
Wilson water Wells	5459
Address: 13787 Hwy 48 Stouffville	
Name of Well Technician: M Rennie	Well Technician's Licence No.: 70339
Signature of Technician/Contractor: Peter Wilson	Submission date: day 12 mo 8 yr 00

MINISTRY USE ONLY

Data source 58 — Contractor 5459 59-62 — Date received AUG 21 2000 63-68

Date of inspection — Inspector

Remarks: CSS.ES0

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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 (1–2) **1915843** Municipality 19012 (10–14) Con. CON (15–22) 01 (23–24)

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Durham	Uxbridge	Con 1	Pt 10+11
[redacted]	Address 2nd Con	Date completed (48-53) 23 day 04 month 02 year	

21 (1–2) UTM (10–12–17–18–24) Northing (25) RC (26) Elevation (30) RC (31) Basin Code (i ii iii iv) (47)

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	Sand + Stones		2	48
Grey	Clay	Silty		48	75
Grey	Silt	Clay		75	143
Grey	Silt + Sand + Gravel			143	154
Grey	Clay		Soft	154	156
Brown	Sand			156	158
Grey	Clay	Stony		158	

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

41 WATER RECORD

Water found at - feet	Kind of water
156 (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
(10-11) 6 1/4	1 ☑ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	156 (13-16)
(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)
12	6 inches	3 feet
Material and type	**Depth at top of screen (41-44)**	(30)
S.S.	156 feet	

61 PLUGGING & SEALING RECORD

☑ Annular space ☐ Abandonment

Depth set at - feet From (10-13)	To (14-17)	Material and type (Cement grout, bentonite, etc.)
0	20	Bentonite Grout
(18-21)	(22-25)	
(26-29)	(30-33)	(60)

PUMPING TEST

71 Pumping test method (10): 1 ☐ Pump 2 ☑ Bailer

Pumping rate (11-14): 45 GPM

Duration of pumping (15-18): 1 Hours 30 Mins (17-18)

25 Water levels during: 1 ☑ Pumping 2 ☐ Recovery

Static level (19-21)	Water level end of pumping (22-24)	15 minutes (25-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
40 feet	120 feet	80 feet	120 feet	120 feet	120 feet

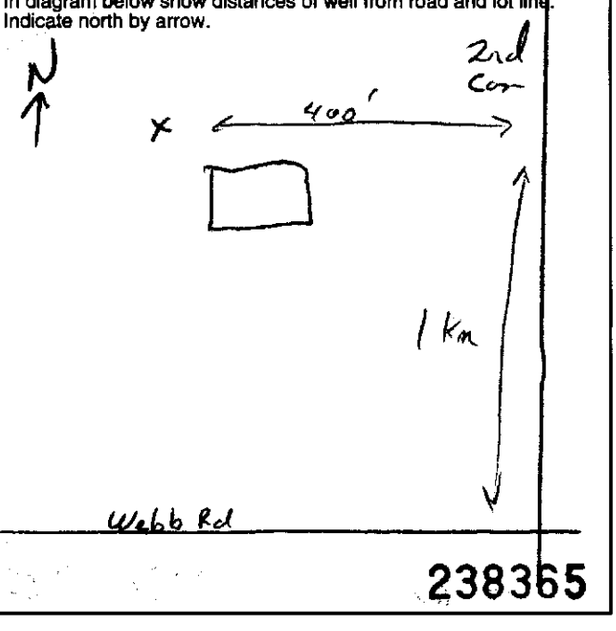
If flowing give rate (38-41)	Pump intake set at	Water at end of test (42)
GPM	feet	☑ Clear ☐ Cloudy

Recommended pump type	Recommended pump setting (43-45)	Recommended pump rate (46-49)
☐ Shallow ☑ Deep	140 feet	15 GPM

(50-53)

LOCATION OF WELL

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



238365

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.
Wilson Water Wells Ltd	5459
Address: Kyttonville	
Name of Well Technician	Well Technician's Licence No.
[signature]	01-83
Signature of Technician/Contractor	Submission date: day 25 mo 04 yr 02
[signature]	

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	5459	MAY 09 2002
Date of inspection	Inspector	
Remarks		CSS.ES2

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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 **1916255**

Municipality 19012 Con. CON Lot 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	UXBRIDGE	1	pt.12&13

Address of Well Location: 123 Hwy. 47 Uxbridge, ON

Date completed: 26 (day) 11 (month) 02 (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	Clay	Layered	0	40
Brown	Sand		Medium	40	55
Brown	Sand		Medium, Clean	55	89

31

32

41 WATER RECORD

Water found at - feet	Kind of water
89	1 [X] 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 [X] Steel 2 [ ] Galvanized 3 [ ] Concrete 4 [ ] Open hole 5 [ ] Plastic	188	0	83
	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
14 & 10	6 inches	6 feet

Material and type: Johnson S/S

Depth at top of screen: 83 feet

61 PLUGGING & SEALING RECORD

[X] Annular space [ ] Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
79	83	K. Packer top 4'
		screen nipple
0	20	Benseal

PUMPING TEST

71 Pumping test method: 1 [ ] Pump 2 [X] Bailer — AIR

Pumping rate: 70 GPM

Duration of pumping: 1 Hours ____ Mins

Static level	Water level end of pumping	Water levels during: 1 [X] Pumping 2 [ ] Recovery			
50 feet	75 feet	15 minutes: feet	30 minutes: feet	45 minutes: feet	60 minutes: 75 feet

If flowing give rate: GPM

Pump intake set at: 75 feet

Water at end of test: [X] Clear [ ] Cloudy

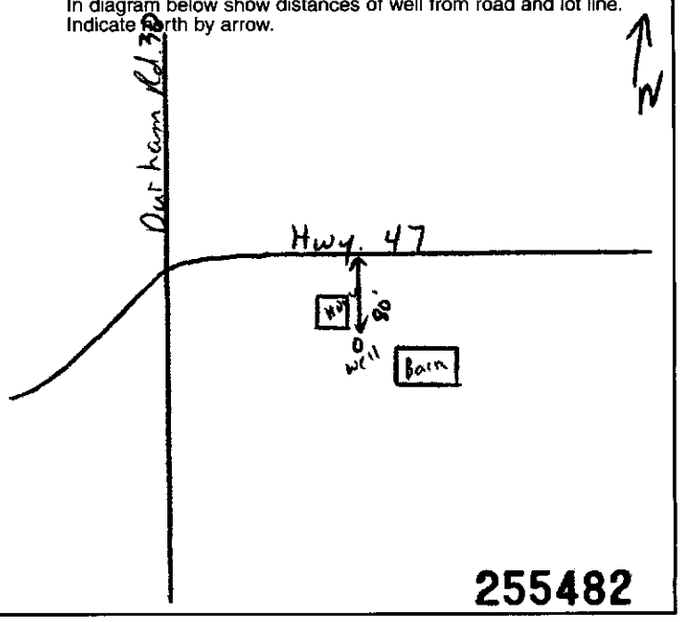
Recommended pump type: [ ] Shallow [X] Deep

Recommended pump setting: 75 feet

Recommended pump rate: 10 GPM

LOCATION OF WELL

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



255482

FINAL STATUS OF WELL

54

[X] 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

[X] 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 [X] 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.
Roger Boadway Ent., Ltd.	1413
Address	
Box 397 Sutton West, ON L0E 1R0	
Name of Well Technician	**Well Technician's Licence No.**
Grant Boadway	T0029
Signature of Technician/Contractor	**Submission date**
Roger Boadway	26 (day) 11 (mo) 02 (yr)

MINISTRY USE ONLY

Data source	Contractor	Date received
	1413	DEC 16 2002
Date of inspection	Inspector	
Remarks		

CSS.ES2

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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 — 1916758 — Municipality 19012 — Con. CON 01

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	Uxbridge	Con 1	12
	Address of Well Location: 3350 Con 2	Date completed: 14 day / 10 month / 03 year	03

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	clay	sandy		0	28
Brown	sand	silty		28	33
Brown	clay	sandy		33	48
Brown	sand	silt		48	56
Brown	sand	stones		56	96
Grey	clay	sand		96	133
Brown	sand	stones		133	159

31

32

41 WATER RECORD

Water found at - feet	Kind of water
146	1 ☑ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 5/8	1 ☑ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	146
	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
14 16	6 inches	6 feet

Material and type: 55 — Depth at top of screen: 146 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	53	Bentonite

71 PUMPING TEST

Pumping test method: 1 ☑ Pump 2 ☐ Bailer — Pumping rate: 12 GPM — Duration of pumping: 1 Hours ... Mins

25 Water levels during: 1 ☑ Pumping 2 ☐ Recovery

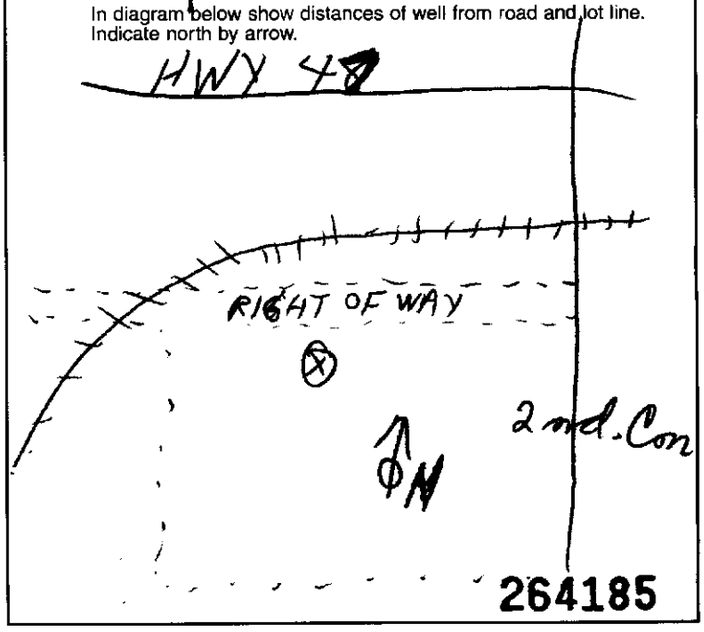
Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
37 feet	43 feet	42.8 feet	42.9 feet	42.95 feet	43 feet

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: ... feet — Recommended pump rate: ... 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 use 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.
Wilson Water Wells	5457
Address: 13787 HWY 48	
Name of Well Technician: Grant	Well Technician's Licence No. 0234
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source	Contractor	Date received
	5459	OCT 21 2003
Date of inspection	Inspector	
Remarks		

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0506 (06/02) Front Form 9

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below) A004952

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN 1901 2 CON CON 01 LOT 13

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR,Lot,Concession)
Durham	Region	

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
Durham		Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Uxville Conservation Park	Uxbridge	13	1

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.

GPS Reading: NAD 83 | Zone | Easting 641265 | Northing 4875281

Unit Make/Model | Mode of Operation: ☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
Brown	clay	sandy		0	30
Brown	sand	stones		30	56
Brown	clay	stones		56	92
Brown	sand	stones		92	161
Brown	clay	sandy		161	189
Brown	sand	stones		189	222

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	222'	6"

Water Record

Water found at ___ Metres / Kind of Water

___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
2 1/2"	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	1/4"	0	212
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam 2 1/2"	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	Slot No.	212	222
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs + ___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type, ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
If flowing give rate - (litres/min)	15		15	
If pumping discontinued, give reason.	20		20	
	25		25	
	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record ☑ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	205'	Bentonite	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☑ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☑ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☑ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: Nelson Water Wells | Well Contractor's Licence No.: 5459

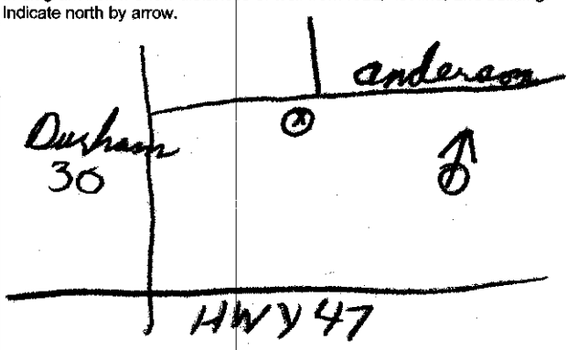
Business Address (street name, number, city etc.): 13787 HWY 48

Name of Well Technician (last name, first name): | Well Technician's Licence No.: 0234

Signature of Technician/Contractor: X | Date Submitted YYYY MM DD: May 04 05 17

Location of Well

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



Audit No. Z 05035 | Date Well Completed YYYY MM DD: 04 05 17

Was the well owner's information package delivered? ☐ Yes ☑ No | Date Delivered YYYY MM DD

Ministry Use Only

Data Source | Contractor: 5459

Date Received YYYY MM DD: JUL 08 2004 | Date of Inspection YYYY MM DD

Remarks | Well Record Number: 1917140

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below) A004953

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN 19012 CON ØN 01 LOT 13

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
Durham	Region	

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
Durham		Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Uxville Island Park	Uxbridge	13	1

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83		641264	4875282		☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Brown	clay	gravelly		0	31
Brown	sand	stones		31	57
Brown	clay	stones		57	93
Brown	sand	stones		93	122

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	122	6"

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas ☐ Other:
- ___ m ☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas ☐ Other:
- ___ m ☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
2½"	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	¼"	0	112
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam 2½"	☐ Steel ☐ Fibreglass ☑ Plastic ☐ Concrete ☐ Galvanized	Slot No.	112	122

No Casing or Screen ☐ Open hole

Test of Well Yield

Pumping test method	Draw Down Time (min)	Draw Down Water Level (Metres)	Recovery Time (min)	Recovery Water Level (Metres)
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs + ___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	105	Bentonite	

Method of Construction

☐ Cable Tool ☑ Rotary (conventional) ☐ Rotary (reverse) ☐ Rotary (air) ☐ Air percussion ☐ Boring ☐ Diamond ☐ Jetting ☐ Driving ☐ Digging ☐ Other

Water Use

☐ Domestic ☐ Stock ☐ Irrigation ☐ Industrial ☐ Commercial ☐ Municipal ☐ Public Supply ☑ Not used ☐ Cooling & air conditioning ☐ Other

Final Status of Well

☐ Water Supply ☑ Observation well ☐ Test Hole ☐ Recharge well ☐ Abandoned, insufficient supply ☐ Abandoned, poor quality ☐ Unfinished ☐ Dewatering ☐ Replacement well ☐ Abandoned, (Other)

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
Nilson Water Wells	5459

Business Address (street name, number, city etc.) 13282 HWY 48

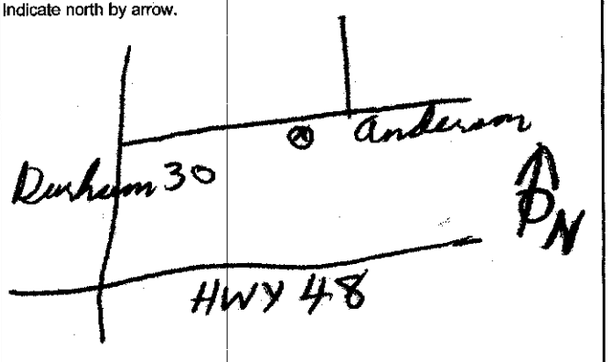
Name of Well Technician (last name, first name)	Well Technician's Licence No.
Grant	0237

Signature of Technician/Contractor X Grant

Date Submitted YYYY MM DD 04 05 17

Location of Well

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



Audit No. Z 05036

Date Well Completed YYYY MM DD 04 05 13

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered YYYY MM DD

Ministry Use Only

Data Source

Contractor 5459

Date Received JUL 08 2004 YYYY MM DD

Date of Inspection YYYY MM DD

Remarks

Well Record Number 1917141

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below): A022116

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of ___

Instructions for Completing Form

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

RR#/Street Number/Name: 2nd Con | City/Town/Village: Caledon | Site/Compartment/Block/Tract etc.:

GPS Reading: NAD 83 | Zone: 17 | Easting: 592659 | Northing: 4875150 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Brown	clay	sandy stone + silt		0	41
Brown	sandy			41	103
Brown	sand			103	162

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	147'	9 1/2"

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☑ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
6 5/8	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.188	0	141'
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam		Slot No.		
6	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	18	141'	147'
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method: Jet

Pump intake set at (metres): 130'

Pumping rate (litres/min): 10 gpm

Duration of pumping: 1 hrs + ___ min

Final water level end of pumping: 54.0 metres

Recommended pump type: ☐ Shallow ☑ Deep

Recommended pump depth: ___ metres

Recommended pump rate (litres/min):

If flowing give rate (litres/min):

If pumping discontinued, give reason:

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		47.2		
1		50.8	1	
2		52.4	2	
3		53.3	3	
4		53.7	4	
5		53.9	5	
10		54.0	10	
15		54.0	15	
20		54.0	20	
25		54.0	25	
30		54.0	30	
40		54.0	40	
50		54.0	50	
60		54.0	60	

Plugging and Sealing Record ☐ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	83'	Bentonite	
83'	141'	Slurry	

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☑ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☑ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: Wilson Water Wells | Well Contractor's Licence No.: 5459

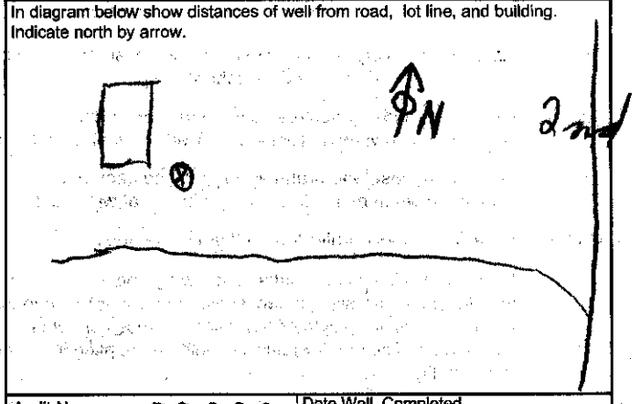
Business Address (street name, number, city etc.): 13787 HWY 48

Name of Well Technician (last name, first name) | Well Technician's Licence No.: 0234

Signature of Technician/Contractor: x [signature] | Date Submitted: YYYY MM DD

Location of Well

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



Audit No.: Z 22444 | Date Well Completed: YYYY MM DD

Was the well owner's information package delivered? ☐ Yes ☐ No | Date Delivered: YYYY MM DD

Ministry Use Only

Data Source | Contractor: 5459

Date Received: JUL 13 2005 MM DD | Date of Inspection: YYYY MM DD

Remarks: REPORTED VIA PHONE DWC 2005/06/07 | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

UTM 17 Z 614170 E
N 5 R 4873894 N

Elev. 6 R

Basin 29

46 No. 2710

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Ontario Township, Village, Town or City Uxbridge

Con. 1 Lot 10 Date completed 8 (day) oct (month) 1966 (year)

[redacted] dress RR 3 Stouffville

Casing and Screen Record

Inside diameter of casing 5 1/4"

Total length of casing 82'

Type of screen slot #6 Johnson stainless steel

Length of screen 8'

Depth to top of screen 67'

Diameter of finished hole 4" I.D. NIPPLE

Pumping Test

Static level 17'

Test-pumping rate 3 G.P.M.

Pumping level 70'

Duration of test pumping 2 hrs

Water clear or cloudy at end of test clear

Recommended pumping rate 3 G.P.M.

with pump setting of 72' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
surface clay & stone	0	18		
soft blue clay	18	42		
fine sand & clay	42	70		
clean fine sand	70	82	82	fresh

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

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

Drilling or Boring Firm P. F. Broadway

Address Sutton West Ont

Licence Number 2019

Name of Driller or Borer P. F. Broadway

Address Sutton

Date Oct 8/66

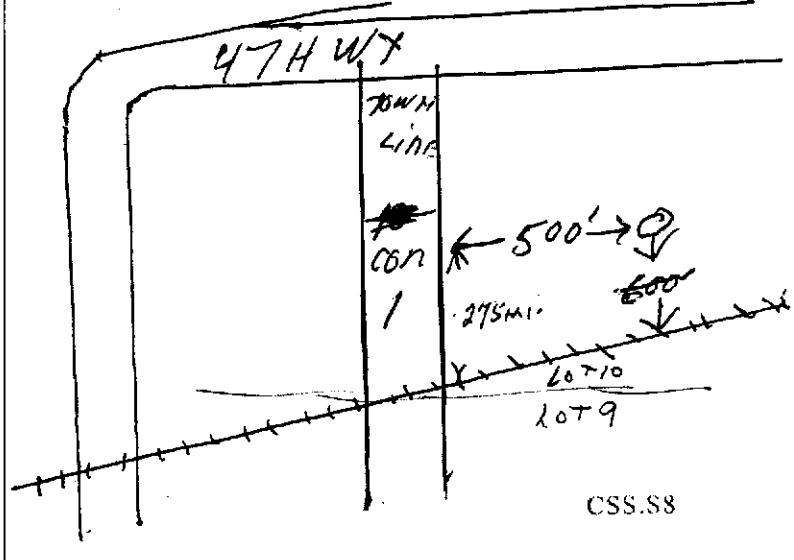
P. F. Broadway
(Signature of Licensed Drilling or Boring Contractor)

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.



CSS.S8

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

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11 | 4604231 | MUNICIP. 46009 | CON. Con 01

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
ONTARIO	UXBRIDGE	1	012

OWNER (SURNAME FIRST) 28-47	ADDRESS	DATE COMPLETED 48-53
CENTURY CITY	12 Sheppard Ave Toronto	DAY 16 MO 10 YR 69

21 UTM ZONE 17 EASTING 641550 NORTHING 4874470 RC. 4 ELEVATION 965 RC. 6 BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	TO
Brown	Top soil			0'	1'
Brown	Clay	sand + gravel	dense	0'	15'
Brown	Sand	gravel + boulders	loose	15'	21'
Grey	Clay	sand + gravel	dense	21'	44'
Grey	Silt		soft	44'	51'
Grey	Clay	sand + gravel	layered	51'	55'
Grey	Clay	silt, sand + gravel	layered	55'	73'
Brown	Sand	gravel, clay	packed	73'	81'
Grey	Clay	gravel	hard	81'	140'

31 | 0001 002 | 0015 6 05 09 11 | 0021 6 09 11 13 | 0044 4 05 09 11 | 0051 2 06 | 0055 2 05 09 11

32 | 0073 2 05 06 09 | 0081 6 09 11 05 | 0140 2 05 11

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0015	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	TO
06"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~			
	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
NA	INCHES	FEET

MATERIAL AND TYPE: NA — DEPTH TO TOP OF SCREEN: FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
	NA	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
~~PUMP~~ NA ~~BAILER~~	~~Flow~~ GPM	~~NA~~ HOURS MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
ABOVE GROUND FEET	NA FEET	FEET	NA FEET	FEET	FEET

IF FLOWING, GIVE RATE: 0003 GPM. | PUMP INTAKE SET AT: NA FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW NA ☐ DEEP | RECOMMENDED PUMP SETTING: NA FEET | RECOMMENDED PUMPING RATE: NA GPM.

50-53 ABANDONED FOR CITY SITE

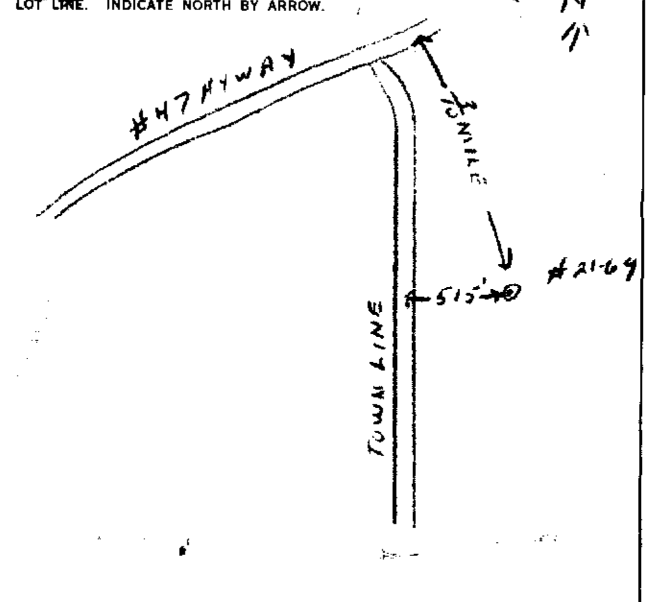
FINAL STATUS OF WELL: 1 ☐ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☒ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ~~ABANDONED, INSUFFICIENT SUPPLY~~ 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 09: 1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION NA 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: International Water Supply Co — LICENCE NUMBER: 3397

ADDRESS: 12 Maitland St. London

NAME OF DRILLER OR BORER: Howard Peterman — LICENCE NUMBER: —

SIGNATURE OF CONTRACTOR: [signature] — SUBMISSION DATE: DAY 20 MO. Nov YR. 69

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 2801 | DATE RECEIVED 011269

DATE OF INSPECTION | INSPECTOR P/C office loc.

REMARKS: CSS.S8

J.B

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WATER WELL RECORD

Water management in Ontario

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COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
ONTARIO	UXBRIDGE	1	72 012

OWNER (SURNAME FIRST) 28-47	ADDRESS	DATE COMPLETED 48-53
CENTURY CITY	12 Sheppard St Toronto	DAY 03 MO 10 Oct YR 69

21 | UTM ZONE 17 | EASTING 641600 | NORTHING 4874520 | RC. 4 | ELEVATION 1065 | RC. 6 | BASIN CODE 2H

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	TO
Brown	Clay	gravel	dense	0'	11'
Brown	Sand	gravel	loose	11'	18'
Brown	Sand	gravel & clay	packed	18'	34'
Grey	Clay	sand	soft.	34'	108'
Grey	Clay	sand, gravel	dense	108'	129'
Grey	Clay	gravel	packed	129'	253'
Grey	Gravel	clay	packed	253'	270'
Grey	Clay	gravel	packed	270'	285'
Grey	Gravel	clay	packed	285'	300'
Grey	Clay	gravel	packed	300'	305'

31 | 0011605 11 | 0018609 11 | 0034609 1105 | 0108120509 | 0129120509 11 | 0253120511 | 1

32 | 0270211105 | 0285120511 | 0300211105 | 0305120511

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0034'	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	TO
04	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		0'	34 0034
	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.): 125 (slot) | DIAMETER: 04.000 INCHES | LENGTH: 07' FEET

MATERIAL AND TYPE: Steel | DEPTH TO TOP OF SCREEN: 0034 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
NA		

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER | PUMPING RATE: 0002 GPM. | DURATION OF PUMPING: 01 HOURS 00 MINS.

STATIC LEVEL: 024 FEET | WATER LEVEL END OF PUMPING: 12 FEET | WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY | 15 MINUTES: NA FEET | 30 MINUTES: FEET | 45 MINUTES: FEET | 60 MINUTES: FEET

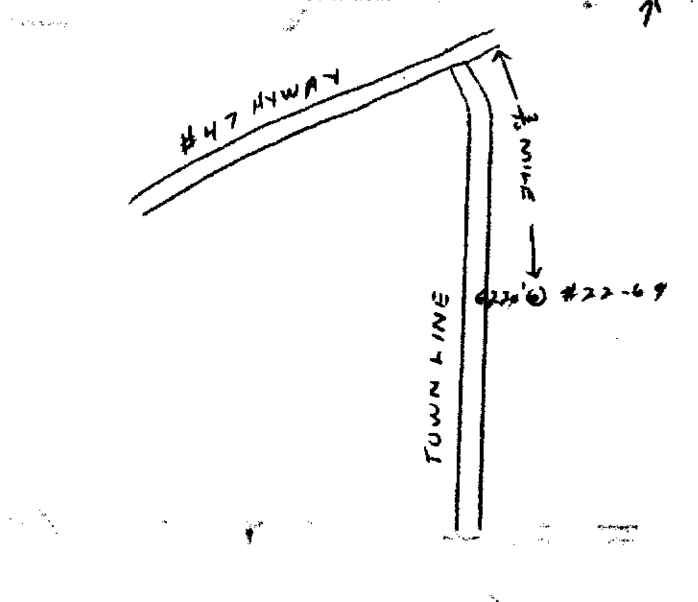
IF FLOWING, GIVE RATE: NA GPM. | PUMP INTAKE SET AT: 30 FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW NA ☐ DEEP | RECOMMENDED PUMP SETTING: NA FEET | RECOMMENDED PUMPING RATE: NA 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: 1 ☐ WATER SUPPLY 2 ☒ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 09: 1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL NA ☐ 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

CONTRACTOR

NAME OF WELL CONTRACTOR: International Water Supply Co | LICENCE NUMBER: 3397

ADDRESS: 12 Maitland St. London

NAME OF DRILLER OR BORER: Howard Peterman | LICENCE NUMBER: —

SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 29 MO Nov YR 68

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 2801 | DATE RECEIVED: 011269

DATE OF INSPECTION: | INSPECTOR: [signature]

REMARKS: CSS.S8

J.B.

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3D3b

UTM: 17 z 641384 E
9 R 4874367 N
Co. - x
Elev. 9 R 1025
Basin 24

No. 69 8478

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District: York
Township, Village, Town or City: WHITCHURCH-STOUFFVILLE Whitchurch
Date completed: 7 (day) Aug (month) 63 (year)

[redacted] RR#3 Stouffville

Casing and Screen Record

Inside diameter of casing: 34"
Total length of casing: 30'
Type of screen:
Length of screen:
Depth to top of screen:
Diameter of finished hole: 34"

Pumping Test

Static level: 15'
Test-pumping rate: 3 G.P.M.
Pumping level:
Duration of test pumping:
Water clear or cloudy at end of test: clear
Recommended pumping rate: 2 G.P.M.
with pump setting of 27 feet below ground surface

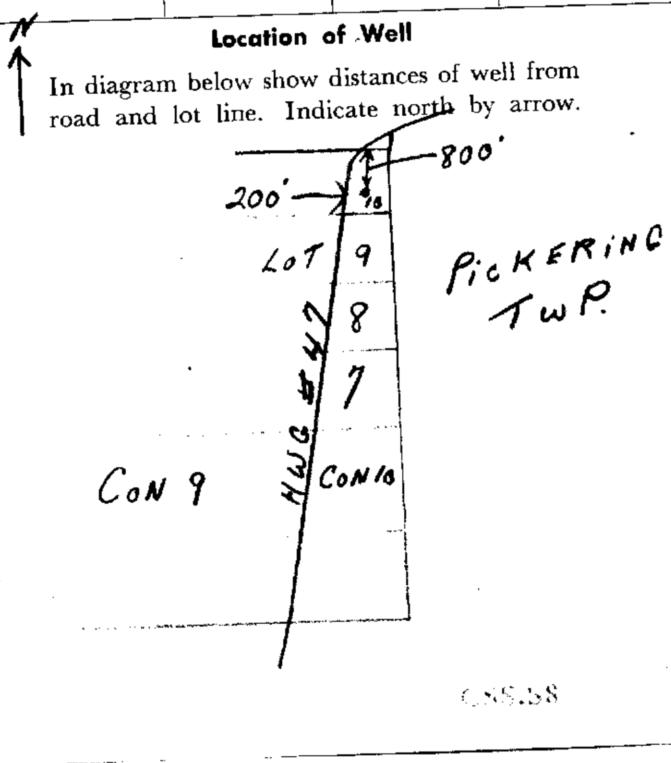
Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
Dark topsoil sandy	0	1		
yellow sandy clay	1	9		
Blue sandy clay	9	22		
gravel & boulders 6-12"	22	25	25	fresh
grey clay	25	29		

For what purpose(s) is the water to be used? farm
Is well on upland, in valley, or on hillside? hillside
Drilling or Boring Firm: Wilsons' Well Digging
Address: RR#2 Goodwood Ont
Licence Number: 1002
Name of Driller or Borer: same
Address:
Date: Aug 14/63
William Wilson
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7 10M-62-1152

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CSS.58

31D/3E
b

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WATER WELL RECORD

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6909956

MUNICIP.	CON.
69009	CON 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	WITCHURCH / WHITCHURCH-STOUFFVILLE	CON 10	010

DATE COMPLETED: DAY 27 MO. 04 YR. 70

[redacted] TouFFVILLE

	RC.	ELEVATION	RC.	BASIN CODE
74450	4	1075	5	24

21 641150 4874450 4 1075 5

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	TO
brown	clay	some stones	surface	0'	18'
brown	gravel	some sands	loose	18'	39'
brown	sand	coarse	loose	39'	50'

31 | 0018 clay 12 | 0039 GRVL 09 | 0050 SAND

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0039 ~~39-50~~	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
34 ~~34~~	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☒ CONCRETE 4 ☐ OPEN HOLE	2½"	0'	~~50~~ 0050
	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.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER

PUMPING RATE: ~~No test~~ GPM.

DURATION OF PUMPING: HOURS MINS.

STATIC LEVEL: 040 FEET

WATER LEVEL END OF PUMPING: ~~50~~ FEET

WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY

15 MINUTES / 30 MINUTES / 45 MINUTES / 60 MINUTES: ~~over night~~

IF FLOWING, GIVE RATE: GPM.

PUMP INTAKE SET AT: FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

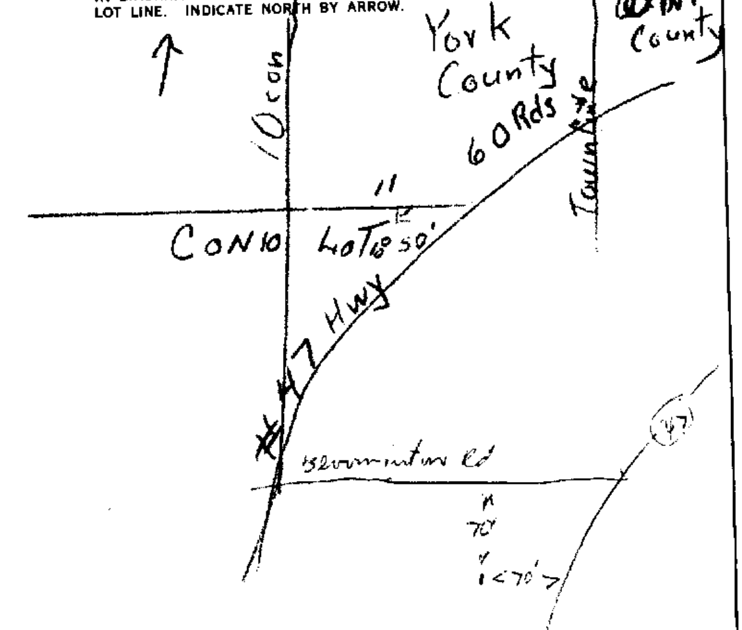
RECOMMENDED PUMP SETTING: 045 FEET

RECOMMENDED PUMPING RATE: 0008 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

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Wilson Water Wells Limited — LICENCE NUMBER: 5459

ADDRESS: R. R. #2 Gormley

NAME OF DRILLER OR BORER: Abner Sauder — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: William Wilson — SUBMISSION DATE: DAY 20 MO. 07 YR. 70

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 5459 — DATE RECEIVED: 270770

DATE OF INSPECTION: — INSPECTOR: P.F.

REMARKS:

J.B.

OWRC COPY

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WATER WELL RECORD

Water management in Ontario

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(11) 6914906 MUNICIP. 69009 CON. CON 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
YORK	Whitchurch	9th Con 1X	9 010

[redacted] RI-STOUFFVILLE.

DATE COMPLETED 06 DAY 29 MO. June YR. 78

[redacted] 574350 RC 5 ELEVATION 1075 RC. 5 BASIN CODE 24

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	TO
	clay			0	15
	gravel			15	30
	sand			30	40
	gravel sand			40	50

31 0015 05 | 0030 11 | 0040 28 | 0050 28

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0040	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
02	1 ☐ STEEL 2 ☒ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	1/8		
	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.) 060 DIAMETER 01.250 INCHES LENGTH 05 FEET

MATERIAL AND TYPE Brass DEPTH TO TOP OF SCREEN 0045 FEET

PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
~~0~~	~~00~~	

71 PUMPING TEST

PUMPING TEST METHOD 1 ☒ PUMP 2 ☐ BAILER PUMPING RATE 0005 GPM DURATION OF PUMPING 02 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
FEET	FEET	FEET	FEET	FEET	FEET

WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY

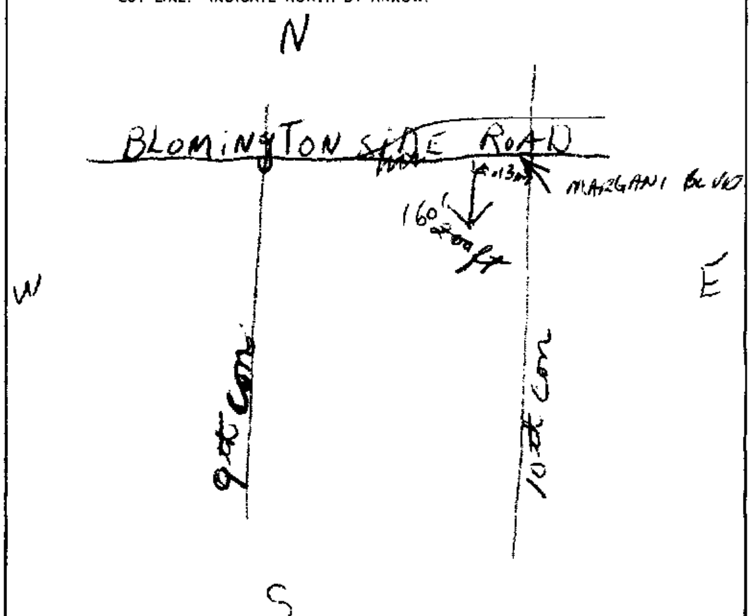
IF FLOWING, GIVE RATE GPM. PUMP INTAKE SET AT FEET. WATER AT END OF TEST 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP. RECOMMENDED PUMP SETTING 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 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: TOM WHITE — LICENCE NUMBER 5417

ADDRESS: RR 2 STOUFFVILLE

NAME OF DRILLER OR BORER — LICENCE NUMBER

SIGNATURE OF CONTRACTOR: Tom White — SUBMISSION DATE DAY 24 MO. Jan. YR. 79

OFFICE USE ONLY

DATA SOURCE 1 CONTRACTOR 5417 DATE RECEIVED 070279

DATE OF INSPECTION — INSPECTOR

REMARKS: loc only 05/12/79

P 58

WI

WRC COPY

Ministry of the Environment
Ontario

31D/3E

The Ontario Water Resources Act 3103E.

WATER WELL RECORD

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

11 6915214 MUNICIP 69009 CON. CON 10

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
[redacted]	[redacted]TCHURCH STOUFFVILLE	CON10	009

[redacted] R.R.#3 STOUFFVILLE

DATE COMPLETED: DAY 05 MO 10 OCT. YR 79

[redacted] 74000 RC 5 ELEVATION 1025 RC 5 BASIN CODE 24

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	30
BROWN	SAND		LOOSE	30	35
GRAY	GRAVEL	CLAY	LOOSE	35	42
GRAY	CLAY	SAND	SOFT	42	108
GRAY	CLAY	SAND	HARD	108	130
GRAY	SAND		MEDIUM WATERBEARING	130	138

31 0030 23 | 0035 628 77 | 0042 211 0577 | 0108 205 2855 | 0130 205 2873 | 0138 2099 11

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
~~100~~ ~~138~~ 0100	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
~~6 1/4~~ 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	~~0~~	0135
	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
~~#16~~ 016	06000 INCHES	03 FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN
JOHNSON S. STEEL	0135 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: 0015 GPM
DURATION OF PUMPING: 01 HOURS 00 MINS

STATIC LEVEL: 016 FEET
WATER LEVEL END OF PUMPING: FEET
WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
040 FEET	--- FEET	--- FEET	040 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 ~~35-40~~ FEET
RECOMMENDED PUMPING RATE: 0005 ~~5-15~~ GPM

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

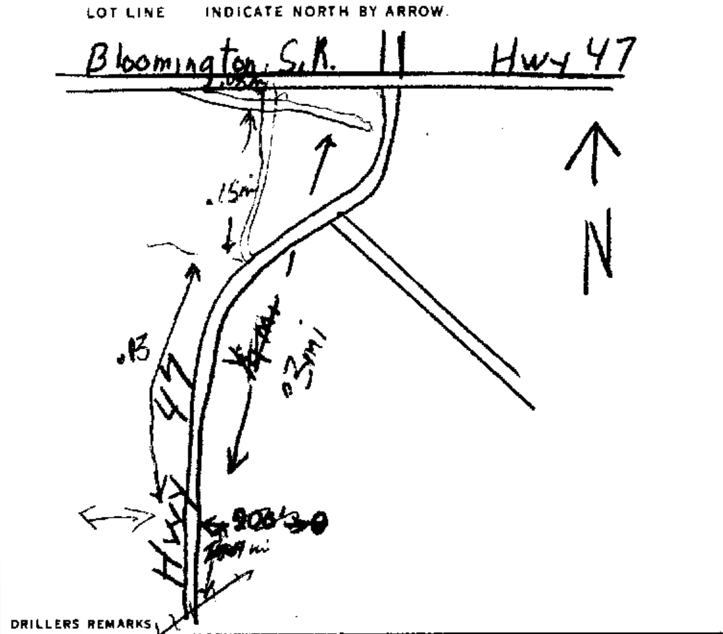
1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
☐ OTHER
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
9 ☐ NOT USED

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

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: E.S. WELL DRILLING — LICENCE NUMBER 4738
ADDRESS: 487 ELM RD. STOUFFVILLE
NAME OF DRILLER OR BORER: EARL SAUDER — LICENCE NUMBER
SIGNATURE OF CONTRACTOR: Earl Sauder
SUBMISSION DATE: DAY 27 MO. 11 YR. 79

OFFICE USE ONLY

DATA SOURCE: 1 CONTRACTOR: 4738 DATE RECEIVED: 29 1179
DATE OF INSPECTION: 06/10/80 INSPECTOR:
REMARKS: CSS.S8 Not plotted properly card lot

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506-4-77

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 6920326 MUNICIP 69009 CON. CON 109

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC	LOT
York	Whitchurch + Stouffville	9	11
[redacted]	RR 1 Stouffville	DATE COMPLETED DAY 26 MO 10 YR 88	

RC ELEVATION RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Clay	Fill		0	6'
Brown	Sand	Fine		6'	32'
Blue	Clay			32'	80'
Blue	Sand	Coarse		80'	93'

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
80	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & ~~OPEN~~ HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	188	0	79
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
10	6 INCHES	4 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN	
55	89 FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
0	12	Bentseal T Hole Plug

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	15 GPM	2 HOURS MINS

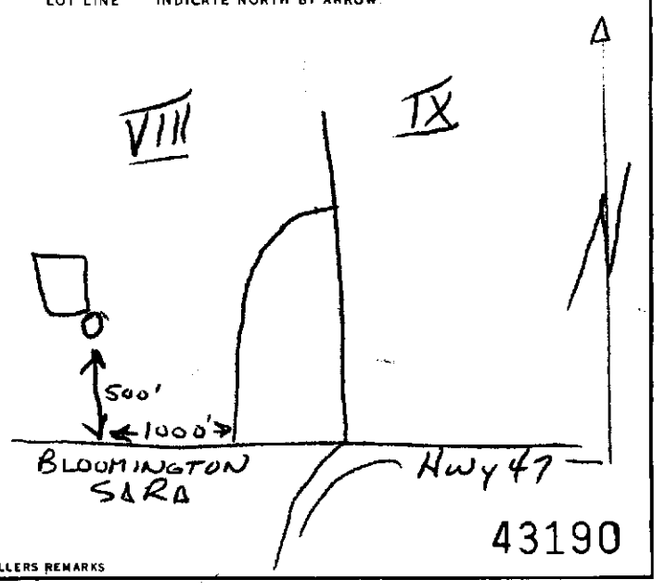
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING 1 ☐ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
54 FEET	80 FEET		60 FEET	71 FEET	8 FEET	80 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	80 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	80 FEET	15 GPM

LOCATION OF WELL

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



43190

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 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING ☐ OTHER 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: Gormley Well Drilling
WELL CONTRACTOR'S LICENCE NUMBER: 7409
ADDRESS: RR1 Richmond Hill
NAME OF WELL TECHNICIAN: Wm Bishop
WELL TECHNICIAN'S LICENCE NUMBER: 7661
SIGNATURE OF TECHNICIAN/CONTRACTOR: Bill Bishop
SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 2407 | DATE RECEIVED APR 27 1989
DATE OF INSPECTION | INSPECTOR
REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 | 6922709 | MUNICIP. 69009 | CON. CON | LOT 10

COUNTY OR DISTRICT [redacted] | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Whitchurch | CON., BLOCK, TRACT, SURVEY, ETC Con 10 | LOT 10

Old 47 | DATE COMPLETED DAY 5 MO 7 YR 94

RC. | ELEVATION | BC. | BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	clay	sand		0	18
"	sand			18	32
"	gravel			32	37
"	sand		coarse	37	46
"	"	clay		46	51
Brown	sand		coarse	51	64

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
51	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	61
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
18	6	5

MATERIAL AND TYPE: SS | DEPTH TO TOP OF SCREEN: 61 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	20	Holeplug

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE: 20 GPM | DURATION OF PUMPING: 1 HOURS 00 MINS

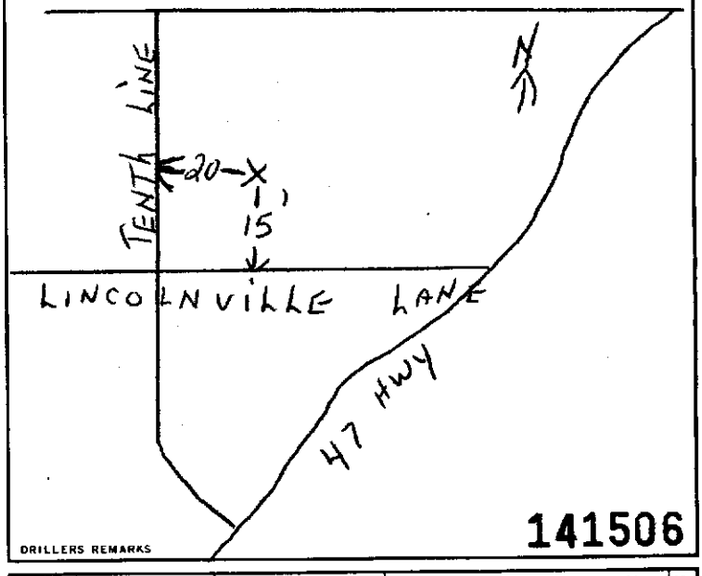
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
30 FEET	55 FEET		45 FEET	50 FEET	55 FEET	55 FEET

IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: 55 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 55 FEET | RECOMMENDED PUMPING RATE: 10 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

141506

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: Wilson water wells | WELL CONTRACTOR'S LICENCE NUMBER: 5459

ADDRESS: RR#4 Stouffville

NAME OF WELL TECHNICIAN: Norm Rempel | WELL TECHNICIAN'S LICENCE NUMBER: 10359

SIGNATURE OF TECHNICIAN/CONTRACTOR: Pete Wilson | SUBMISSION DATE: DAY 6 MO. 7 YR. 94

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 5459 | DATE RECEIVED JUL 12 1994

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) 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 **6925399** Municipality 69009 Con CON 09

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
York	W Hutchinson Stouffville	Con 9	12
[redacted]	Address 10TH Line	Date completed 9 day 6 month 00 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	Topsoil			0	1
Brown	clay		soft	1	19
Gray	"		"	19	21
Brown	gravel	stones		21	24
"	clay	sand		24	50
"	gravel		coarse	50	58
"	clay	sand		58	74
"	silt		fine	74	100
Brown	sand		fine	100	108

31

32

41 WATER RECORD

Water found at - feet	Kind of water
100	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	102
	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
10	6 inches	6 feet
Material and type	**Depth at top of screen**	
SS	102 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	20	Benseal

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☒ Bailer
Pumping rate: 10 GPM
Duration of pumping: 1 Hours 30 Mins

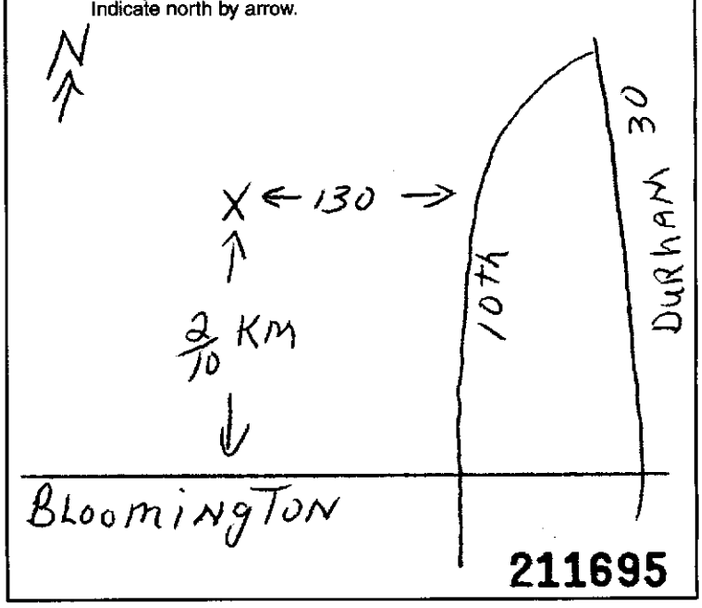
Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☐ Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
55 feet	75 feet	70 feet	75 feet	75 feet	75 feet

If flowing give rate	Pump intake set at	Water at end of test
GPM	75 feet	☒ Clear ☐ Cloudy

Recommended pump type	Recommended pump setting	Recommended pump rate
☐ Shallow ☒ Deep	75 feet	10 GPM

LOCATION OF WELL

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



211695

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 use; 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.
Wilson water Wells	5459
Address	
13787 Hwy 48 Stouffville	
Name of Well Technician	**Well Technician's Licence No.**
Tom Renwick	70339
Signature of Technician/Contractor	**Submission date**
Peter Wilson	day 12 mo 6 yr 00

MINISTRY USE ONLY

Data source 58 | Contractor 5459 | Date received JUN 20 2000

Date of inspection | Inspector

Remarks

CSS.ES0

0506 (11/98) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

Ontario — Ministry of the Environment

Well Tag Number (Place sticker and print number below): A001501 / A001501

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR,Lot,Concession)
York Region		C/O Jagger Hims Ltd 1091 Gorham St

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
York	Newmarket	Ontario	L3Y 7V1	

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
York	Whitchurch-Stouffville	10	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Lincolnville Lane		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	640937	4874632	Magellan	☐ Undifferentiated ☐ Differentiated, specify ☒ Averaged

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (Metres)	Depth To (Metres)
Black	Topsoil			0	2
Brown	Silty clay & gravel			2	11
Brown	Silty sand & gravel trace clay			11	21
Brown	Silty sand			21	26
Brown	silty sand & gravel			26	37
Brown	Sand & gravel			37	94
Grey	Silty sand	some gravel	water bearing	94	110
Grey	sand & gravel		water bearing	110	113
Grey	sand	some gravel	water bearing	113	126
Grey	sand & gravel		water bearing	126	137

Hole Diameter

Depth From (Metres)	Depth To (Metres)	Diameter (Inches)
0	137	6"

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Salty ☐ Minerals ☐ Gas ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Salty ☐ Minerals ☐ Gas ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Salty ☐ Minerals ☐ Gas ☐ Other:

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam (centimetres / Inches)	Material	Wall thickness (centimetres / Inches)	Depth From (Metres)	Depth To (Metres)
Casing				
2"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	SCH 40	+3	107
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam: 2"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.: SCH 40	107	137
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level (Metres)	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level	39		
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at (Metres) From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
137	103½	Silica Sand	
103½	97	Bentonite Chips	
97	2	Bentonite Slurry & Chips	
2	0	Cement	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☒ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☒ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling Ltd	T-2662

Business Address (street name, number, city etc.): P.O. Box 850 Fenelon Falls Ontaario

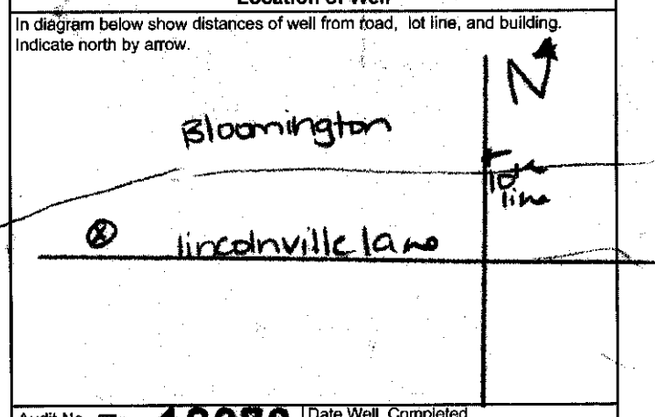
Name of Well Technician (last name, first name)	Well Technician's Licence No.
Watson, Bryan	T-2441

Signature of Technician/Contractor: X [signature]

Date Submitted: YYYY MM DD

Location of Well

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



Audit No. Z 18670

Date Well Completed: YYYY 2003 MM 12 DD 01

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered: YYYY MM DD

Ministry Use Only

Data Source	Contractor 2662
Date Received YYYY MM DD: APR 20 2005	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario | Ministry of the Environment

Well Tag Number: A 001502 / A001502

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

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- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
York Region		C/O Jagger Hims Ltd 1091 Gorham St

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Newmarket	Ontario	L3Y 7V1	

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
York Region	Whitchurch-Stouffville	10	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Lincolnville Lane		

GPS Reading: NAD 83 | Zone 17 | Easting 640936 | Northing 4874629 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (Metres)	Depth To (Metres)
Black	Topsoil			0	2
Brown	Silty Clay & Gravel			2	13
Brown	Silty sand & Gravel	Trace Clay		13	19
Brown	Silty sand & Gravel			19	28
Brown	Silty sand & Gravel	Trace Clay		28	38
Brown	Sand & Gravel		water bearing	38	65

Hole Diameter

Depth From (Metres)	Depth To (Metres)	Diameter (Inches)
0	65	6"

Water Record

Water found at ___ Metres	Kind of Water
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam (Inches)	Material	Wall thickness (InChes)	Depth From (Metres)	Depth To (Metres)
Casing				
2"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Sch 40	+3	
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
2"		sch 40	40	65

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level (Metres)	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level	39		
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs + ___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
If flowing give rate - (litres/min)	15		15	
If pumping discontinued, give reason.	20		20	
	25		25	
	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
65	37	Silica Sand	
37	21	Bentonite Chips	
21	2	Bentonite Slurry	
2	0	Cement	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

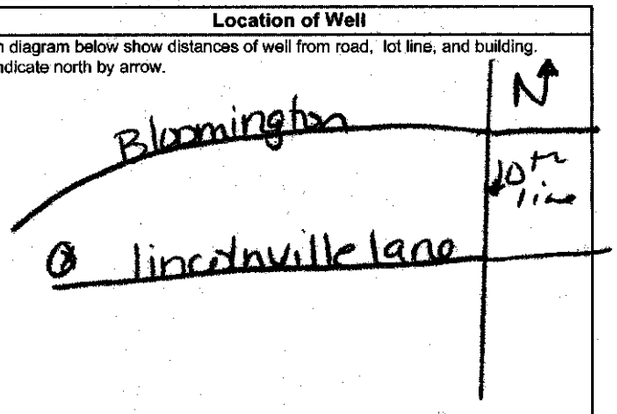
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☒ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☒ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



Audit No. Z 18673

Date Well Completed: YYYY 2003 MM 11 DD 01

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered: YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling LTd	2662

Business Address (street name, number, city etc.): P.O. Box 850 Fenelon Falls OntarioK0M 1N0

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Watson,Bryam	T-2441

Signature of Technician/Contractor: x Clark — Date Submitted: YYYY MM DD

Ministry Use Only

Data Source	Contractor
	2662
Date Received: YYYY MM DD APR 20 2005	Date of Inspection: YYYY MM DD
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

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 (1 2) SHEET 1 of 2

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

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
York	Whitchurch-Stouffville	Con.9	10

Owner's surname (26-47)	First Name	Address of Well Location	Date completed (46-53)
York Region		1091 Gorham St.,Suite 301,Newmarket,ON	21 day 10 03 month year

21 (1 2)

UTM Zone (10 12) 17 Easting (12 17) 641 043 Northing (18 24) 4874 658 RC (25) Elevation (26 30) RC (30) Basin Code (31) ii iii iv *Abandoned 08 10 04 (47)

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	3
Brown	Sandy clay & gravel	some sand lenses		3	28
Brown	Sand & gravel	some silt	dry	28	43
Brown	Sandy gravel		wet @ 50'	43	98
Gray	Silty sand		water bearing	98	113
Gray	Sand & gravel		waterbearing	113	140
Gray	Sandy clay & gravel			140	246
Gray	Sand & gravel			246	248
Gray	Sandy clay & gravel			248	256
Gray	Sand & Gravel			256	261
** See attached Page 2 for colours & material				261	529

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

41 WATER RECORD

Water found at - feet	Kind of water
(10-13)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (14)
(15-18)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (19)
(20-23)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (24)
(25-28)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (29)
(30-33)	1 ☐ Fresh ½ ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (34) (60)

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
(10-11) 6¼	1 ☒ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.280	-7	(13-16)
6¼		.280	+3	525
(17-18) 6	1 ☐ Steel (19) 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		525	(20-23) 529
(24-25) 10 10	1 ☒ Steel (26) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	Dec 6h-73 .380	0	(27-30) 20

SCREEN

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

61 PLUGGING & SEALING RECORD

☐ Annular space ☒ Abandonment

Depth set at - feet From	To	Material and type (Cement grout, bentonite, etc.)
(10-17) 0	20	Cement (10" pipe)
(18-21) 529	(22-25) 7	Bentonite Grout
(26-29) 7	(30-33) 0	(80) Native Soil

71 PUMPING TEST

Pumping test method (10) 1 ☐ Pump 2 ☐ Bailer

Pumping rate (11-14) GPM

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

Static level (19-21) feet	Water level end of pumping (22-24) feet

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

15 minutes (26-28) feet	30 minutes (29-31) feet	45 minutes (32-34) feet	60 minutes (35-37) 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

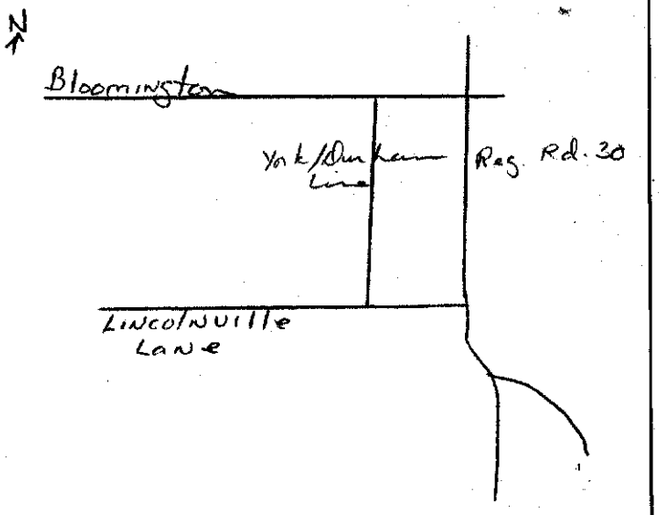
Recommended pump setting (43-45) feet

Recommended pump rate (46-49) GPM

(50-53)

LOCATION OF WELL

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



267700

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.
G.Hart & Sons Well Drilling Ltd.	2662
Address: Box 850, Fenelon Falls, ON	
Name of Well Technician: Bryan Watson	Well Technician's Licence No.: T-2441
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	2662	APR 20 2005
Date of inspection	Inspector	
Remarks		

2 - MINISTRY OF ENVIRONMENT AND ENERGY COPY

0506 (06/02) Front Form 9

of the Environment

WATER WELL RECORD

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

SHEET #2

County or District		Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
York		Whitchurch-Stouffville	Con. 9	10
Owner's surname	First Name	Address c/o Jagger Hims, 1091 Gorham St.,Ste 301,Newmarket,ON	Date completed 21 (day) 10 (month) 03 (year)	

Zone | Easting | Northing

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
		** Continued from Page 1			
Gray	Sandy Clay & gravel			261	271
Gray	Silty clay		sticky	271	290
Gray	Sandy clay & gravel		hard	290	353
Gray	Sandy clay & gravel			353	493
Gray	Sandy clay	some gravel, some silt lenses		493	504
Dark Gray	Clay	some gravel		504	521
Gray	Silt	some sand, gravel & clay		521	524
Black	Shale			524	529

* Page #2

267700 2662 APR 20 2005

Ontario — Ministry of the Environment

Well Tag Number: A018493 (A018493)

Well Record

Regulation 903 Ontario Water Resources Act

SHEET 1 of 3 — page 1 of 3

Instructions for Completing Form

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- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
York Regionm		C/O Jagger Hims Ltd 1091 Gorham St, Suite 301

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Newmarket	Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
YORK 6	Whitchurch-Stouffville	11	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
# Cairo Court Lot 10		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	640929	4874989	Magellan	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
Grey	Gravel		fill	0	1
Brown	Silty Sand	some organics		1	3
Brown	Silty Sand & Gravel			3	5
Brown	Silty Clay & Gravel			5	14½
Grey	Sandy Clay & Gravel			14½	18
Brown	Silty sand & Gravel			18	27
Brown	Silty Clay	some gravel		27	47
Brown	Silty Sand	some gravel		47	50
Brown	Gravel	silty sand		50	60

Hole Diameter

Depth From	Depth To	Diameter
0	21	10"
21	173	6"

Water Record

Water found at	Kind of Water
___ m	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas ☐ Other:
___ m	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas ☐ Other:
___ m	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals ☐ Gas ☐ Other:

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam	Material	Wall thickness	Depth From	Depth To
Casing				
6¼"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.250	+3	132
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	Material	Slot No.		
6"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	20,16, 14,20,20	132	166
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method: Pump

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		58.6		
1		91.1	1	60.3
2		91.8	2	59.7
3		91.9	3	59.3
4		92.3	4	59.2
5		92.4	5	59.2
10		92.5	10	58.9
15		92.9	15	58.7
20		92.9	20	58.6
25		92.9	25	
30		92.9	30	
40		92.9	40	
50		93.0	50	
60		93.0	60	

Pumping rate - (litres/min) 452 gpm

Duration of pumping: 24 hrs + ___ min

Final water level end of pumping: 96 ft metres

Recommended pump type: ☐ Shallow ☐ Deep

Recommended pump depth: 120 ft metres

Recommended pump rate: (litres/min)

If flowing give rate - (litres/min)

If pumping discontinued, give reason:

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - From	Depth set at - To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	21	Bentonite Slurry	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

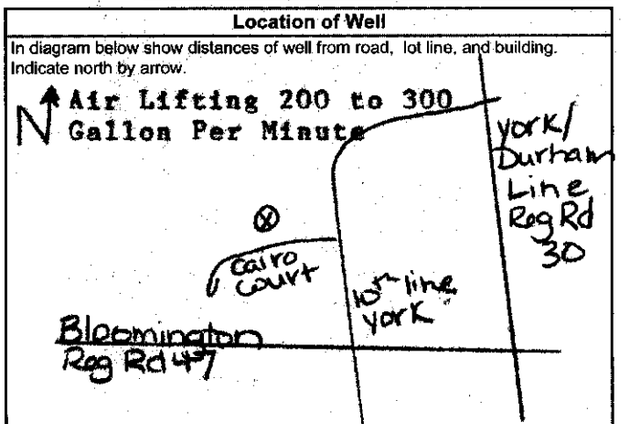
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



Audit No. Z 18710

Date Well Completed: YYYY 2004 MM 12 DD 22

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered: YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling Ltd	2662

Business Address (street name, number, city etc.): P.O. Box 850 Fenelon Falls Ont K0M 1N0

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Wasson, Bryan	T-2441

Signature of Technician/Contractor: x

Date Submitted: YYYY MM DD

Ministry Use Only

Data Source	Contractor
	2662
Date Received: APR 20 2005	Date of Inspection: YYYY MM DD
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment

Well Tag Number (Place sticker and print number below): A018493

Well Record

Regulation 903 Ontario Water Resources Act

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
York Region		C/O Jagger Hims Ltd 1091 Gorham St Suite 301

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Newmarket	Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
York	Whitchurch-Stouffville	11	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Cairo Court Lot 10		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	640929	4874989	Magellan	☐ Undifferentiated ☐ Differentiated, specify ☒ Averaged

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (Metres)	Depth To (Metres)
Brown	Sand & Gravel			60	63
Brown	Gravel	some sand		63	68
Brown	Silt		wet	68	88
Brown	Silt	some fine sand	water bearing	88	108
Brown	Silt	some fine sand, some sandy clay lenses	(wet)	108	116
Brown	Sand		water bearing	116	131
Brown	Sand & Gravel		water bearing	131	138
Brown	Sand	some gravel	water baring	138	141
Brown	Sand & Gravel		water bearing	141	145

Hole Diameter

Depth From	Metres To	Diameter Centimetres

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☒ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___ hrs + ___ min	2		2	
Final water level end of pumping ___ metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___ metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record ☐ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling Ltd	2662

Business Address (street name, number, city etc.): P.O. Box 850 Penelon Falls Ont K0M 1N0

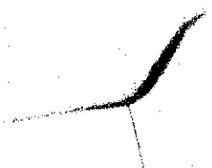
Name of Well Technician (last name, first name)	Well Technician's Licence No.
Watson, Bryan	T-2441

Signature of Technician/Contractor: X

Date Submitted YYYY MM DD

Location of Well

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



Audit No. Z 18686

Date Well Completed YYYY MM DD: 2004 12 22

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered YYYY MM DD

Ministry Use Only

Data Source | Contractor: 2662

Date Received: APR 20 2005 | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment

Well Tag Number (Place sticker and print number below): A018493

Well Record

Regulation 903 Ontario Water Resources Act

SHEET 3 of 3

Instructions for Completing Form

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR,Lot,Concession)
York Regioon		C30 Jagger Hims Ltd 1091 Gorham St Suite 301

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Newmarket	Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
York	Whitchurch-Stouffville	11	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Cairo Court Lot 10		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	640929	4874989	Magellan	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From (Metres)	Depth To (Metres)
Brown	Sand	some gravel	water bearing	145	165
Brown	Sand & Gravel		water bearing	165	168
Grey	Sandy Clay & Gravel	some cobbles		168	173

Hole Diameter

Depth From	Metres To	Diameter Centimetres

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☐ Clear and sediment free
☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
If flowing give rate - (litres/min)	15		15	
If pumping discontinued, give reason.	20		20	
	25		25	
	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☐ Annular space ☐ Abandonment

Depth set at - Metres From	Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling LTd	2662

Business Address (street name, number, city etc.): P.O. Box 850 Fenelon Falls Ont K0M 1N0

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Watson, Bryan	T-2441

Signature of Technician/Contractor: X

Date Submitted YYYY MM DD

Location of Well

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

Audit No. Z 18687

Date Well Completed YYYY MM DD: 2004 12 22

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered YYYY MM DD

Ministry Use Only

Data Source	Contractor
Date Received YYYY MM DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario Ministry of the Environment

Well Tag Number A018508

A018508

Well Record

Regulation 903 Ontario Water Resources Act

page 1 of 2

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- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
York Region		C/O Jagger Hims Ltd 1091 Gorham St Suite 301

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Newmarket	Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
York	Whitchurch-Stouffville	11	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Cairo Court		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	640926	4874992	Magellan	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
Grey	gravel		fill	0	3
Black	topsoil			3	5
Brown	silty clay	some gravel		5	15
Brown	silty sand & gravel	some cobbles		15	17
Brown	sand			17	23
Brown	silt & Sand			23	30
Brown	silty clay	some sand & gravel		30	48
Brown	silty sand	some gravel		48	53
Brown	gravel	some silty sand		53	65

Hole Diameter

Depth From	Depth To	Diameter
0	20	19"
20	164'6"	12"

Water Record

Water found at	Kind of Water
139ft	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
to 164'6"	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☒ Clear and sediment free
☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam	Material	Wall thickness	Depth From	Depth To
12"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.375"	+3	139
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			

Screen

Outside diam	Material	Slot No.	Depth From	Depth To
12"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	20,18,20	139	164'6"

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method: Pump

Pump intake set at - 137ft

Pumping rate - 618igpm

Duration of pumping 72 hrs + ____ min

Final water level end of pumping 106.8

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth. 137ft

Recommended pump rate 618igpm

If flowing give rate - (litres/min)

If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level	Recovery Time min	Recovery Water Level
Static Level		62.4		
1		101.7	1	66.8
2	102.7		2	65.1
3	103.5		3	64.5
4	104.2		4	64.1
5	104.6		5	63.8
10	105.2		10	63.2
15	105.4		15	63.0
20	105.4		20	63.0
25	105.4		25	63.0
30	105.4		30	63.0
40	105.4		40	63.0
50	105.5		50	63.0
60	105.5		60	62.9

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at From	Depth set at To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
21	1	neat cement	
1	0	bentonite	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

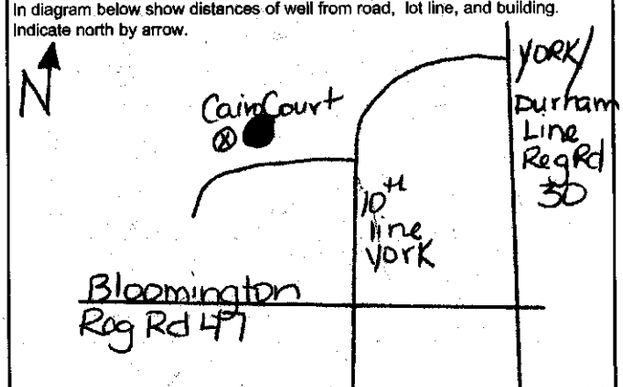
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☒ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



Audit No. Z 22725

Date Well Completed YYYY MM DD: 2005 07 22

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling Ltd	2662

Business Address (street name, number, city etc.): P.O. Box 850 Fenelon Falls On KOM 1NO

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Watson, Bryan T-2441	T-2441

Signature of Technician/Contractor: X

Date Submitted YYYY MM DD

Ministry Use Only

Data Source | Contractor: 2662

Date Received: NOV 2 YYYY 2005 DD | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number: A018508 (A018508)

Well Record

Regulation 903 Ontario Water Resources Act

page 2 of 2

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- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
C. York Region		C/O Jagger Hims Ltd 1091 Gorham StSuite 301

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Newmarket	Ontario		

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
York	Whitchurch-Stouffville	11	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Cairo Court		

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	17	640926	4874992	Magellan	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Brown	Sandy Silt		water bearing	65	95
Brown	Silty Sand	some clay	water bearing	95	114
Brown	Sand	some silt	water bearing	114	129
Brown	Sand		water bearing	129	134
Brown	Silty Sand & Gravel		water bearing	134	136
Brown	Sand & Gravel		water bearing	136	146
Brown	Sand	some gravel	water bearing	146	151
Brown	Sand & GRavel		water bearing	151	166½
Grey m	Sandy Clay & Gravel	*FINISHED DEPTH 164.6"*		166½	170

Hole Diameter

Depth From	Metres To	Diameter Centimetres

Water Record

Water found at ___ Metres / Kind of Water

- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping ___hrs +___ min	2		2	
Final water level end of pumping ___metres	3		3	
Recommended pump type. ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. ___metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record

☐ Annular space ☐ Abandonment

Depth set at - Metres From	Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☐ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☒ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling Ltd	2662

Business Address (street name, number, city etc.): P.O. Box 850 Fenelon Falls Ont K0M 1N0

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Watson, Bryan	T-2441

Signature of Technician/Contractor: X

Date Submitted: YYYY MM DD

Location of Well

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

Audit No.	Date Well Completed YYYY MM DD
Z 22724	2005 07 22
Was the well owner's information package delivered? ☐ Yes ☐ No	Date Delivered YYYY MM DD

Ministry Use Only

Data Source	Contractor
	2662
Date Received NOV 21 2005 YYYY MM DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag Number A 032909

A032909

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

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- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

York | Whitchurch | 12 | 9

RR#/Street Number/Name: Cairo Court | City/Town/Village: Stouffville | Site/Compartment/Block/Tract etc.

GPS Reading | NAD: 83 | Zone: 17 | Easting: 640853 | Northing: 4874906 | Unit Make/Model: MAGELLAN | Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

IN FEET

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
BROWN	SAND		SOFT	0	10
GREY	CLAY		SOFT	10	25
BROWN	SAND		LOOSE	25	115
BROWN	SAND	GRAVEL	LOOSE	115	170

Hole Diameter

Depth From	Depth To	Diameter Centimetres
0	163'	6"
163'	170'	5"

Water Record

Water found at ___ Metres	Kind of Water
170'	☑ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☒ Clear and sediment free ☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

FEET

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
6"	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized		0	163'
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
5"		#10	163	170
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - ~~(metres)~~ 155'	Static Level	60'		
Pumping rate - ~~(litres/min)~~ 10	1	61.5	1	
Duration of pumping 1 hrs + 0 min	2	61.5	2	
Final water level end of pumping ___ metres	3	61.5	3	
Recommended pump type. ☐ Shallow ☑ Deep	4	61.5	4	
Recommended pump depth. ___ metres	5	61.5	5	
Recommended pump rate. (litres/min)	10	61.5	10	
	15	61.5	15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30	61.5	30	
	40	61.5	40	
	50		50	
	60	61.5	60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	6M.	BENTONITE BENSEAL	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

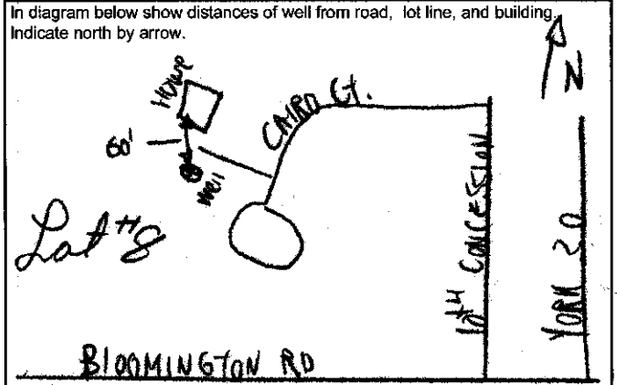
☑ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

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



Well Contractor/Technician Information

Name of Well Contractor: WILSON'S WATER WELLS | Well Contractor's Licence No.: 5459

Business Address (street name, number, city etc.): 13789 HWY #48 STOUFFVILLE

Name of Well Technician (last name, first name): O'BRIEN MICHAEL | Well Technician's Licence No.: T-3516

Signature of Technician/Contractor: X M. C. O'Brien | Date Submitted: 2005 / 10 / 07

Audit No. Z 35788 | Date Well Completed: 2005 / 11 / 02

Was the well owner's information package delivered? ☐ Yes ☐ No | Date Delivered

Ministry Use Only

Data Source | Contractor: 5459

Date Received: NOV 24 2005 | Date of Inspection

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario Ministry of the Environment

W [illegible] (Place sticker and print number below)
A 035529
A 035529

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

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- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

York | Whitchurch-Stouffville | Pt.11 | 9

RR#/Street Number/Name: Cairo Court | City/Town/Village | Site/Compartment/Block/Tract etc.: Lot#3

GPS Reading: NAD 83 | Zone 17 | Easting 640941 | Northing 4874861 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Black	Topsoil			0	1
Brown	Sand	silt		1	24
Brown	Clay	silt & some gravel		24	33
Brown	Sand	gravel & cobbles	boulder at 72ft	33	72
Brown	Gravel	sand	wet	72	86
Brown	Sand			86	115

Hole Diameter

Depth From (Metres)	Depth To (Metres)	Diameter (Centimetres) INCHES
0	20	10"
20	115	6"

Water Record

Water found at ___ Metres / Kind of Water

111 ft: ☒ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: UNTESTED.

___ m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

___ m: ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☒ Clear and sediment free ☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam (centimetres) INCHES	Material	Wall thickness (centimetres) INCHES	Depth From (Metres)	Depth To (Metres)
Casing				
6¼	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.188	+2½	111
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam		Slot No.		
6	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	8	111	115

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method: Pump

Pump intake set at - (Metres) 100ft

Pumping rate - (litres/min) 12gpm

Duration of pumping 1 hrs + ___ min

Final water level end of pumping 61.2ft (Metres)

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth. 100 ft (Metres)

Recommended pump rate. 10gpm (litres/min)

If flowing give rate - (litres/min)

If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level (Metres)	Recovery Time min	Recovery Water Level (Metres)
Static Level		54.3		
1	1	58.3	1	54.5
2	2	57.7	2	54.4
3	3	58.8	3	54.4
4	4	58.8	4	54.5
5	5	58.8	5	54.3
10	10	58.7	10	54.3
15	15	58.7	15	54.3
20	20	58.7	20	54.3
25	25	58.7	25	54.3
30	30	58.7	30	54.3
40	40	58.7	40	54.3
50	50	58.7	50	54.3
60	60	58.7	60	54.3

Plugging and Sealing Record ☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
20	6	Benseal, Ez-mud	
6	0	Holeplug	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: G.Hart & Sons Well Drilling Ltd. | Well Contractor's Licence No.: 2662

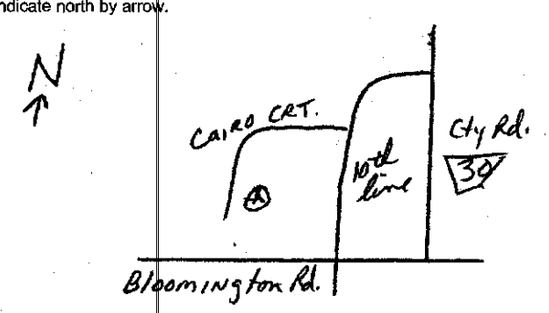
Business Address (street name, number, city etc.): Box 850, Fenelon Falls, ON

Name of Well Technician (last name, first name): Turnbull James | Well Technician's Licence No.: T-3089

Signature of Technician/Contractor: X [signature] | Date Submitted YYYY MM DD

Location of Well

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



Audit No. Z 45694 | Date Well Completed YYYY MM DD: 2006 05 19

Was the well owner's information package delivered? ☐ Yes ☐ No | Date Delivered YYYY MM DD

Ministry Use Only

Data Source | Contractor: 2662

Date Received YYYY MM DD: JUN 27 2006 | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

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Ontario Ministry of the Environment

Well Tag Number (Plate number below): A 035530

A035530

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

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- Please print clearly in blue or black ink only.

Ministry Use Only

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Well Owner's Information and Location of Well Information

[redacted]

York	Whitchurch-Stouffville	Pt.11	9
RR#/Street Number/Name: Cairo Court	City/Town/Village	Site/Compartment/Block/Tract etc.: Lot 5	

GPS Reading: NAD 83 | Zone 17 | Easting 640895 | Northing 4874806

Unit Make/Model: Magellan

Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
Black	Topsoil			0	½
Brown	Clay	silt & gravel		½	17
Gray	Clay	some gravel		17	35
Brown	Sand	clay & gravel		35	40
Brown	Sand	gravel		40	52
Brown	Clay	sand		52	65
Brown	Sand	some gravel		65	115

Hole Diameter

Depth From	Depth To	Diameter
0	20	10" INCHES
20	115	6"

Water Record

Water found at Metres / Kind of Water

111 Holes	☐ Fresh	☐ Sulphur	
☐ Gas	☐ Salty	☐ Minerals	
☐ Other: UNTESTED			
___ m	☐ Fresh	☐ Sulphur	
☐ Gas	☐ Salty	☐ Minerals	
☐ Other:			
___ m	☐ Fresh	☐ Sulphur	
☒ Gas	☐ Salty	☐ Minerals	
☐ Other:			

After test of well yield, water was
☒ Clear and sediment free
☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam (centimetres / INCHES)	Material	Wall thickness (centimetres / INCHES)	Depth From (Metres)	Depth To (Metres)
Casing				
6¼	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.188	+2½	111
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
6		20	111	115
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

Pumping test method: Pump

Pump intake set at (metres): 100ft.

Pumping rate (litres/min): 12gpm

Duration of pumping: 1 hrs + ___ min

Final water level end of pumping: 48.1 ft (metres)

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 100ft. (metres)

Recommended pump rate: 10gpm (litres/min)

If flowing give rate (litres/min):

If pumping discontinued, give reason:

	Draw Down Time min	Draw Down Water Level (Metres)	Recovery Time min	Recovery Water Level (Metres)
Static Level		46		
1		48.1	1	46.2
2		48.1	2	46.2
3		48.1	3	46.2
4		48.1	4	46.2
5		48.1	5	46.2
10		48.1	10	46.2
15		48.1	15	46.2
20		48.0	20	46.2
25		48.0	25	46.2
30		48.1	30	46.2
40		48.1	40	46.2
50		48.1	50	46.2
60		48.1	60	46.2

Plugging and Sealing Record ☒ Annular space ☐ Abandonment

Depth set at - From (Metres)	Depth set at - To (Metres)	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
20	4	Benseal & Ez-mud	
4	0	Holeplug	

Method of Construction

☐ Cable Tool	☒ Rotary (air)	☐ Diamond	☐ Digging
☐ Rotary (conventional)	☐ Air percussion	☐ Jetting	☐ Other
☐ Rotary (reverse)	☐ Boring	☐ Driving	

Water Use

☒ Domestic	☐ Industrial	☐ Public Supply	☐ Other
☐ Stock	☐ Commercial	☐ Not used	
☐ Irrigation	☐ Municipal	☐ Cooling & air conditioning	

Final Status of Well

☒ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other)
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering	
☐ Test Hole	☐ Abandoned, poor quality	☐ Replacement well	

Well Contractor/Technician Information

Name of Well Contractor: G.Hart & Sons Well Drilling Ltd.

Well Contractor's Licence No.: 2662

Business Address (street name, number, city etc.): Box 850, Fenelon Falls, ON

Name of Well Technician (last name, first name): Turnbull James

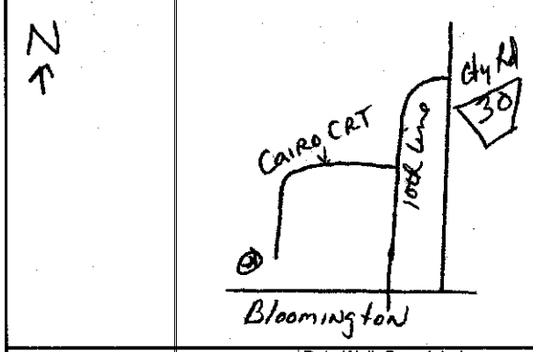
Well Technician's Licence No.: T-3089

Signature of Technician/Contractor: x [signature]

Date Submitted YYYY MM DD

Location of Well

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



Audit No.: Z 45695

Date Well Completed YYYY MM DD: 2006 05 23

Was the well owner's information package delivered? ☐ Yes ☐ No

Date Delivered YYYY MM DD

Ministry Use Only

Data Source

Contractor: 2662

Date Received YYYY MM DD: JUN 27 2006

Date of Inspection YYYY MM DD

Remarks

Well Record Number

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario | Ministry of the Environment

Well Tag Number (Place sticker and print number below): A 035535 / A 035535

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

York | Whitchurch-Stouffville Pt.11 | 9

RR#/Street Number/Name: Cairo Court | City/Town/Village | Site/Compartment/Block/Tract etc.: Lot 4

GPS Reading: NAD 83 | Zone 17 | Easting 6409 27 | Northing 487481 4 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
Black	Topsoil			0	1
Brown	Silt			1	4
Brown	Silt	clay	some black	4	11
Brown	Silt	gravel		11	21
Brown	Clay	silty & some gravel		21	46
Brown	Sand	gravel		46	109
Brown	Sand	some gravel		109	116

Hole Diameter

Depth From	Depth To	Diameter (INCHES)
0	20	10"
20	116	6"

Water Record

Water found at	Kind of Water		
112	☐ Fresh	☐ Sulphur	☐ Gas
	☒ Salty	☐ Minerals	☐ Other: UNTESTED
___ m	☐ Fresh	☐ Sulphur	☐ Gas
	☐ Salty	☐ Minerals	☐ Other:
___ m	☐ Fresh	☐ Sulphur	☐ Gas
	☐ Salty	☐ Minerals	☐ Other:

After test of well yield, water was: ☒ Clear and sediment free ☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Casing

Inside diam (INCHES)	Material	Wall thickness (INCHES)	Depth From	Depth To
6¼	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.188	+2½	112
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			

Screen

Outside diam		Slot No.	Depth From	Depth To
6	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	12	112	116

No Casing or Screen

☐ Open hole

Test of Well Yield

Pumping test method: Pump

Pump intake set at - (metres) 100ft

Pumping rate - (litres/min) 12gpm

Duration of pumping: 1 hrs + ___ min

Final water level end of pumping: 52.5ft metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 100 ft metres

Recommended pump rate: 10gpm (litres/min)

If flowing give rate - (litres/min)

If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level	Recovery Time min	Recovery Water Level
Static Level		48.4		
1		52.2	1	47.5
2		52.6	2	48.4
3		52.5	3	48.4
4		52.5	4	48.4
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50			50	
60		52.5	60	48.4

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - From	Depth set at - To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
20	6	Benseal & Ezmud	
6	0	Holeplug	

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☐ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: G.Hart & Sons Well Drilling Ltd. | Well Contractor's Licence No.: 2662

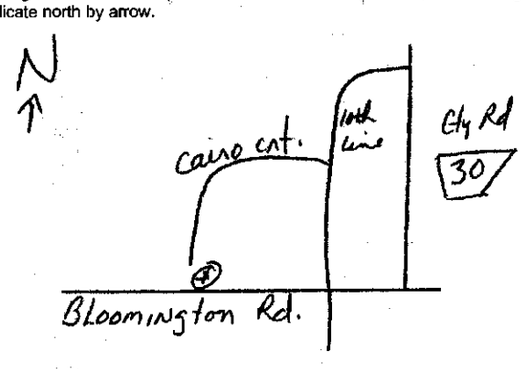
Business Address (street name, number, city etc.): Box 850, Fenelon Falls, ON

Name of Well Technician (last name, first name): Turnbull, James | Well Technician's Licence No.: T-3089

Signature of Technician/Contractor: X [signature] | Date Submitted YYYY MM DD

Location of Well

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



Audit No.: Z 45693 | Date Well Completed YYYY MM DD: 2006 05 25

Was the well owner's information package delivered? ☐ Yes ☐ No | Date Delivered YYYY MM DD

Ministry Use Only

Data Source | Contractor: 2662

Date Received YYYY MM DD: NOV 07 2006 | Date of Inspection YYYY MM DD

Remarks | Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. (Place Sticker and/or Print Below) A081444

Well Record

Regulation 903 Ontario Water Resources Act

Page ___ of ___

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
29 Lincolnville Lane	Witchurch-Stouffville		

County/District/Municipality	City/Town/Village	Province	Postal Code
York	Stouffville	Ontario	L4A 7X4

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	640925	4874516		

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	Clay		Hard	0	32
Brown	Sand	Gravel	Coarse	32	45

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	20	Wyo Ben	

Method of Construction

☐ Cable Tool ☐ Diamond
☑ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify* ___

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 1/4	Steel	219	0	42

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
5 1/2	Steel	25	42	45

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	
45 (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)

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): 40

Pumping rate (l/min / GPM): 7

Duration of pumping: 1 hrs + ___ min

Final water level end of pumping (m/ft): 40

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 40

Recommended pump rate (l/min / GPM): 7

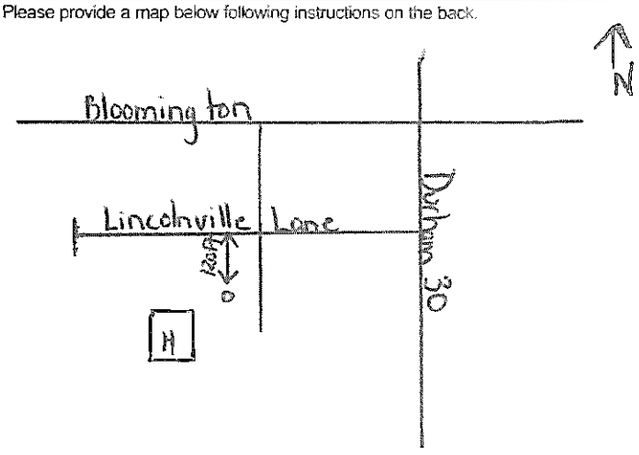
Well production (l/min / GPM):

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	35		
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	

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.
Roger Boadway Ent. Ltd.	1413

Business Address (Street Number/Name)	Municipality
Box 397, Sutton West	York

Province	Postal Code	Business E-mail Address
ON	L0E 1R0	boadwayservices@aol.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9057225362	Boadway, Grant

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0029	Roger Boadway	2009 08 04

Ministry's Copy

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☐ Yes ☐ No	Y Y Y Y M M D D	Audit No. Z 101130
	Date Work Completed: 2009 08 12	SEP 16 2009 Received

0506E (12/2007)

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. (Place Sticker and/or Print Below)

A 095335 A095335

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Well Location

Address of Well Location (Street Number/Name): 3199 York-Durham Line 30

Township | Lot | Concession

County/District/Municipality

City/Town/Village: Stouffville

Province: Ontario | Postal Code

UTM Coordinates NAD 83 | Zone: 17 | Easting: 641669 | Northing: 4874389

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	Fill		moist	0	4
Brown	clay		moist	4	16
Brown	clay	Sand	wet	16	22
Grey	clay		wet	22	28

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
28	21	Sand	
21	1	Bentonite	
1	0	Sand, Flushmont, Concrete	

Method of Construction

☐ Cable Tool ☐ Diamond ☑ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☑ Test Hole ☐ Monitoring ☐ Livestock ☐ 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
2"	Plastic	Sch 40	23	0

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
2"	Plastic	10	28	23

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*

Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
28	0	8"

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)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / 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				
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	

Map of Well Location

Please provide a map below following instructions on the back.

See map

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Profile Drilling | Well Contractor's Licence No.: 7215

Business Address (Street Number/Name): 149 Norfinch DR Units 4-8 | Municipality: North York

Province: ON | Postal Code: M3N1Y2 | Business E-mail Address: Jason@Profiledrilling.com

Bus. Telephone No. (inc. area code): 4165064494 | Name of Well Technician (Last Name, First Name): Slocki, Jason

Well Technician's Licence No.: 2978 | Signature of Technician and/or Contractor | Date Submitted: 2010/02/18

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: YYYY MM DD

Date Work Completed: 2010/01/28

Ministry Use Only

Audit No. Z110069

Received MAR 19 2010

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Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* **A 088308**

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
St	Lawrance Grains		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
York Durham Town Line	Uxbridge	12	1

County/District/Municipality	City/Town/Village	Province	Postal Code
Durham	Uxbridge	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	641602	4874462		

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
	Bentonite Slurry			0	85
	Hole Plug			85	88
	Silica sand			88	98

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☐ Air percussion ☐ Other, *specify*

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

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

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)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	98	6"

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)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min-/ GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

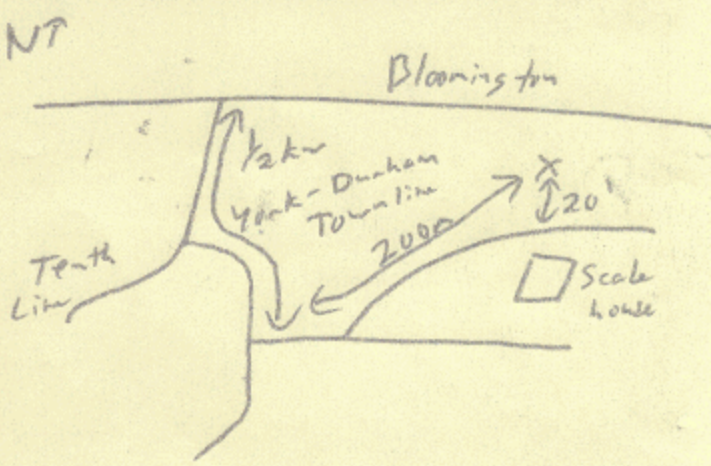
Well production *(l/min / GPM)*

Disinfected? ☑ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level				
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	

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.
Wilson's Water Well Ltd.	5459

Business Address (Street Number/Name)	Municipality
13787 Hwy 48	Stouffville

Province	Postal Code	Business E-mail Address
ON	L4A7X3	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
9056404369	Ferguson, Eric

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3490		2010/05/10

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: YYYY MM DD

Date Work Completed: 2010/05/10

Ministry Use Only

Audit No. Z 81578

JUN 08 2010 Received

0506E (12/2007)

Contractor's Copy

Ontario Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag **A113019** A113019

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
E12 Linconville LN	whit-stouff	10	10

County/District/Municipality	City/Town/Village	Province	Postal Code
York	Stouffville	Ontario	L4A7X4

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	641169	4874715		

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	To
Brown	Sand / Clay			0	4
Brown	Clay / Gravel			4	21
Brown	Gravel / Sand		Cemented	21	36
Brown	Sand			36	42

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	4	Hole Plug	4 Bags
4	21+	Quick Groute	52 Gallon

Method of Construction

☑ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, specify ☐ Diamond ☐ Jetting ☐ Driving ☐ Digging

Well Use

☐ Public ☑ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, specify ☐ Commercial ☐ Municipal ☐ Test Hole ☐ Cooling & Air Conditioning ☐ Not used ☐ Dewatering ☐ Monitoring

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
8.25	Steel	.188	0	20
6.25	Steel	.188	+2	36

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
5.5	STainless	.010	36	42
5.5	Steel	L/P	34	36

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 36 (m/ft) ☐ Gas | Kind of Water: ☑ Fresh ☐ Untested ☐ Other, specify

Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify

Water found at Depth (m/ft) ☐ Gas | Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	20	9
20	42	6.6

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): 38 FT

Pumping rate (l/min / GPM): 12 GPM

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 34.2 FT

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 38 FT.

Recommended pump rate (l/min / GPM): 12 GPM

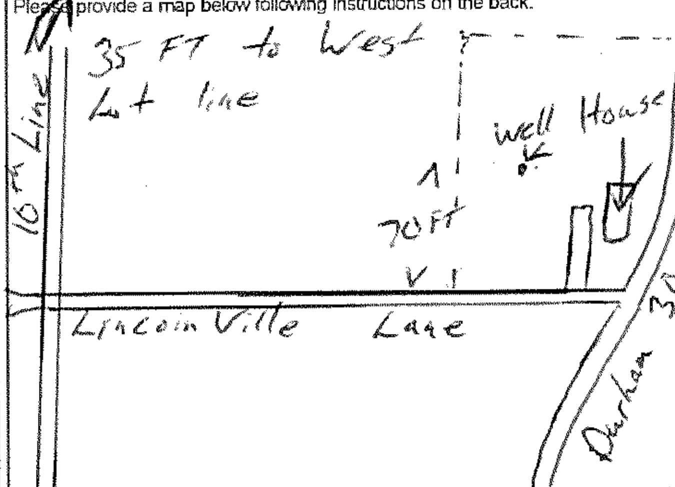
Well production (l/min / GPM): 12 GPM

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	32.2		
1	34.1	1	32.3
2	34.1	2	32.2
3	34.2	3	32.2
4	34.2	4	32.2
5	34.2	5	32.2
10	34.2	10	32.2
15	34.2	15	32.2
20	34.2	20	32.2
25	34.2	25	32.2
30	34.2	30	32.2
40	34.2	40	32.2
50	34.2	50	32.2
60	34.2	60	32.2

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.
Dale Baraniecki Well Drilling	1350

Business Address (Street Number/Name)	Municipality
2497 Vivian Rd	Newmarket

Province	Postal Code	Business E-mail Address
ON	L3Y4W1	—

Bus.Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
9058957342	Baraniecki BYRON DALE

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2550	[signature]	YYYYMMDD

Well owner's information package delivered ☑ Yes ☐ No

Date Package Delivered: 20120622

Date Work Completed: 20120622

Ministry Use Only

Audit No. Z128286

Received AUG 02 2012

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Ministry's Copy

Source: Compiled from Google Earth. Aerial photo dated May 7, 2005.

Scale:
Refer to Scale Bar
Coordinate System:
NAD 1983 UTM Zone 17

Grainboys Holdings Inc.
3469 Con Rd 1, Township of Uxbridge
Geotechnical Investigation

11197394-02
October, 2019

Well Survey Locations

Appendix B.5

APPENDIX B.6: WATER WELL INFORMATION SURVEY

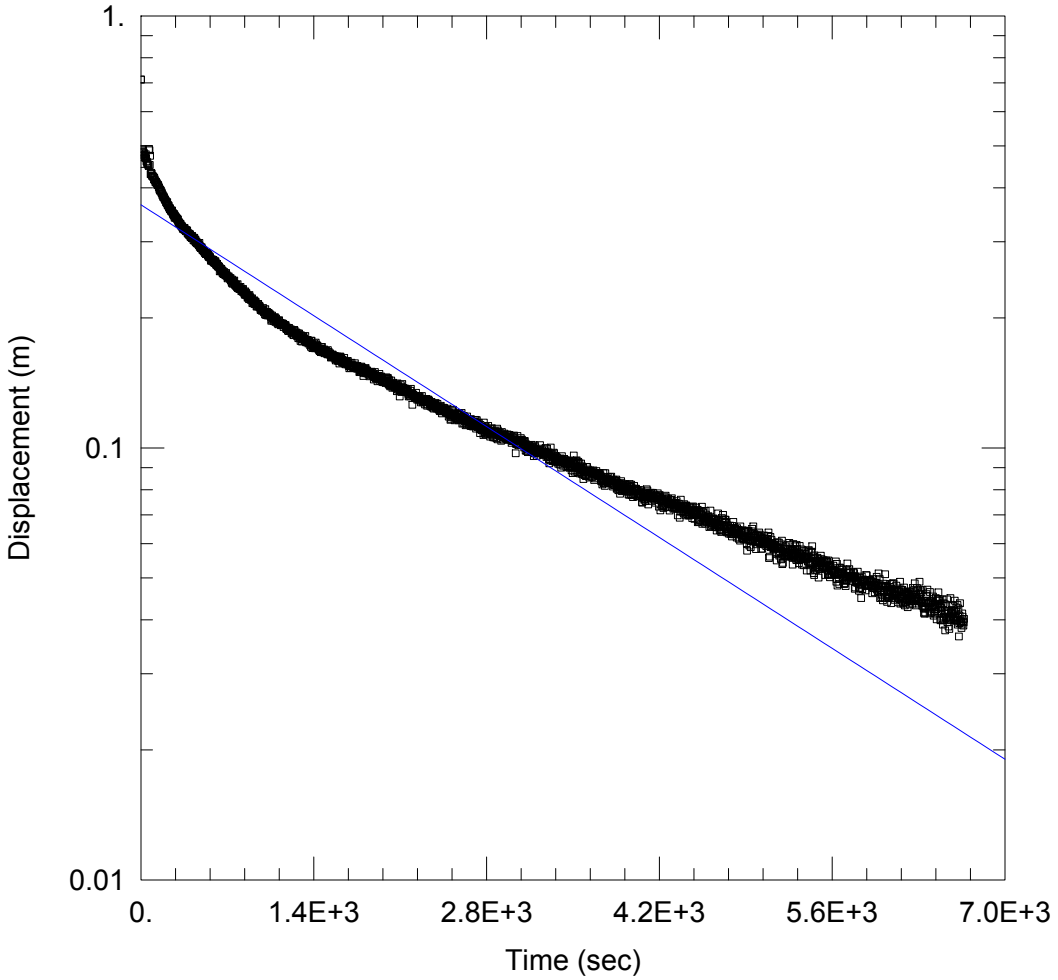
PROJECT: 11197394-02

LOCATION: 3469 Concession Road 1, Uxbridge, ON

DATE: October 15, 2019

Address	Well ID for Map	Easting (m)	Northing (m)	Well Type	Top of Well (m)	Water Level (m)	Depth (m)	Quality	Quantity	Comments
3469 York Durham Line	L-1	641844	4874834	Dug	0.6	5.25	7.9	No Issues	No Issues	Water quality tested when property was sold. Record 1906217
3210 York Durham Line	L-2	641391	4874548	Dug	--	--	--	No Issues	No Issues	Record 6908478
3199 York Durham Line	L-3	641683	4874508	Dug	--	--	8.2	No Issues	No Issues	Commercial use well
3197 York Durham Line	L-4	641523	4874387	Abandoned	--	--	--	--	--	Former domestic well, removed in 90's
3229 York Durham Line	L-5	641400	4874618	--	--	--	--	No Issues	No Issues	Resident not home. No casing observed
3003 York Durham Line	L-6	641483	4874186	Drilled	--	--	25	No Issues	No Issues	Record 4602710
3889 York Durham Line	L-7	640948	4875781	--	--	--	--	No Issues	No Issues	Resident identifed a drilled well. Unable to access
14001 10th Line	L-8	640979	4875329	Drilled	--	--	--	No Issues	No Issues	No information provided by resident
13672 10th Line	L-9	641006	4874407	Dug	--	--	7.9	No Issues	No Issues	Installed in the 60's
13383 10th Line	L-10	641452	4873797	Dug	--	--	8.2	No Issues	No Issues	No information provided by resident
13357 10th Line	L-11	641272	4873765	Drilled	--	--	--	--	--	Resident not home. Drilled well casing observed.

Appendix C
Hydraulic Conductivity Data



BH-103 FALLING HEAD TEST

Data Set: I:\...\BH-3 Falling Head Test.aqt
Date: 10/02/19 Time: 11:48:50

PROJECT INFORMATION

Company: GHD
Client: Grainboys Holdings Inc.
Project: 11197394-02
Location: 3469 Conc. Road 1, Uxbridge ON
Test Well: BH-103
Test Date: September 11, 2019

AQUIFER DATA

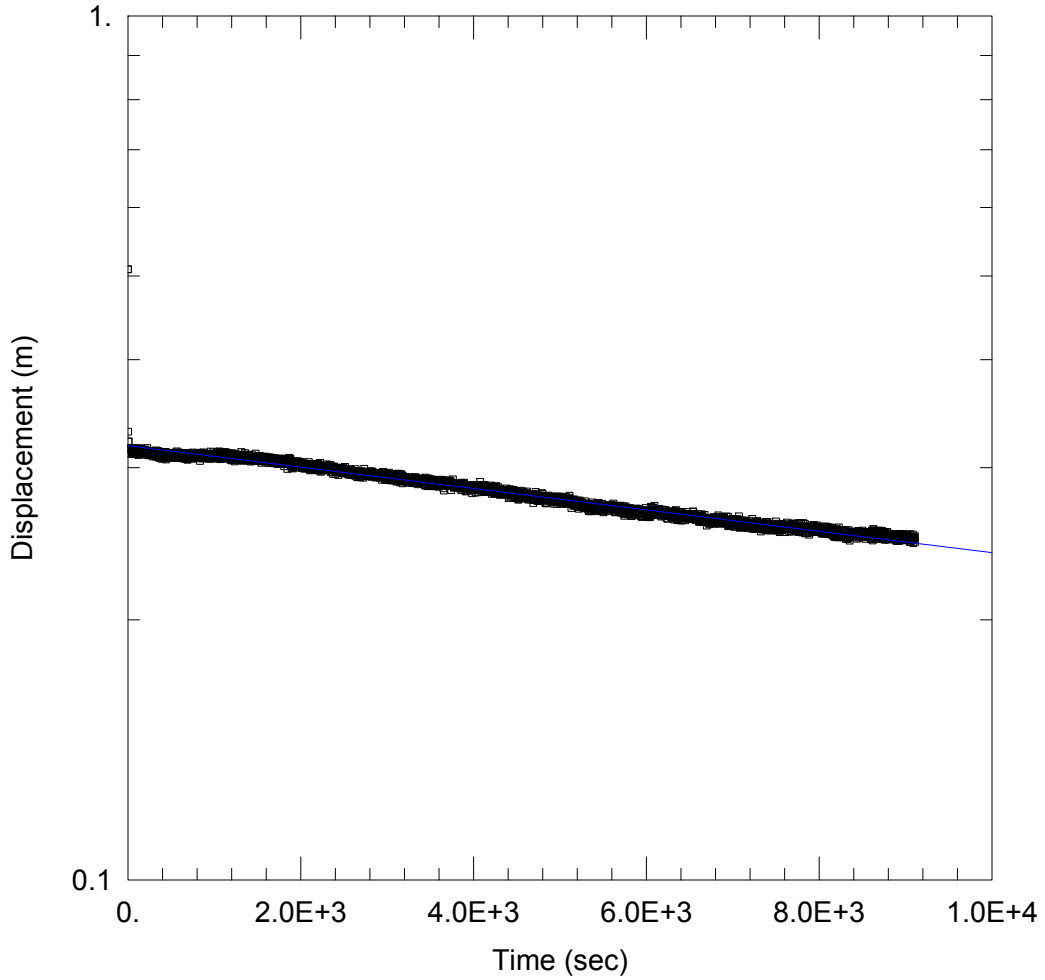
Saturated Thickness: 3.62 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH-3)

Initial Displacement: 0.7126 m
Total Well Penetration Depth: 3.62 m
Casing Radius: 0.025 m
Static Water Column Height: 3.62 m
Screen Length: 1.5 m
Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.247E-5 cm/sec
y0 = 0.3654 m



BH-103 RISING HEAD TEST

Data Set: I:\...\BH-3 Rising Head Test.aqt
Date: 10/02/19 Time: 11:50:24

PROJECT INFORMATION

Company: GHD
Client: Grainboys Holdings Inc.
Project: 11197394-02
Location: 3469 Conc. Road 1, Uxbridge ON
Test Well: BH-103
Test Date: September 11, 2019

AQUIFER DATA

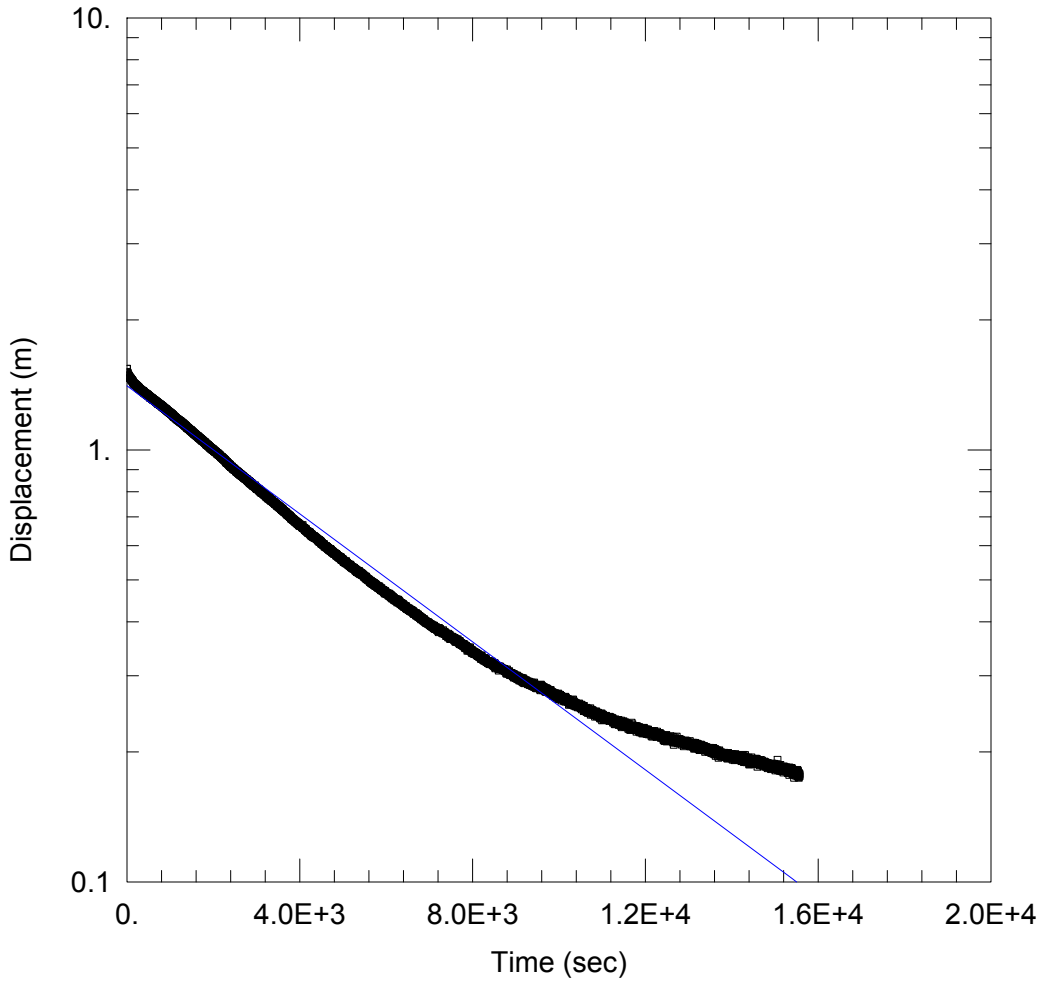
Saturated Thickness: 3.62 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH-3)

Initial Displacement: 0.5091 m Static Water Column Height: 3.62 m
Total Well Penetration Depth: 3.62 m Screen Length: 1.5 m
Casing Radius: 0.025 m Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 2.192E-6 cm/sec y0 = 0.3181 m



BH-107 FALLING HEAD TEST

Data Set: I:\...\BH-7 Falling Head Test.aqt
Date: 10/02/19 Time: 11:51:03

PROJECT INFORMATION

Company: GHD
Client: Grainboys Holdings Inc.
Project: 11197394-02
Location: 3469 Conc. Road 1, Uxbridge ON
Test Well: BH-107
Test Date: September 11, 2019

AQUIFER DATA

Saturated Thickness: 0.67 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH-7)

Initial Displacement: 1.542 m
Total Well Penetration Depth: 3. m
Casing Radius: 0.025 m
Static Water Column Height: 0.67 m
Screen Length: 3. m
Well Radius: 0.025 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.656E-5 cm/sec
y0 = 1.407 m

Appendix C: Infiltration Testing (in-situ)

Project No. 11197394-02
Date: September 11, 2019
Equipment: ETC Pask Permeameter

Location:	BH-103	BH-105	BH-107
Depth of hole:	0.6 m	0.6 m	0.6 m
	Test 1	Test 1	Test 1

Elapsed Time (minutes)	Permeameter Level (cm)	Elapsed Time (minutes)	Permeameter Level (cm)	Elapsed Time (minutes)	Permeameter Level (cm)
0.167	42.2	0.167	41.4	0.167	41.5
1	42.2	0.33	40.6	0.5	41
2	41.8	0.5	40.4	1	40.5
3	41.5	0.66	40.0	2	39.6
4	41.1	0.83	39.7	3	38.8
5	40.7	1	39.4	4	38
6	40.4	2	37.9	5	37.2
7	40.0	3	36.6	6	36.3
8	39.6	4	35.4	7	35.5
9	39.3	5	34.3	8	34.7
10	38.9	6	33.2	9	34
12	38.2	7	32.1	10	33.1
14	37.6	8	31.1	12	31.6
16	36.9	9	30.1	14	30
18	36.3	10	29.2	16	28.3
20	35.7	11	28.3	18	26.6
22	35.1	12	27.2	20	25
24	34.4	13	26.3	22	23.3
26	33.8	14	25.4	24	21.6
		15	24.5	26	19.8
		16	23.6	28	18.1
		17	22.8	30	16.5
		18	21.9		
		19	21		
		20	20.1		
		21	19.3		
		22	18.4		

Quasi Steady Flow Rate ® (cm/min)	0.3	0.9	0.9
Field-saturated Hydraulic Conductivity (Ksf) (m/sec)	1.60E-06	4.80E-06	4.80E-06

Appendix D
Analytical Data

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G93290 **REPORT No. B19-29037**

Report To:

GHD Limited
455 Phillip Street,
Waterloo Ontario N2L 3X2 Canada
Attention: Eric Wierdsma

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 12-Sep-19
DATE REPORTED: 19-Sep-19
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Uxbridge/11197394-02
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		BH-3	BH-7	Dug Well	
			Sample I.D.		B19-29037-1	B19-29037-2	B19-29037-3	
			Date Collected		11-Sep-19	11-Sep-19	11-Sep-19	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
pH @25°C	pH Units		SM 4500H	13-Sep-19/O	8.07	8.06	7.70	
Conductivity @25°C	µmho/cm	1	SM 2510B	13-Sep-19/O	542	607	807	
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	13-Sep-19/O	239	244	363	
Hardness (as CaCO3)	mg/L	1	SM 3120	17-Sep-19/O	315	349	450	
Chloride	mg/L	0.5	SM4110C	13-Sep-19/O	15.9	17.6	42.5	
Fluoride	mg/L	0.1	SM4110C	13-Sep-19/O	< 0.1	< 0.1	0.5	
Nitrite (N)	mg/L	0.1	SM4110C	13-Sep-19/O	< 0.1	< 0.1	< 0.1	
Nitrate (N)	mg/L	0.1	SM4110C	13-Sep-19/O	< 0.1	3.9	0.1	
Sulphate	mg/L	1	SM4110C	13-Sep-19/O	42	66	21	
Colour	TCU	2	SM 2120C	18-Sep-19/O	< 2	< 2	< 2	
Turbidity	NTU	0.1	SM 2130	18-Sep-19/O	45.2	8.9	11.1	
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	13-Sep-19/K	0.19	0.02	< 0.01	
o-Phosphate (P)	mg/L	0.002	PE4500-S	13-Sep-19/K	0.013	< 0.002	0.005	
Potassium	mg/L	0.1	SM 3120	17-Sep-19/O	2.2	2.8	0.9	
Sodium	mg/L	0.2	SM 3120	17-Sep-19/O	7.8	5.8	9.4	
Calcium	mg/L	0.02	SM 3120	17-Sep-19/O	95.2	102	159	
Magnesium	mg/L	0.02	SM 3120	17-Sep-19/O	18.8	22.9	12.8	
Iron	mg/L	0.005	SM 3120	17-Sep-19/O	< 0.005	0.047	< 0.005	
Copper	mg/L	0.002	SM 3120	17-Sep-19/O	< 0.002	< 0.002	< 0.002	
Manganese	mg/L	0.001	SM 3120	17-Sep-19/O	0.076	0.125	0.170	
Zinc	mg/L	0.005	SM 3120	17-Sep-19/O	0.011	< 0.005	0.024	
Anion Sum	meq/L		Calc.	17-Sep-19/O	6.12	7.02	8.93	
Cation Sum	meq/L		Calc.	17-Sep-19/O	6.71	7.31	9.43	
% Difference	%		Calc.	17-Sep-19/O	4.62	2.02	2.72	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G93290 **REPORT No. B19-29037**

Report To:

GHD Limited
455 Phillip Street,
Waterloo Ontario N2L 3X2 Canada
Attention: Eric Wierdsma

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 12-Sep-19
DATE REPORTED: 19-Sep-19
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Uxbridge/11197394-02
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		BH-3	BH-7	Dug Well	
			Sample I.D.		B19-29037-1	B19-29037-2	B19-29037-3	
			Date Collected		11-Sep-19	11-Sep-19	11-Sep-19	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Ion Ratio	AS/CS		Calc.	17-Sep-19/O	0.912	0.960	0.947	
Sodium Adsorption Ratio	-		Calc.	17-Sep-19/O	0.190	0.135	0.193	
TDS(ion sum calc.)	mg/L	1	Calc.	17-Sep-19/O	326	381	465	
Conductivity (calc.)	µmho/cm		Calc.	17-Sep-19/O	603	677	845	
TDS(calc.)/EC(actual)	-		Calc.	17-Sep-19/O	0.602	0.627	0.576	
EC(calc.)/EC(actual)	-		Calc.	17-Sep-19/O	1.11	1.11	1.05	
Langelier Index(25°C)	S.I.		Calc.	17-Sep-19/O	0.984	1.00	0.999	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Appendix E
Water Balance Calculations

Appendix E.1

Water Budget(Thornthwaite Method) - Average Values*

Weather Station: King Smoke Tree

Climate Station: 6154142 **Elevation:** 352 masl **Distance Away:** ~ 21.8 km

Month	Mean Temperature (^{o}C)	Heat Index	Potential ET (mm)	Daylight Correction Factor	Adjusted ET (mm)	Total Precipitation (mm)	Surplus (mm)	Deficit (mm)
January	-7.4	0	0	0.82	0	51.7	51.70	
February	-6.1	0	0	0.82	0	46	46.00	
March	-1.5	0	0	1.03	0	51.2	51.20	
April	6	1.32	27.29	1.1	30.02	64.9	34.88	
May	12.5	4.00	59.98	1.25	74.97	87.1	12.13	
June	17.7	6.78	87.11	1.27	110.63	84.8	0.00	25.83
July	20.5	8.47	101.97	1.29	131.55	86.4	0.00	45.15
August	19.6	7.91	97.18	1.15	111.75	88.4	0.00	23.35
September	15.3	5.44	74.50	1.04	77.48	84.2	6.72	
October	8.6	2.27	40.15	0.94	37.74	72.9	35.16	
November	2.2	0.29	9.30	0.8	7.44	84.6	77.16	
December	-3.7	0	0	0.78	0	55.5	55.50	
TOTAL	7.0	36.5	497.5		581.6	857.7	370.4	94.3
				TOTAL WATER SURPLUS:		276.1	mm	

Notes:

King Smoke Tree weather station utilized: 43^{o} 52' N, 78^{o} 50' W

*Average values of precipitation were used. Average values of temperature were also used.

Water budget adjusted for latitude and daylight

Total Water Surplus is calculated as total precipitation minus adjusted potential evapotranspiration

Total Moisture Surplus is calculated as total precipitation minus actual evapotranspiration

Formulas utilized:

$I = (T_i/5)^{1.514}$

$E=0$ when $T_i<0$ ^{o}C

$E=16(10T_i/I_{tot})^{a}$ when $0<T_i<26.5$ ^{o}C

$E=-415.85+32.24T_i-0.43T_i^{2}$ when $T_i>26.5$ ^{o}C

$a=6.7x10^{-7}I^{3}-7.71x10^{-5}I^{2}+1.79x10^{-2}I+0.49$

a = 1.072892197

Appendix E.2

Water Budget Pre-Development

Catchment Designation	SITE				
	Rooftops	Open Area	Treed Area	Driveway - Gravel	Total
Area (m^2)	250	343895	16000	2900	363045
Pervious Area (m^2)	0	343895	16000	2900	362795
% Pervious	0%	95%	4%	0.8%	99.9%
Impervious Area (m^2)	250	0	0	0	250
% Impervious	0.1%	0%	0%	0%	0.1%
INFILTRATION FACTORS					
Topography Infiltration Factor	0	0.15	0.2	0.25	
Soil Infiltration Factor	0	0.25	0.25	0.25	
Land Cover Infiltration Factor	0	0.1	0.2	0	
MECP Infiltration Factor	0	0.5	0.65	0.5	
Actual Infiltration Factor	0	0.5	0.65	0.5	
Runoff Coefficient	1	0.5	0.35	0.5	
Runoff from Impervious Surfaces*	0.8	0	0	0.8	
INPUTS (PER UNIT AREA)					
Precipitation (mm/yr)	858	858	858	858	858
Run On (mm/yr)	0	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0	0
Total Inputs (mm/yr)	858	858	858	858	858
OUTPUTS (PER UNIT AREA)					
Precipitation Surplus (mm/yr)	686	276	276	686	280
Net Surplus (mm/yr)	686	276	276	686	280
Evaportranspiration (mm/yr)	172	582	582	172	578
Infiltration (mm/yr)	0	138	179	343	141
Rooftop Infiltration (mm/yr)	172	0	0	0	0.1
Total Infiltration (mm/yr)	172	138	179	343	142
Runoff Pervious Areas	0	138	97	343	138
Runoff Impervious Areas	515	0	0	0	0.4
Total Runoff (mm/yr)	515	138	97	343	138
Total Outputs (mm/yr)	858	858	858	858	858
Difference (Inputs - Outputs)	0	0	0	0	0
INPUTS (VOLUMES)					
Precipitation (m^3/yr)	214	294959	13723	2487	311384
Run On (m^3/yr)	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0
Total Inputs (m^3/yr)	214	294959	13723	2487	311384
OUTPUTS (VOLUMES)					
Precipitation Surplus (m^3/yr)	172	94956	4418	1990	101535
Net Surplus (m^3/yr)	172	94956	4418	1990	101535
Evaportranspiration (m^3/yr)	43	200003	9305	497	209848
Infiltration (m^3/yr)	0	47478	2872	995	51345
Rooftop Infiltration (m^3/yr)	43	0	0	0	43
Total Infiltration (m^3/yr)	43	47478	2872	995	51387
Runoff Pervious Areas (m^3/yr)	0	47478	1546	995	50019
Runoff Impervious Areas (m^3/yr)	129	0	0	0	129
Total Runoff (m^3/yr)	129	47478	1546	995	50148
Total Outputs (m^3/yr)	214	294959	13723	2487	311384
Difference (Inputs - Outputs)	0	0	0	0	0

Appendix E.3

Water Budget Post-Development - No Mitigation Strategies

Catchment Designation	SITE							
	New Building Rooftop	New Concrete Pads	New Asphalt Areas	Existing Rooftops	Remaining Open Areas	Remaining Treed Areas	Remaining Gravel Driveway	Total
Area (m^2)	4700	1370	6070	250	331755	16000	2900	363045
Pervious Area (m^2)	0	0	0	0	331755	16000	2900	350655
% Pervious	0%	0%	0%	0%	91.4%	4%	1%	96.6%
Impervious Area (m^2)	4700	1370	6070	250	0	0	0	12390
% Impervious	1.3%	0.4%	1.7%	0.1%	0%	0.0%	0.0%	3.4%
INFILTRATION FACTORS								
Topography Infiltration Factor	0	0	0	0	0.15	0.2	0.25	
Soil Infiltration Factor	0	0	0	0	0.25	0.25	0.25	
Land Cover Infiltration Factor	0	0	0	0	0.1	0.2	0	
MECP Infiltration Factor	0	0	0	0	0.5	0.65	0.5	
Actual Infiltration Factor	0	0	0	0	0.5	0.65	0.5	
Runoff Coefficient	1	1	1	1	0.5	0.35	0.5	
Runoff from Impervious Surfaces*	0.8	0.8	0.8	0.8	0.8	0.8	0.6	
INPUTS (PER UNIT AREA)								
Precipitation (mm/yr)	858	858	858	858	858	858	858	858
Run On (mm/yr)	0	0	0	0	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0	0	0	0	0
Total Inputs (mm/yr)	858	858	858	858	858	858	858	858
OUTPUTS (PER UNIT AREA)								
Precipitation Surplus (mm/yr)	686	686	686	686	276	276	515	292
Net Surplus (mm/yr)	686	686	686	686	276	276	515	292
Evaportranspiration (mm/yr)	172	172	172	172	582	582	343	566
Infiltration (mm/yr)	0	0	0	0	138	179	257	136
Rooftop Infiltration (mm/yr)	0	0	0	172	0	0	0	0
Total Infiltration (mm/yr)	0	0	0	172	138	179	257	136
Runoff Pervious Areas	0	0	0	0	138	97	257	132
Runoff Impervious Areas	686	686	686	515	0	0	0	23
Total Runoff (mm/yr)	686	686	686	515	138	97	257	156
Total Outputs (mm/yr)	858	858	858	858	858	858	858	858
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0
INPUTS (VOLUMES)								
Precipitation (m^3/yr)	4031	1175	5206	214	284546	13723	2487	311384
Run On (m^3/yr)	0	0	0	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0	0	0	0
Total Inputs (m^3/yr)	4031	1175	5206	214	284546	13723	2487	311384
OUTPUTS (VOLUMES)								
Precipitation Surplus (m^3/yr)	3225	940	4165	172	91604	4418	1492	106016
Net Surplus (m^3/yr)	3225	940	4165	172	91604	4418	1492	106016
Evaportranspiration (m^3/yr)	806	235	1041	43	192942	9305	995	205368
Infiltration (m^3/yr)	0	0	0	0	45802	2872	746	49420
Rooftop Infiltration (m^3/yr)	0	0	0	43	0	0	0	43
Total Infiltration (m^3/yr)	0	0	0	43	45802	2872	746	49463
Runoff Pervious Areas (m^3/yr)	0	0	0	0	45802	1546	746	48094
Runoff Impervious Areas (m^3/yr)	3225	940	4165	129	0	0	0	8458
Total Runoff (m^3/yr)	3225	940	4165	129	45802	1546	746	56553
Total Outputs (m^3/yr)	4031	1175	5206	214	284546	13723	2487	311383
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0

Notes:

*Evaporation from impervious areas and gravel areas was assumed to be 20% and 40% of precipitation, respectively

25% of available precipitation from existing rooftops is assumed to infiltrate.

Areas based upon site statistics provided by Lassing Dibben Consulting Engineers Ltd. by email on October 15, 2019

Appendix E.4

Water Budget Post-Development - With Mitigation Strategies

Catchment Designation	SITE							
	New Building Rooftop	New Concrete Pads	New Asphalt Areas	Existing Rooftops	Remaining Open Areas	Remaining Treed Areas	Remaining Gravel Driveway	Total
Area (m^2)	4700	1370	6070	250	331755	16000	2900	363045
Pervious Area (m^2)	0	0	0	0	331755	16000	2900	350655
% Pervious	0%	0.0%	0%	0%	91.4%	4%	1%	96.6%
Impervious Area (m^2)	4700	1370	6070	250	0	0	0	12390
% Impervious	1.3%	0%	1.7%	0.1%	0%	0.0%	0.0%	3.4%
INFILTRATION FACTORS								
Topography Infiltration Factor	0	0	0	0	0.15	0.2	0.25	
Soil Infiltration Factor	0	0	0	0	0.25	0.25	0.25	
Land Cover Infiltration Factor	0	0	0	0	0.1	0.2	0	
MECP Infiltration Factor	0	0	0	0	0.5	0.65	0.5	
Actual Infiltration Factor	0	0	0	0	0.5	0.65	0.5	
Runoff Coefficient	1	1	1	1	0.5	0.35	0.5	
Runoff from Impervious Surfaces*	0.8	0.8	0.8	0.8	0.8	0.8	0.6	
INPUTS (PER UNIT AREA)								
Precipitation (mm/yr)	858	858	858	858	858	858	858	858
Run On (mm/yr)	0	0	0	0	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0	0	0	0	0
Total Inputs (mm/yr)	858	858	858	858	858	858	858	858
OUTPUTS (PER UNIT AREA)								
Precipitation Surplus (mm/yr)	686	686	686	686	276	276	515	292
Net Surplus (mm/yr)	686	686	686	686	276	276	515	292
Evaportranspiration (mm/yr)	172	172	172	172	582	582	343	566
Infiltration (mm/yr)	0	0	0	0	138	179	257	136
% Rooftop runoff req'd to balance	59.7%							
Rooftop Infiltration (mm/yr)	410	0	0	172	0	0	0	5
Total Infiltration (mm/yr)	410	0	0	172	138	179	257	142
Runoff Pervious Areas	0	0	0	0	138	97	257	132
Runoff Impervious Areas	277	686	686	515	0	0	0	18
Total Runoff (mm/yr)	277	686	686	515	138	97	257	150
Total Outputs (mm/yr)	858	858	858	858	858	858	858	858
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0
INPUTS (VOLUMES)								
Precipitation (m^3/yr)	4031	1175	5206	214	284546	13723	2487	311384
Run On (m^3/yr)	0	0	0	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0	0	0	0
Total Inputs (m^3/yr)	4031	1175	5206	214	284546	13723	2487	311384
OUTPUTS (VOLUMES)								
Precipitation Surplus (m^3/yr)	3225	940	4165	172	91604	4418	1492	106016
Net Surplus (m^3/yr)	3225	940	4165	172	91604	4418	1492	106016
Evaportranspiration (m^3/yr)	806	235	1041	43	192942	9305	995	205368
Infiltration (m^3/yr)	0	0	0	0	45802	2872	746	49420
Rooftop Infiltration (m^3/yr)	1925	0	0	43	0	0	0	1968
Total Infiltration (m^3/yr)	1925	0	0	43	45802	2872	746	51387
Runoff Pervious Areas (m^3/yr)	0	0	0	0	45802	1546	746	48094
Runoff Impervious Areas (m^3/yr)	1300	940	4165	129	0	0	0	6534
Total Runoff (m^3/yr)	1300	940	4165	129	45802	1546	746	54628
Total Outputs (m^3/yr)	4031	1175	5206	214	284546	13723	2487	311383
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0

Notes:

*Evaporation from impervious areas and gravel areas was assumed to be 20% and 40% of precipitation, respectively

25% of available precipitation from rooftops is assumed to infiltrate.

Areas based upon site statistics provided by Lassing Dibben Consulting Engineers Ltd. by email on October 15, 2019

Appendix E.5

Water Budget Summary

PARAMETER	SITE				
	Pre-Development	*Post-Development No Mitigation*	*Difference Pre- vs. Post-*	*Post-Development Rooftop Mitigation*	*Difference Pre- vs. Post-*
INPUTS (VOLUMES)					
Precipitation (m^3/yr)	311384	311384	0%	311384	0%
Run On (m^3/yr)	0	0	0%	0	0%
Other Inputs (m^3/yr)	0	0	0%	0	0%
Total Inputs (m^3/yr)	311384	311384	0%	311384	0%
OUTPUTS (VOLUMES)					
Precipitation Surplus (m^3/yr)	101535	106016	4%	106016	4%
Net Surplus (m^3/yr)	101535	106016	4%	106016	4%
Evapotranspiration (m^3/yr)	209848	205368	-2%	205368	-2%
Infiltration (m^3/yr)	51345	49420	-4%	49420	-4%
Rooftop Infiltration (m^3/yr)	43	43	0%	1968	4488%
Total Infiltration (m^3/yr)	51387	49463	-4%	51387	0%
Runoff Pervious Areas (m^3/yr)	50019	48094	-4%	48094	-4%
Runoff Impervious Areas (m^3/yr)	129	8458	6474%	6534	4978%
Total Runoff (m^3/yr)	50148	56553	13%	54628	9%
Total Outputs (m^3/yr)	311384	311383	0%	311383	0%

To maintain pre-development infiltration values; 59.7% of post-development rooftop runoff needs to be infiltrated.

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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