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PH5075-LET.01

W.O. Stinson & Sons Ltd.
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Attention: **Scott Stinson**

Subject: **Hydrogeological Assessment and Terrain Analysis**
Proposed Industrial Development
301 Somme Street, Ottawa, Ontario

INTRODUCTION

Further to your request, Paterson has conducted a Hydrogeological Assessment and Terrain Analysis in support of a Site Plan Control Application (hereby referred to as a Site Plan application) for the proposed industrial development located at 301 Somme Street in Ottawa. Please refer to the Figure 1 - Key Plan attached for the approximate site location.

The purpose of this work has been to determine the suitability of the water supply aquifer underlying the site to support the Site Plan application as well as determining the suitability of the subject site to attenuate sewage system impacts. A Hydrogeological Assessment for a different Site Plan application for the same property was competed in 2022 by GHD Ltd (GHD) and was titled Hydrogeological and Impact Assessment Report (HIAR) dated September 22, 2022. The GHD HIAR has been used to support this assessment. Supplemental hydrogeological fieldwork was performed by Paterson to confirm the water quality which was encountered in the GHD HIAR report.

The Subject Site consists of a 6.09 ha lot which is largely brush-covered, with a engineered pad extending across the central portion of the site. The property is generally flat until the northern and western property boundaries, where it then slopes into abutting ditches. A mapped watercourse (GeoOttawa) flows from southwest to northeast along the northern property boundary.

The suitability of the aquifer to supply the subject site was assessed using the methodology provided in City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG).

HYDROGEOLOGICAL PRE-CONSULTATION

A Hydrogeological pre-consultation was completed with a City of Ottawa Hydrogeologist on July 11, 2025. It was proposed to use the data collected as part of GHD's HIAR to support this site plan application. During the Hydrogeological pre-consultation, the City Hydrogeologist indicated that the collection and submission of a water quality sample would be required to confirm the water quality encountered in the GHD HIAR. The intent behind the additional sampling is to confirm that the water quality is still similar to the water quality from the pumping test completed in support of the GHD HIAR.

DESCRIPTION OF SUBJECT SITE

The subject site is an approximately 6.09 ha undeveloped lot which is covered with grassed areas and brush. An engineered pad is located in the area of the proposed building from the previous Site Plan application. Please refer to Figure-1 Key Plan and Hobin Architecture Drawing No. A1.00 Vehicle Service & Storage Yard Site Plan attached for the proposed site location and site layout.

The subject site is currently vacant and will be serviced by a private water supply and sewage system. A drilled well was installed onsite on July 27, 2022, and is hereafter referred to as Test Well 1 (TW1). TW1 is the well which will be the service well for the proposed development.

The site is bordered to the north by Rideau Road, to the east by vacant properties, and to the south and west by Somme Street. The properties to the west of Somme Street remain undeveloped, while the property south of Somme Street consist of an industrial development. The subject site itself and the surrounding industrial areas are zoned RH for Rural Heavy Industrial Zone (GeoOttawa).

POTENTIAL KARST

Based on available Ontario Geological Survey (OGS) mapping (GRS005), the subject site is not within an area of known, potential or inferred karst.

RAISIN-SOUTH NATION SOURCE PROTECTION PLAN

The Raisin-South Nation Source Protection Plan (RSNSPP) provides guidance as to which policies apply to a given property, municipality or specific activity and if there are specific designations that apply to the area. The subject site and surrounding areas have been designated as a Highly Vulnerable Aquifer (HVA within the RSNSPP), Significant Groundwater Recharge Area (SGRA) and Intake Protection Zone 3 (IPZ 3) and is identified as three of four groundwater related vulnerable areas identified within the Clean

Water Act (2006). The four vulnerable areas consist of SGRA, HVA, IPZ, and wellhead protection area (WHPA).

Based upon the designation, the RSNSPP provides a list of activities that are prohibited, managed or encouraged to change/educate dependent upon the vulnerable area type. There are no restrictions of land uses on the subject site based upon its proposed usage.

Therefore, there are no related requirements for an HVA, SGRA or IPZ 3 at this location.

FIELDWORK PROGRAM

Well Testing – GHD HIAR – August 9, 2022

As a means to demonstrate the adequacy of the aquifer underlying the subject lands with respect to water quality and quantity, TW1 was installed in July of 2022 and submitted to a pumping test as part of GHD's HIAR. TW1 has a Water Well Record (WWR) Well ID of A342117. TW1 has a 152.4 mm diameter steel casing that extends to 15.9 m below ground surface (bgs) with a 0.7 m stick up. The well itself extends to a depth of 42.7 m bgs. Based on available geological mapping, the drift thickness at TW1 varies from 0 to 2 m. Refer to Hobin Architecture Drawing A1.00 Vehicle Service & Storage Yard Site Plan, attached, for the approximate location of TW1 (referred to as existing well).

As a means to evaluate the water supply aquifer intercepted by the well, the well was subjected to a 12-hour constant rate pumping test at a rate of 38 L/min. The pumping test was conducted on August 9, 2022 by GHD. Details of the pumping test can be found in the Hydrogeological and Impact Assessment completed by GHD (September 22, 2022).

The selected rate of 38 L/min provides approximately 6.7 times the Total Daily Design Sanitary Sewage Flow (TDDSSF) volume of 4,077 L/day during the 12-hour pumping test performed by GHD. Recovery data was collected from the well following the completion of the pumping in 2022. The well was noted to have achieved 100% recovery approximately 7 hours after the completion of the 12-hour pumping test.

Supplemental Well Testing – August 12, 2025

On August 12, 2025, Paterson completed supplemental geochemical testing on TW1 where TW1 was purged at a rate of 38 L/min for 6 hours, after which a water sample was obtained. The purpose of the supplemental testing was to confirm that the water quality of the aquifer accessed by TW1 is consistent with the results from the pumping test performed by GHD in 2022.

A submersible pump was installed by Air Rock Drilling Co Ltd and used for the 6-hour purge. The well purge was carried out at a pumping rate of 38 L/min for a duration of 6 hours. The water was discharged in a manner where the discharge water would not flow back towards the well. During the well purging, the pumping rate was measured using the timed volume correlation method. The pumping rate was maintained within 5% of the

selected pumping rate. An electric datalogger (VanEssen TD-Diver) was installed in the test well prior to the start of the well purge, and the static water level was periodically recorded manually.

The selected rate of 38 L/min provides approximately 3.4 times the Total Daily Design Sanitary Sewage Flow (TDDSSF) volume of 4,077 L/day, and equates to approximately 22 well volumes.

A series of field tests of the pumped water were carried out at the well head at the end of the 6-hour well purge. The parameters tested at the well head included: pH, total dissolved solids, conductivity, turbidity, true colour, hydrogen sulfide, and temperature. Calibration / confirmation of calibration of all field-testing equipment was performed in Paterson's laboratory the day prior to the pumping test. Values are then confirmed again onsite prior to the start of the pumping test.

Groundwater samples were collected at 6 hours after the start of the purging. Prior to collection of the groundwater samples, the free chlorine residual was verified as non-detectable. The water samples were submitted for comprehensive testing of bacteriological, chemical, and physical water quality parameters consistent with the standard "Subdivision Supply" suite of parameters plus trace metals, and Volatile Organic Compounds (VOCs).

All samples were collected unfiltered and unchlorinated and were placed directly into clean bottles supplied by the analytical laboratory. Samples were placed immediately into a cooler with ice and were transported directly to Environmental Testing Canada Inc. (Eurofins) laboratory in Ottawa. All samples were received by the laboratory within 24 hours of collection.

Aquifer Analysis

The parameters encountered in the samples collected by Paterson after the well purge are similar to those found in GHD's HIAR (2022). Based on a comparison of the water quality results, there are no significant changes in water quality compared to the pumping test performed in 2022 by GHD as part of the HIAR, and therefore the pumping test completed by GHD in support of the HIAR can be considered representative for this assessment.

Water Quantity

Pumping test data was analyzed by GHD and is presented below:

Table 1: SUMMARY OF WATER SUPPLY AQUIFER CHARACTERISTICS OF TW1 GHD HIAR – AUGUST 9, 2022 PUMPING TEST	
AQUIFER PARAMETER	**RESULT OF ANALYSIS**
Transmissivity (m^2/day)	26.7
Pumping Rate (L/min)	38
Pre-test Static Water Level (m)	7.9
Post-test Static Water Level (m)	8.7
Available Drawdown (m)	31.5
% Drawdown During Pumping Test (%)	2.5
Specific Capacity (L/min/m drawdown)	48.5

The drawdown data was analyzed in GHD's HIAR and aquifer transmissivity was estimated to be 33.4 m^2/day based on the drawdown and 26.7 m^2/day based on the recovery.

The pumping test results from GHD's HIAR shows that TW1 has a high yield to support the water demands that may be required. Overall maximum drawdown at a constant pumping rate of 38 L/min, for a period of 12 hours was approximately 0.8 m (2.5% of the available drawdown). Full Recovery was attained within 7 hours after pumping ceased.

The total volume of water pumped during the 12-hour pumping event was approximately 27,360 L. This is approximately 6.7 times the maximum total daily design volume of water (4,077 L/d) required to support the Site Plan Control Application.

Based on the information summarized in Table 1, it is readily apparent that the water supply well has intercepted an adequately strong water supply aquifer which has sufficient quantity to service the proposed Site Plan Control Application.

The suitability of the aquifer to supply the proposed Site Plan Application for the proposed industrial development was assessed using the methodology provided in the City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG).

Given the analyses presented and summarized above, it is our opinion that there is an adequate supply of water to support the proposed Site Plan Control Application. Available water well records (WWR) of the neighboring properties on the MECP Well Record mapping website indicated that the wells were screened in limestone. Surrounding WWRs are attached to this report.

Water Quality

Laboratory Data

During Paterson's well purge, a total of 13,680 L was discharged. This is approximately 3.4 times the TDDSSF, and equates to approximately 22 well volumes.

A HACH Pocket Colorimeter II chlorine reader was used to measure the free chlorine residual level. No chlorine residual was detected in the discharge water prior to the collection of the water sample at the end of Paterson's well purge.

Hydrogen sulfide was not detected olfactorily during Paterson's well purge. Hydrogen sulfide levels were measured using the HACH Hydrogen Sulfide Test Kit, Model HS−C, (# 2537800).

The Subdivision Package suite of parameters and trace metals laboratory water quality obtained from the 12-hour pumping test sample collected by GHD (HIAR), along with the geochemical results from the sample collected at the end of Paterson's well purge (August 12, 2025), are presented in Tables 3a and 3b below. The laboratory analyses reports can be found attached. VOC laboratory analytical testing was completed on the sample collected at the end of Paterson's well purge and was found to be non-detect in the sample results. All laboratory test results can be found attached to this report.

TABLE 3a: GROUNDWATER MICROBIOLOGY & GENERAL GEOCHEMISTRY					
PARAMETER	UNITS	ODWS		TW1	
		LIMIT	TYPE	A342117 (12hr) 2022-08-09	TW1 GW1 (6 hr) 2025-08-12
MICROBIOLOGICAL					
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0	0
Total Coliforms	ct/100mL	0	MAC	3	0
GENERAL CHEMICAL - HEALTH RELATED					
Fluoride (F)	mg/L	1.5	MAC	-	2.20
Ammonia ($N\text{-}NH_3$)	mg/L	-	-	0.17	0.240
Nitrite ($N\text{-}NO_2$)	mg/L	1	MAC	<0.003	<0.5
Nitrate ($N\text{-}NO_3$)	mg/L	10	MAC	<0.006	<0.5
Total Kjeldahl Nitrogen	mg/L	-	-	0.16	0.332
Turbidity (Field)	NTU	1.0 (5.0)	MAC/AO	-	0.86
Turbidity (Laboratory)	NTU	1.0 (5.0)	MAC/AO	4.21	2.3
GENERAL CHEMICAL - AESTHETIC RELATED					
Alkalinity (as CaCO3)	mg/L	30-500	OG	261	306
Chloride (Cl)	mg/L	250	AO	68	79
Colour (Laboratory - True)	TCU	5	AO	<2	<2
Colour (Field - True)	TCU	5	AO	-	0
Conductivity	uS/cm	-	-	1350	1,210
Dissolved Organic Carbon	mg/L	5	AO	2	2.2
Hardness (as CaCO3)	mg/L	100	OG	511	567
Ion Balance	unitless	-	-	-	1.01
pH	unitless	6.5-8.5	AO	8.23	8.2
Phenols	mg/L	-	-	-	<0.001
Sulphate (SO_4)	mg/L	500	AO	400	285
Sulphide (S_2^-)	mg/L	0.05	AO	<0.02	<0.01
Tannin & Lignin	mg/L	-	-	0.4	0.10
Total Dissolved Solids	mg/L	500	AO	914	787

1. ODWS identifies the following types of parameters:
   MAC = Maximum Allowable Concentration
   AO = Aesthetic Objective
   OG = Operational Guideline
2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

TABLE 3b: GROUNDWATER GEOCHEMISTRY - METALS					
PARAMETER	UNITS	ODWS		TW1	
		LIMIT	TYPE	A342117 (12hr) 2022-08-09	TW1 GW1 (6 hr) 2025-08-12
METALS					
Aluminum (Al)	mg/L	0.1	OG	<0.001	<0.01
Antimony (Sb)	mg/L	0.006	IMAC	<0.0009	<0.0005
Arsenic (As)	mg/L	0.01	IMAC	0.0004	<0.001
Barium (Ba)	mg/L	1.0	MAC	0.0988	0.09
Beryllium (Be)	mg/L	-	-	0.000011	<0.0005
Boron (B)	mg/L	5.0	IMAC	0.216	0.24
Cadmium (Cd)	mg/L	0.005	MAC	0.00002	<0.0001
Calcium (Ca)	mg/L	-	-	117	128
Chromium (Cr)	mg/L	0.05	MAC	<0.00008	<0.001
Cobalt (Co)	mg/L	-	-	0.000082	<0.0002
Copper (Cu)	mg/L	1.0	AO	<0.0002	<0.001
Iron (Fe)	mg/L	0.3	AO	0.48	0.55
Lead (Pb)	mg/L	0.01	MAC	<0.00009	<0.001
Magnesium (Mg)	mg/L	-	-	53.5	60
Manganese (Mn)	mg/L	0.05	AO	0.171	0.18
Mercury (Hg)	mg/L	0.001	MAC	<0.00001	<0.0001
Molybdenum (Mo)	mg/L	-	-	0.03188	0.018
Nickel (Ni)	mg/L	-	-	0.0012	<0.005
Potassium (K)	mg/L	-	-	7.39	8
Selenium (Se)	mg/L	0.05	MAC	0.00011	<0.001
Silver (Ag)	mg/L	-	-	<0.00005	<0.0001
Sodium (Na)	mg/L	200	AO	57	65
Strontium (Sr)	mg/L	-	-	5.92	6.25
Thallium (Tl)	mg/L	-	-	<0.000005	<0.0001
Uranium (U)	mg/L	0.02	MAC	0.000219	<0.001
Vanadium (V)	mg/L	-	-	0.00009	<0.001
Zinc (Zn)	mg/L	5.0	AO	<0.002	<0.01

1. ODWS identifies the following types of parameters:
   MAC = Maximum Acceptable Concentration
   IMAC = Interim Maximum Acceptable Concentration
   AO = Aesthetic Objective
   OG = Operational Guideline
2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

The bacteriological test results from Paterson's Well purge (Certificate of Analysis – Report No. 4432589) indicated that the test samples at the 6-hour point were non-detect (0 ct/100 mL) for E.Coli and Total Coliforms.

The water quality of the subject water supply well meets all the Ontario Drinking Water Standards Maximum Acceptable Concentrations (MAC). The water meets all of the Aesthetic Objectives (AO) and Operational Guidelines (OG) with the exception of the following:

- ❑ Hardness (as $CaCO_3$)
- ❑ Fluoride (F)
- ❑ Total Dissolved Solids (TDS)
- ❑ Iron (Fe)
- ❑ Manganese (Mn)

Each of these groundwater parameters are discussed in detail below. Should any water treatment be desired by the owner, it is recommended that a water treatment specialist be retained to ensure that water treatment occurs in a safe manner.

Hardness as $CaCO_3$

Hardness, expressed as calcium carbonate, is an operational guideline and does not appear in the ODWS. Rather, it appears in the Technical Support Documents for Ontario Drinking Water Standards, Objectives and Guidelines as a parameter with an operational guideline at 100 mg/L. At the measured concentrations of 567 mg/L, the water is considered to be very hard, and it is above the Ontario Drinking Water Objective (ODWO) of 500 mg/L specified in Table 3 of the MOECC guidance document Procedure D-5-5 (1996).

The Langelier Saturation Index (LSI) calculation provided an LSI of 0.5. Based on the evaluation of the result, the water is super saturated and tends to precipitate a scale layer of calcium carbonate (slightly scale forming and slightly corrosive). Based on the range of stability in the positive direction, there are no mitigative measures needed. See Langelier Saturation Index Calculation attached for calculation details.

It is recommended that water hardness be treated using conventional technologies such as water softening or reverse osmosis, if desired by the owner. Without treating hardness, scaling can occur which can result in discolouration and residue buildup on water fixtures, or reduction in boiler efficiency due to scale build-up. According to Health Canada's *Guidelines for Canadian Drinking Water Quality - Summary Tables,* "Although hardness may have significant aesthetic effects, a guideline has not been established because public acceptance of hardness may vary considerably according to the local conditions; major contributors to hardness (calcium and magnesium) are not of direct public health concern".

Fluoride

Fluoride can be naturally occurring in groundwater and has been added to drinking water in concentrations of 0.5 to 0.8 mg/L to control tooth decay. Fluoride was present in concentrations of 2.2 mg/L. The MAC for fluoride is 1.5 mg/L, however, concentrations up to 2.4 mg/L are considered acceptable where the fluoride is naturally occurring.

According to the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (TSDODWSOG), when fluoride concentrations are above 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends that an approach through local boards of health be used to raise public and professional awareness to control for excessive exposure to fluoride. Although no treatment is required for fluoride, it must be reported to the local Medical Officer of Health.

Total Dissolved Solids (TDS)

Total Dissolved Solids (TDS) refers to the concentration of inorganic substances dissolved in water. The main constituents are typically chloride, sulphates, calcium, magnesium, and bicarbonates. The TDS concentration of 787 mg/L exceeds the Aesthetic Objective of 500 mg/L. At concentrations above 500 mg/L, some consumers may find the taste objectionable, however, as the objective is an aesthetic objective, no treatment is required. It is recommended that a point of use reverse osmosis unit be installed, if the owner desires, for drinking purposes. As such, no taste problems will occur when the system is used.

The Langelier calculation provided an LSI of 0.5. Based on the evaluation of the result, the water is super saturated and tends to precipitate a scale layer of calcium carbonate (slightly scale forming and slightly corrosive). Based on the range of stability in the positive direction, there are no mitigative measures needed for TDS. See Langelier Saturation Index Calculation attached for calculation details.

Iron

Concentrations of iron above 0.3 mg/L can contribute to staining of fixtures and a metallic taste at higher concentrations. Precipitation of iron can promote the growth of iron bacteria in pipes. The concentration of iron in the groundwater in TW1 was measured to be 0.55 mg/L. The concentration of iron in the groundwater is considered to be reasonably treatable in accordance with Procedure D-5-5. It is recommended that a water softener or manganese greensand filter be used to reduce the levels of iron and reduce the potential for excessive precipitate occurring in the water supply system, if desired by the property owner. If treatment is not used, negative impacts such as discolouration of water fixtures, precipitation of iron and staining may occur.

Manganese

The manganese concentration results from the laboratory test samples yielded a value of 0.18 mg/L in the onsite well, which is above the aesthetic objectives in the ODWSOG of 0.05 mg/L. The Health Canada Federal Drinking Water Guidelines have suggested a health related MAC of 0.12 mg/L due to potential adverse effects on the central nervous system primarily in infants due to chronic exposure, however this guideline has not been implemented by Ontario as of the writing of this report. Furthermore, this is an industrial development that is not raising infants.

According to the Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Manganese, section 3: “Specific guidance related to the implementation of drinking water guidelines should be obtained from the appropriate drinking water authority in the affected jurisdiction.”. The applicable regulations which apply to the development approval process for this site are the HTAG and MECP Procedure D-5-5, which does not have a MAC for manganese.

Procedure D-5-5 gives a maximum concentration considered reasonably treatable for manganese as 1.0 mg/L. It is recommended that a reverse osmosis system, ion exchange, water softeners and / or an oxidizing filter be used to reduce the manganese concentration, if desired by the owner.

As the concentration of manganese is elevated above the Health Canada Federal Drinking Water Guidelines, a notice regarding the elevated levels of manganese in the aquifer accessed by TW1 is recommended to be registered on title so that future owners are made aware.

The City of Ottawa (Ottawa Public Health) has prepared a Manganese in drinking Water Factsheet, which can be found attached to this report.

Sodium

Sodium (Na), an aesthetic parameter, was detected in the laboratory test sample at concentrations of 65 mg/L, which does not exceed the ODWS aesthetic objective of 200 mg/L. Although sodium is not toxic and no maximum acceptable concentration has been set, concentrations above 20 mg/L require that the Medical Officer of Health be notified of the water quality results, so that this information may be passed on to local physicians for use in treatment of those requiring a sodium-restricted diet. It should be noted that some water treatment technologies, such as water softeners, can increase the sodium concentration so care should be given if such treatment technologies are used.

Terrain Analysis

Surficial Geology

A series of boreholes were put down on the subject parcel to delineate the subsurface soil conditions. Onsite investigations were completed by Paterson in 2025, 2021 and 2019 with further investigations completed by others in 2021, 2020, and 2008. The boreholes were distributed in a manner to provide general coverage of the subject site, taking into consideration underground services and available site access. The locations of the test holes on the property are delineated on the Test Hole Location Plan, drawing PG7327-1, attached.

The borehole locations were recorded and the subsurface conditions, including the soil morphology and depth to the groundwater table (if encountered), were carefully observed and recorded. The soils encountered were classified texturally in the field and later reviewed in the laboratory.

Generally, the subsurface profile at the borehole locations were observed to consist of topsoil followed by an approximate 2.3 to 10 m thickness of fill material followed by a layer of clayey silt to silty clay and/or silty sand. Generally, the fill material consisted of silty sand and/or silty clay with varying amounts of organics, gravel, asphalt, concrete and bedrock fragments. The boreholes were advanced to a maximum depth of 14.3 m below ground surface (bgs).

Reference should be made to the test pit logs appended to this report for the details of the soil profiles encountered at each test hole location. The client should be aware that any information pertaining to soils are furnished as a matter of general information only and borehole descriptions are not to be interpreted as descriptive of conditions at locations other than those described by the boreholes themselves.

Hydrogeological Sensitivity of the Site

The subject site is currently vacant and undeveloped aside from an engineered pad. The subject site is to be serviced by a private well and sewage system. The site is bordered by Rideau Road to the north, by vacant lands to the east, and by Somme Street to the west and south. All surrounding properties are on private services.

The overburden at the test hole locations generally consists of topsoil followed by an approximate 2.3 to 10 m thickness of fill material followed by a layer of clayey silt to silty clay and/or silty sand overlying bedrock. The WWR for TW1 indicates that bedrock was encountered at 14.0 m bgs. According to available geological mapping, the drift thickness within the site varies from 0 to 2 m bgs.

According to the geotechnical field investigation, the overburden thickness was observed to be greater than 2 m. As such, the site is not considered to be hydrogeologically sensitive and, therefore, mitigating measures are not required.

Conceptual Lot Development Plan

A vehicle service building, a storage building, a cardlock fueling area and propane storage tanks along with infrastructure is proposed to be constructed onsite. The location of the proposed structure can be found on the attached Hobin Architecture Drawing A1.00 Vehicle Servicing & Storage Yard Site Plan, attached to this report.

Proposed Sewage System

A sewage system design was completed by Paterson and submitted to the Ottawa Septic System Office (OSSO) for a Sewage System Installation Permit (SSIP). The sewage flows for the proposed development are based on Part 8 of the Ontario Building Code (OBC). The Total Daily Design Sanitary Sewage Flow (TDDSSF) volume was calculated to be 4,077 L/day.

The approved OSSO SSIP includes an Advantex AX25-RT treatment system, which is an NSF 245 approved sewage treatment system capable of reducing total nitrogen levels by at least 50 %.

The OSSO approved SSIP will be submitted separately as part of the Site Plan application.

Predictive Nitrate Impact Assessment

Nitrate is considered to be a critical parameter of concern when assessing impacts to groundwater quality downgradient of an onsite sewage system. The City's HTAG, including the annotated MECP Procedure D-5-4 applies for the proposed development. For the purpose of this guideline, the Ontario Drinking Water Objective of 10 mg/L of nitrate is used as an indicator of groundwater impact potential.

Under this guideline, where the average lot size is one hectare or larger and the minimum lot size is 0.8 ha or greater, a detailed impact assessment may not be required. It has been the City of Ottawa's policy that where the lot size of 0.8 ha or larger, a detailed assessment is typically not required since it is considered to be a low-risk development.

The subject site is located within the Hawthorne Industrial Park industrial subdivision (Golder Associates 08-1122-0215-3, September 2011). The subject site is 6.09 ha in size, while the industrial subdivision has an average lot size of 3.15 ha, with lot sizes ranging from 0.8 – 11.04 ha. As such, a detailed nitrate impact assessment (NIA) would not typically be necessary. An NIA was completed below to corroborate our opinion that the property can adequately support the proposed development without having adverse impacts on the underlying bedrock aquifer should the minimum separation distances, well construction, and sewage system be completed as per the recommendations of this report and the OBC. The values shown in the Predictive Nitrate Impact Assessment attached to this report are summarized below.

- ❑ Site area 6.09 ha
- ❑ Impervious area (%) 80 %
- ❑ Daily sewage flow 4.1 m^3/d
- ❑ Concentration of nitrate in effluent with treatment 20 mg/L
  (Value based on nitrate reduction system (Advantex AX25RT Series) with 50 % nitrate reduction)
- ❑ Surplus Water 361 mm/yr
  (The surplus water value was estimated based on Environment Canada Climate Office values with a soil type comprised of clay (Urban Lawns) and anthropogenic sources.)
- ❑ Combined infiltration factor based on: 0.50
- Topography infiltration factor 0.20
- Soil texture infiltration factor 0.20
- Cover infiltration factor 0.10

The topography infiltration factor of 0.20 is based upon a rolling land with an average slope of 2.8 to 3.8 m/km. The soil texture infiltration factor was based upon a material which consisted of a silty sand to silty clay, which is a medium combination of clay and loam with a value of 0.2. This is a reasonable generalization of the overburden. The “cover infiltration factor” was calculated at 0.10 based upon a conservative cultivated land type cover.

There are numerous tertiary treatment technologies that are NSF/ANSI 245 and/or BNQ certified for 50% nitrate reduction, resulting in an effluent nitrate concentration of less than 20 mg/L. The proposed sewage system consists of an Advantex AX25-RT treatment system, which is NSF 245 certified and is therefore capable of providing a minimum of 50 % nitrate reduction. When using an effluent nitrate concentration of 20 mg/L, the predicted nitrate concentration at the property boundary is **8.09 mg/L**. This is below the limit of 10 mg/L of nitrate at the property boundary.

Based on the results of the predicted nitrate impact assessment, it is our opinion that the property can adequately support the proposed industrial development without having an adverse impact on the underlying bedrock aquifer, provided that a NSF/ANSI 245 and/or BNQ certified 50% nitrate reduction technology is used in the sewage system.

CONCLUSIONS

Based on the information contained within the body of this report the following conclusions can be drawn:

1. The water supply aquifer intercepted by the existing well is considered to be adequate to support the water quantity demands for the proposed industrial development.

2. The groundwater contains elevated concentrations of hardness, fluoride, TDS, iron and manganese. The noted parameters can be treated to functional concentrations with current readily available water conditioning equipment, if desired by the owner.

3. Elevated concentrations of manganese were encountered in the water supply intercepted by TW1. Although only regulated for aesthetic reasons in Ontario (AO of 0.05 mg/L), the federal government of Canada has a MAC of 0.12 mg/L due to potential adverse effects on the central nervous system primarily in infants due to chronic exposure. This guideline has not been implemented by Ontario as of the writing of this report. As the concentration of manganese is elevated above the Health Canada Federal Drinking Water Guidelines, a notice regarding the elevated levels of manganese in the aquifer accessed by TW1 is recommended to be registered on title so that future owners are made aware.

4. If desired by the property owner, a residential grade water softener can be used to facilitate the reduction of the hardness concentration and reduce scaling. If a water softener is used for the proposed development, the owner should be made aware that additional sodium will be added to the water to reduce hardness. Note that elevated hardness is above the MCCRT, however, the MCCRT for hardness is related to aesthetic reasons. If desired, a point-of-use reverse osmosis system can be used to provide a drinking tap source without increasing sodium levels.

5. The sodium concentration was measured to be above the 20 mg/L reporting limit and, as such, the Medical Officer of Health for the City of Ottawa should be informed to assist area physicians in the treatment of local residents on sodium reduced diets. It should be noted that some water treatment equipment may further increase the sodium concentration.

6. The predicted nitrate concentrations at the property boundary is calculated to be below the required 10 mg/L threshold when an NSF/ANSI 245 and/or certified BNQ system with a minimum of 50 % nitrate reduction tertiary treatment system is used.

7. A Sewage System Permit and Building Permit need to be issued prior to the commencement of construction on the proposed industrial building or the proposed sewage system.

8. The results of the Hydrogeological Assessment and Terrain Analysis have provided satisfactory evidence that the subject site can support the proposed building addition with respect to water quantity and sewage system placement.

We trust that the current submission satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Alexander Schopf, PhD, EIT

PROFESSIONAL GEOSCIENTIST
ONTARIO
September 3, 2025
ERIK ARDLEY
PRACTISING MEMBER
3667

Erik Ardley, P.Geo

Attachments:

- ❑ Key Plan
- ❑ Hobin Architecture A1.00 Vehicle Service & Storage Yard Site Plan
- ❑ MECP Water Well Records
- ❑ Eurofins Certificate of Analysis
- ❑ Paterson Borehole Logs
- ❑ Nitrate Impact Assessment Calculations
- ❑ Langelier Saturation Index (LSI) Calculation
- ❑ City of Ottawa Manganese in Drinking Water Factsheet
- ❑ Paterson Drawing PG7567-1 - Test Hole Location Plan
- ❑ GHD Ltd. *Hydrogeological and Impact Assessment Report*, September 22, 2022

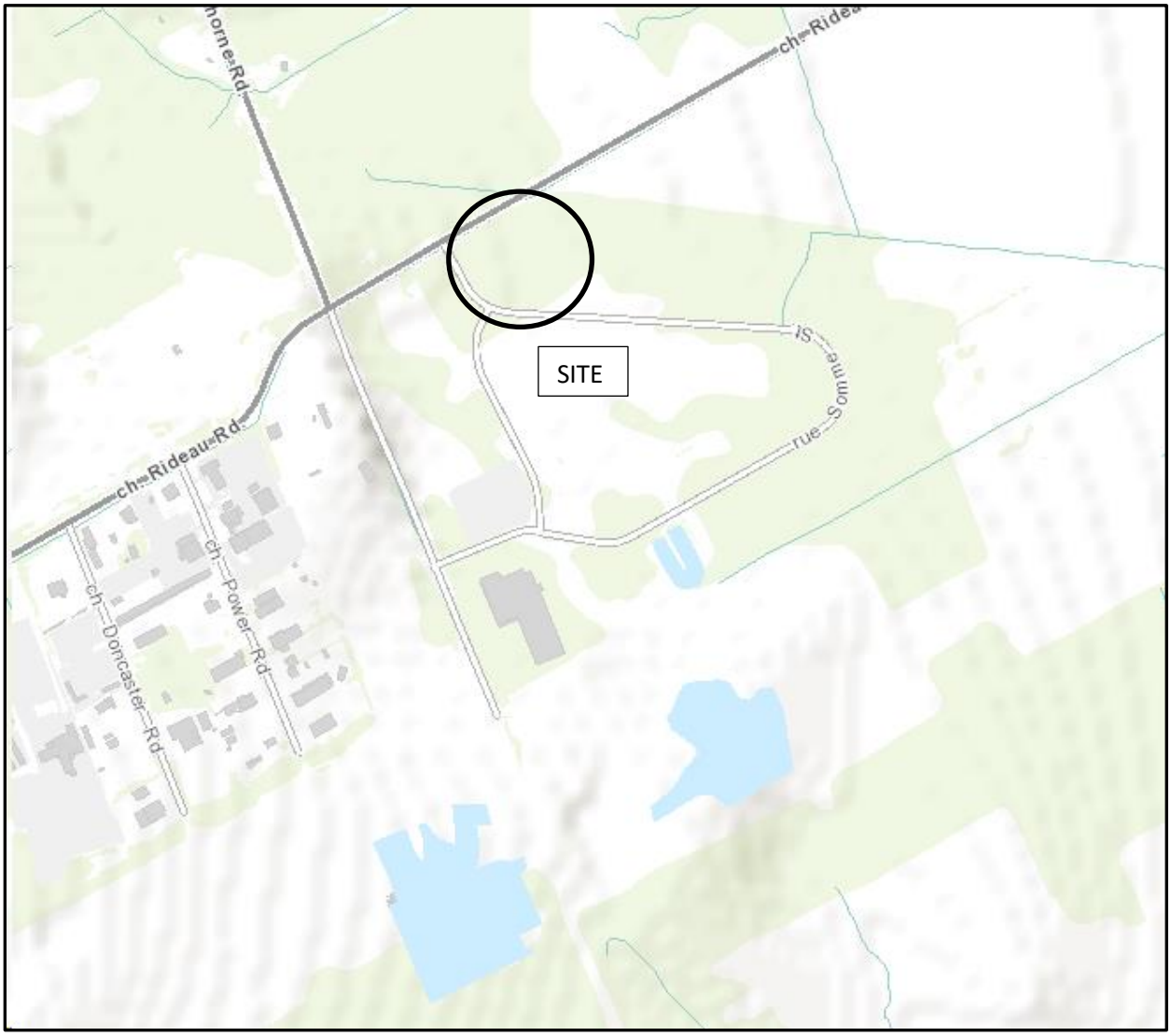
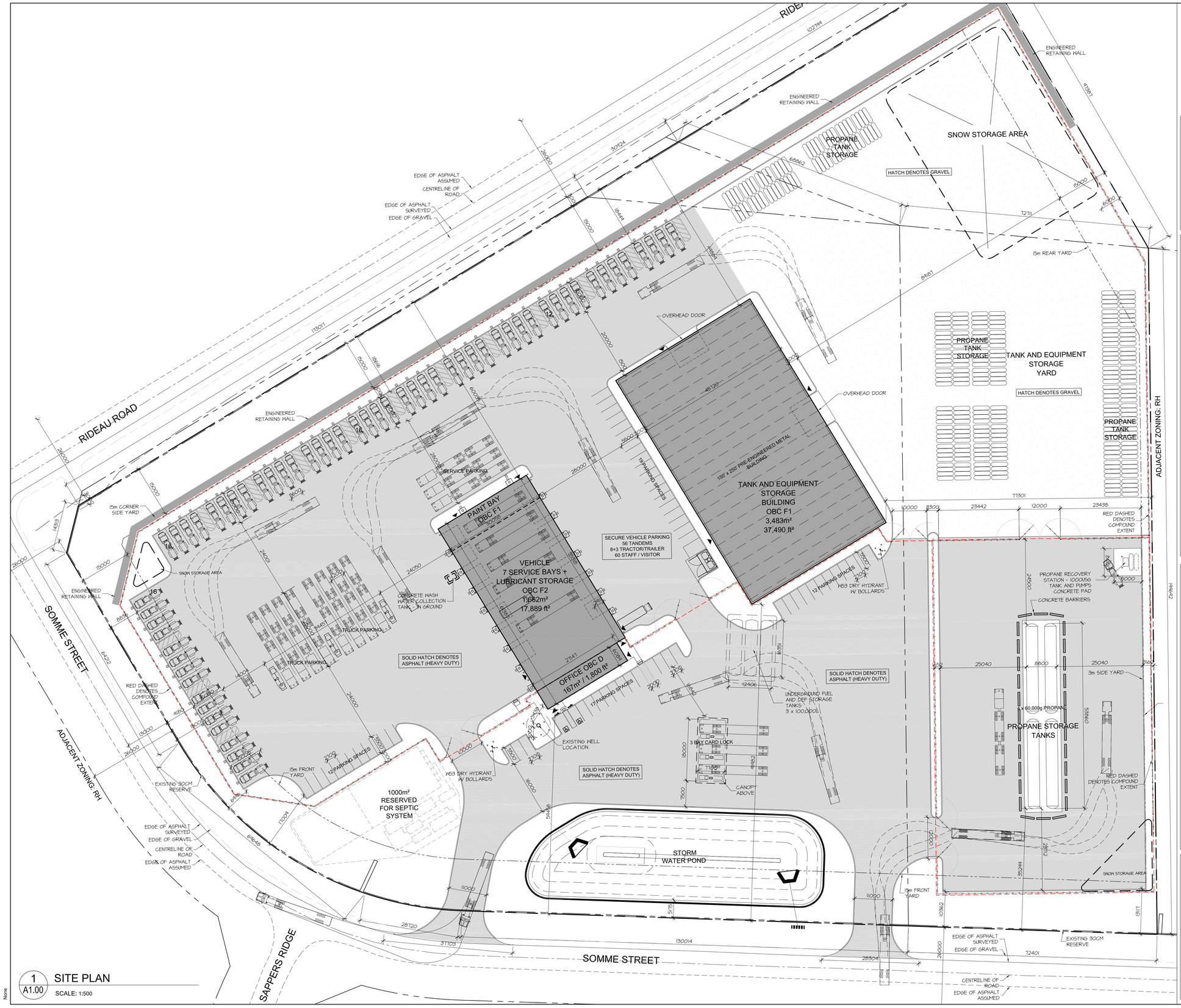


FIGURE 1

KEY PLAN

PATERSON GROUP



1 A1.00 SITE PLAN

SCALE: 1:500

None
None

W.O. STINSON & SON LTD.

LEGAL DESCRIPTION:

PART OF LOT 26; CONCESSION 6 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
and PARK OF BLOCKS 5 AND 14, REGISTERED PLAN 4M-1388
CITY OF OTTAWA

CIVIL ADDRESS:

301 SOMME STREET, OTTAWA

ZONING NOTES:

OFFICIAL PLAN DESIGNATION: RURAL
ZONING - RH - RURAL HEAVY INDUSTRIAL
ABUTTING - RH - RURAL HEAVY INDUSTRIAL

Owner
W. O. STINSON & SON LTD.
4128 Bank Street, Ottawa, ON K1T 3W7
Attn: Scott Stinson - 613 822-7400

Architect/Agent
HOBIN ARCHITECTURE INC.
63 Pamilla Street, Ottawa, ON, K1S 3K7
Attn: Doug van den Ham - 613-238-1200 x 115

Survey
ANNIS O'SULLIVAN VOLLEBEKK LTD
113 Prescott Street, Box 1340, Kemptville, Ontario K0G1J0
Attn: Emmett Ketchum - 613-258-1717

Civil
STANTEC OTTAWA
300 - 1331 Clyde Avenue Ottawa ON K2C 3G4
ATTn: Peter Moroz P.Eng - 613-244-2851

Structural
NOT YET CONTRACTED

Electrical
NOT YET CONTRACTED

Landscape
NOT YET CONTRACTED

Traffic
PARSONS ENGINEERING
1223 Michael St., Suite 100, Ottawa, ON K1J 7T2
Attn: Jake Berube - 613-641-1882

LEGEND:

B.F. PARKING STALL c/w BF. SIGNAGE	3400, 5650
DEPRESSED CURB c/w TWSI	
150mm DIA., 6mm THK, GALV. STEEL BOLLARD (MIN. 1.5m HIGH & 1.5m BELOW GRADE)	BOL
300mm DIA., 6mm THK, GALV. STEEL BOLLARD (MIN. 1.5m HIGH & 1.5m BELOW GRADE)	BOL-2
PRECAST CONCRETE PAVING	
CAST IN PLACE CONCRETE SIDEWALK/ REFER TO GEOTECH. REPORT	
HEAVY DUTY ASPHALT	
ASPHALT SIDEWALK	
PAINTED LINE STOP BAR	
ROLLED CONCRETE CURB	RC
SITE SIGNAGE	
PAINTED LINES	
BIKE RACK	
EXTERIOR LIGHTING/ REFER TO ELEC. DWGS. FOR TYPES	AD
CHAIN LINK FENCE	
FIRE ROUTE SIGNAGE	FRS

no.	date	revision
8	AUG 13, 2025	ISSUED FOR COORDINATION
7	JULY 17, 2025	ISSUED FOR COORDINATION
6	JULY 16, 2025	ISSUED FOR CONCEPT REVIEW
5	MAY 28, 2025	SITEPLAN – EXISTING WELL
4	APR 15, 2025	SITEPLAN PRE-CONSULTATION
3	MAR 20, 2025	ISSUED FOR CONCEPT REVIEW
2	MAR 06, 2025	ISSUED FOR CONCEPT REVIEW
1	FEB 27, 2025	ISSUED FOR CONCEPT REVIEW

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

Copyright reserved.

ZONE: RH	REQUIRED	PROVIDED
PERMITTED USE (AMONG OTHERS)	AUTOMOBILE SERVICE STATION, DRIVE-THROUGH FACILITY, GAS BAR,PARKING LOT, SERVICE & REPAIR SHOP, STORAGE YARD, WAREHOUSE	ALL PERMITTED USES
MIN. LOT AREA	8,000 sq.m.	60,893sq.m.
MIN. LOT WIDTH	50m	00m
MIN. FRONT YARD SETBACK	15 m	15 m
MIN. REAR YARD SETBACK	15 m	15 m
MIN. INTERIOR SIDE YARD SETBACK (i) ABUTTING INDUSTRIAL ZONE (ii) OTHER	3m 10m	3m 10m
MIN. CORNER SIDE YARD SETBACK	15m	15m
MAX. PRINCIPAL BUILDING HEIGHT	15m	15m
MAX. LOT COVERAGE (%)	50%	8.7%
PARKING SPACES (STAFF)	00 / 100 = 00	60
BICYCLE PARKING	1 / 1500 = 2	2 PROVIDED INDOORS
OUTDOOR STORAGE	NOT PERMITTED IN ANY REQUIRED FRONT OR CORNER SIDE YARD, MUST BE SCREENED FROM ADJACENT RESIDENTIAL OR PUBLIC ROADS BY A 1.8M HIGH OPAQUE SCREEN	

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-1200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
W.O. Stinson & Son Ltd.
Somme Street Truck Yard
301 Somme Street

DRAWING TITLE:
VEHICLE SERVICE & STORAGE YARD SITE PLAN

DRAWN BY:	DATE:	SCALE:
DV	FEB 2025	AS NOTED

PROJECT: 2502

DRAWING NO.: A1.00

REVISION NO.:

TW1

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag#: A342117 (Below)

A342117

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	Consolidated Fastfrate (Ottawa) Holdings Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
333 Preston Street, 7th Floor	Ottawa	Ont	K1S 5N4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
# 301 SOMME STREET	GLOUCESTER	P/L 26&27	6 R.F.

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA-CARLETON	GLOUCESTER	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	456582	5017208	4M-1388	

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
	Gravel, Hard Pan, Boulders			0'	46'
Grey & Black	limestone	W/ White Sandstone	Mix	46'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
52'	0'	Neat Cement Slurry	12.48

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	.188"	+2'	52'
6"	Open Hole		52'	140'

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

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
128	☐	☐ Fresh ☒ Untested	
134	☐	☐ Fresh ☒ Untested	
	☐	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	52'	9 3/4"
52'	140'	6"

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co Ltd	7681

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6659 Fronttown Road	Richmond	Ont	K0A2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
6138382170	Hanna Jeremy	T3632		2022/08/31

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify _____

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 120'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 30'7"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min/GPM): 20

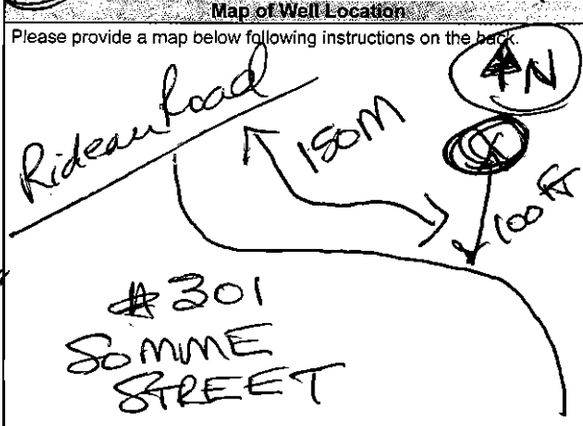
Well production (l/min/GPM): 20

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		28'2"		30'4"
1	29.3		1	29.2
2	29.4		2	29.1
3	29.5		3	29.1
4	29.6		4	29.1
5	29.7		5	29.
10	29.9		10	28.2
15	30.1		15	28'2"
20	30.3		20	
25	30.4		25	
30	30.5		30	
40	30.6		40	
50	30.7		50	
60	30'7"		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1 HP 20 GPM Set @ 100 FT

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2022/08/28	2022/07/27

Ministry Use Only

Audit No. Z379047

Received NOV 22 2022

0506E (2020/06) © Queen's Printer for Ontario, 2020

Ministry's Copy

4 31G/52 162

UTM 18 Z 456400 E
9 R 5016870 N
Elev. 9 R 0290
Basin 25

ONTARIO

The Well Drillers Act
Department of Mines, Province of Ontario

15 No 2342

RECEIVED
DEC 10 1951
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

Water Well Record

[redacted] CARLETON Township, ~~Village, Town or City~~ Gloucester
Town or City)
ss Leitrim
Date Completed 30 (day) 10 (month) 50 (year) Cost of Well (excluding pump)

Pipe and Casing Record		Pumping Test	
Casing diameter(s)	5"	Date	
Length(s) of casing(s)	WELL DEEPENED	Static level	13'
Type of screen	From 27' To 57'	Pumping level	18'
Length of screen		Pumping rate	8 GPM
Distance from top of screen to ground level		Duration of test	30 MIN
Is well a gravel-wall type?		Distance from cylinder or bowls to ground level	

Water Record

Kind (fresh or mineral) Fresh
Quality (hard, soft, contains iron, sulphur, etc.) hard
Appearance (clear, cloudy, coloured) clear
For what purpose(s) is the water to be used? Farm supply

How far is well from possible source of contamination? 75'
What is the source of contamination? Cow stable
Enclose a copy of any mineral analysis that has been made of water

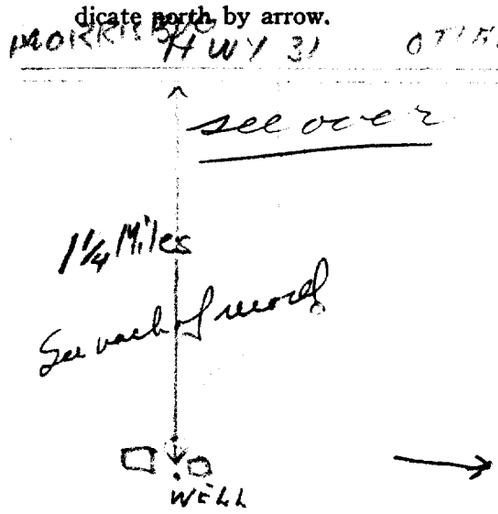
Depth(s) to Water Horizon(s)	Kind of Water	No. of Water R
57	Fresh	44'

Well Log

Overburden and Bedrock Record	From	To
Previous well	0 ft.	27 ft.
SANDSTONE	27'	57'

Location of Well

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



Situation: Is well on upland, in valley, or on hillside? hillside
Drilling Firm F. A. McL[illegible] SON
Address 18[illegible] TAMES ST
Name of Driller M. RENAUD Address
Date Nov 20/51 Licence Number

Signature of Licensee

FORM 5

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

316/5a

Ontario

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

11 | 1514733 | MUNICIP. 15002 | CON. RF | LOT 026 ~~27~~

COUNTY OR DISTRICT [redacted] | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Gloucester Rideau Front. | CON., BLOCK, TRACT, SURVEY, ETC. SRF

[redacted] awa Road Ottawa

DATE COMPLETED DAY 15 MO. 04 YR. 75

16698 | RC 4 | ELEVATION 0330 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Sandy soil			0	2
Brown	shale			2	10
grey	limestone		hard	10	116

31 | 000260228 | 00106 17 | 0116215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0112	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0	~~18~~ 0018
05	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☒ OPEN HOLE			0116
	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 0010 GPM | DURATION OF PUMPING 01 HOURS 20 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
040 FEET	065 FEET	060 FEET	065 FEET	065 FEET	065 FEET

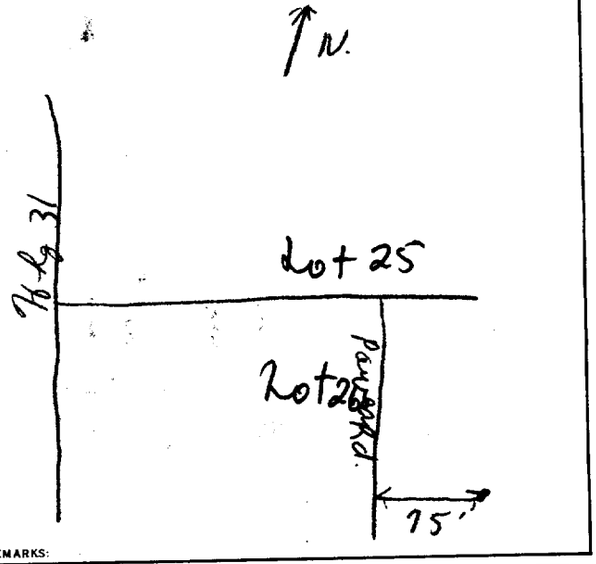
IF FLOWING, GIVE RATE GPM | PUMP INTAKE SET AT 110 FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING 090 FEET | RECOMMENDED PUMPING RATE 0005 GPM

0000.4 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 1656

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 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 57: 1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Maurice Cayer | LICENCE NUMBER 1517

ADDRESS: Casselman Ont

NAME OF DRILLER OR BORER | LICENCE NUMBER

SIGNATURE OF CONTRACTOR: Maurice Cayer | SUBMISSION DATE DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1517 | DATE RECEIVED 63-68: 08 07 75

DATE OF INSPECTION | INSPECTOR

REMARKS: CSS.SS

P ✓

WI

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT COPY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1527048

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

11

MUNICIP 15002 | CON. CON | 06

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Ottawa Carleton	Gloucester	6	26

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Beaver Road Builders Ltd.	P.O. Box 4208 st. "E" Ottawa, Ontario K1S 5B2	DAY 19 MO 4 YR 93

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	Sandy Clay	Broken Rock	Fill	0	9
Gray	Hardpan	Boulders		9	15
Gray	Limestone		Soft	15	33
White & Gray	Sandstone		Hard	33	135

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
56	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
120	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS — NOT TESTED
	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	31
6 1/8	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		31	75
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		75	135

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.)
31	0	Grouted - Cement (18)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	15-20 GPM	1 HOURS ___ MINS

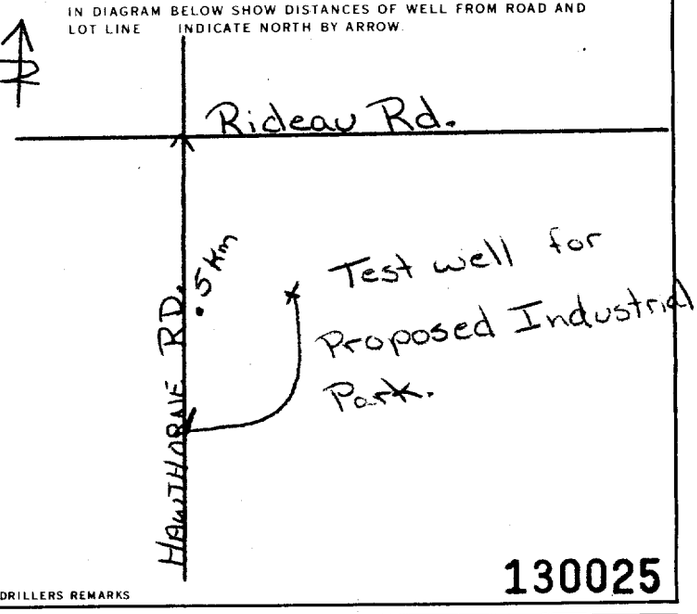
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
31 FEET	130 FEET	1 ☐ PUMPING 2 ☒ RECOVERY	40 FEET	32 FEET	31 FEET	31 FEET

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	125 FEET	5 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

130025

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: Capital Water Supply Ltd. | WELL CONTRACTOR'S LICENCE NUMBER: 1558

ADDRESS: P.O. Box 490 Stittsville, Ontario K2S 1A6

NAME OF WELL TECHNICIAN: S. Miller | WELL TECHNICIAN'S LICENCE NUMBER: T0097

SIGNATURE OF TECHNICIAN/CONTRACTOR: W Kavanagh | SUBMISSION DATE: DAY 20 MO 4 YR 93

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR: 1558 | DATE RECEIVED: MAY 06 1993

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 — 1527383 — MUNICIP 15002 — CON. CON. K6

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	[redacted]ucester	6	26

[redacted] Box 4208 stn. "E" Ottawa, Ontario K1S 5B2 — DATE COMPLETED: DAY 16 MO 8 YR 93

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	Stone		0	5
Gray	Hardpan	Boulders		5	28
Gray	Sandstone		Hard	28	100

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
58	1 ☐ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
88	1 ☐ FRESH 2 ☐ SALTY — 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
NOT TESTED	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	39
5 15/16	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		39	100
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

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

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
37.5	0	Cement - Grouted

71 PUMPING TEST

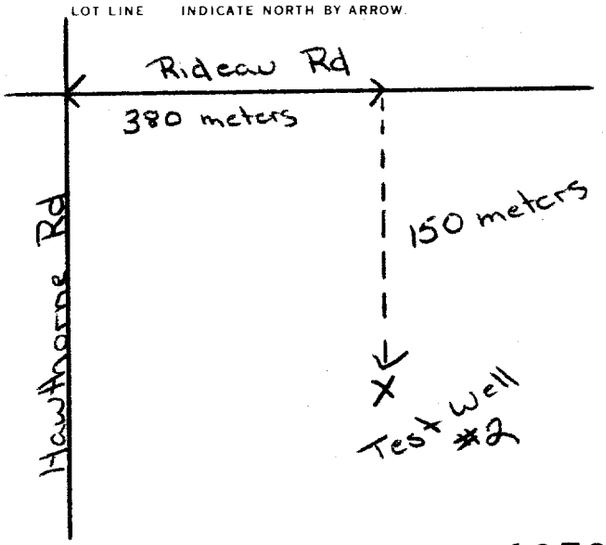
PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	20 GPM	1 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
7'6" FEET	14'6" FEET		13'11" FEET	14 FEET	14'4" FEET	14'6" FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
GPM	FEET	1 ☐ CLEAR 2 ☒ CLOUDY	☐ SHALLOW ☒ DEEP	50 FEET	5 GPM

LOCATION OF WELL

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



DRILLERS REMARKS: 135946

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: Capital Water Supply Ltd.
WELL CONTRACTOR'S LICENCE NUMBER: 1558
ADDRESS: Box 490 Stittsville, Ontario K2S 1A6
NAME OF WELL TECHNICIAN: S.Miller/T. Harrison
WELL TECHNICIAN'S LICENCE NUMBER: T0097/T2251
SIGNATURE OF TECHNICIAN/CONTRACTOR: [signature]
SUBMISSION DATE: DAY 18 MO 8 YR 93

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 1558 | DATE RECEIVED SEP 21 1993
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 — 1527384 — MUNICIP. 15002 — CON. CON — LOT 26

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON.	BLOCK, TRACT, SURVEY, ETC.	LOT
Ottawa Carleton	Gloucester		6	26

[redacted]
Box 4208 stn "D" Ottawa, Ontario K1S 5B2

DATE COMPLETED: DAY 16 MO 8 YR 93

NG | 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
Gray & White	Sandstone		Hard	0	100

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
30	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
84	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
NOT TESTED	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	22
6 1/16	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		22	100
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

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

MATERIAL AND TYPE — DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
20'8"	0	Grouted cement (3)

71 PUMPING TEST

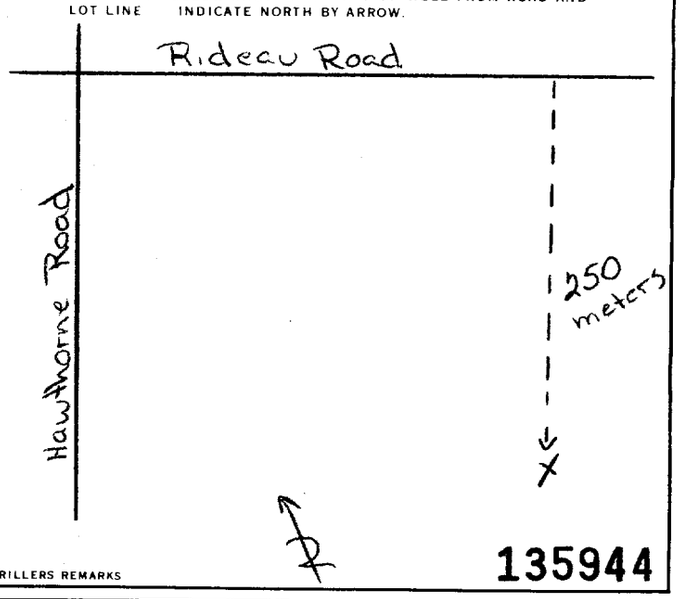
PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	15-20 GPM	1 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
21'6" FEET	24'4" FEET		23'6" FEET	24 FEET	24'4" FEET	24'4" FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST	RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
GPM	40 FEET	1 ☐ CLEAR 2 ☒ CLOUDY	☐ SHALLOW ☒ DEEP	50 FEET	5 GPM

LOCATION OF WELL

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



DRILLERS REMARKS: 135944

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: Capital Water Supply Ltd. — WELL CONTRACTOR'S LICENCE NUMBER: 1558

ADDRESS: Box 490 Stittsville, Ontario K2S 1A6

NAME OF WELL TECHNICIAN: S. Miller/T. Harrison — WELL TECHNICIAN'S LICENCE NUMBER: T0097/T2251

SIGNATURE OF TECHNICIAN/CONTRACTOR: [signature]

SUBMISSION DATE: DAY 18 MO 8 YR 93

OFFICE USE ONLY

DATA SOURCE — CONTRACTOR: 1558 — DATE RECEIVED: SEP 21 1993

DATE OF INSPECTION — INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below) A018916 A018916

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 [illegible] CON [illegible] LOT [illegible]

Well Owner's Information and Location of Well Information

[redacted]

OTTAWA CARLETON | GLOUCESTER | Lot 2 | Concession 5

RR#/Street Number/Name: 3500 RIDEAU ROAD | City/Town/Village: GLOUCESTER | Site/Compartment/Block/Tract etc.:

GPS Reading | NAD 8 3 | Zone 18 | Easting 456298 | Northing 5016953 | 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
	GRAVEL + EARTH			0	1.21
GREY + WHITE	SANDSTONE			1.21	35.05
GREY	LIMESTONE W/ GREY SANDSTONE			35.05	42.67

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	42.67	15.23

Water Record

Water found at Metres	Kind of Water
36.20 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☒ Minerals ☐ Other: NOT TESTED
39.92 m	☐ Fresh ☐ Sulphur ☐ Gas ☒ Salty ☐ Minerals ☐ Other: NOT TESTED
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☒ Clear and sediment free ☐ Other, specify: NOT TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	6.70
	☐ 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		6.09	42.67

Test of Well Yield

Pumping test method: Submp

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		14.18		
1		15.26	1	14.62
2		15.31	2	14.62
3		15.35	3	14.62
4		15.39	4	14.62
5		15.42	5	14.57
10		15.57	10	14.44
15		15.64	15	14.36
20		15.69	20	14.31
25		15.72	25	14.27
30		15.74	30	14.23
40		15.78	40	14.20
50		15.82	50	14.18
60		15.85	60	14.18

Pump intake set at - (metres) 41.16
Pumping rate - (litres/min) 5.71
Duration of pumping 1 hrs + 0 min
Final water level end of pumping 15.85 metres
Recommended pump type: ☐ Shallow ☒ Deep
Recommended pump depth. 41.16 metres
Recommended pump rate. 15.71 (litres/min)
If flowing give rate - (litres/min)
If pumping discontinued, give reason.

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)
6.09	0	NEAT CEMENT SLURRY	.1362

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

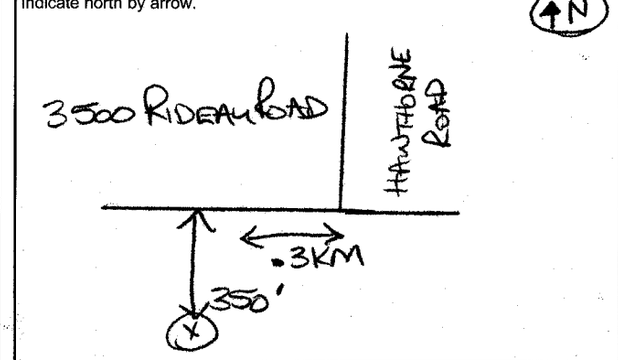
☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

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 19099

Date Well Completed: YYYY 2004 MM 10 DD 27

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered: YYYY 2004 MM 10 DD 28

Well Contractor/Technician Information

Name of Well Contractor: AIR ROCK DRILLING CO. LTD | Well Contractor's Licence No.: 1119

Business Address (street name, number, city etc.): RR#1 RICHMOND, ONT K0A 2Z0

Name of Well Technician (last name, first name): HOGAN DAN | Well Technician's Licence No.: T3058

Signature of Technician/Contractor: X [signature] | Date Submitted: YYYY 2004 MM 11 DD 16

Ministry Use Only

Data Source	Contractor
	1119
Date Received YYYY MM DD: NOV 26 2004	Date of Inspection YYYY MM DD:
Remarks	Well Record Number: 1535203

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: [X] Metric [ ] Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A068335 **A 068335**

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name): TW #5 - Rideau

Township: Gloucestor

Lot: 26

Concession: 6

County/District/Municipality: Ottawa Carleton

City/Town/Village: Gloucestor

Province: Ontario

Postal Code:

UTM Coordinates: Zone: 18 Easting: 457043 Northing: 5016848 NAD 83

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	Soil	Stones	Fill	0	1.21
Gray	Sandy Soil	Stones	Wet	1.21	3.96
Gray	Sandstone		Very Hard	3.96	29.86

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
12.80	0	Grouted Cement	.525m^3

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[X] Rotary ~~(Reverse)~~ Air [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [X] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[X] Industrial
[ ] Other, specify Test Well

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
15.86	Steel	.48	+.45	12.80

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] 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	Other, specify
27.12	[ ]	[ ] Fresh [X] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	12.80	15.86
12.80	29.86	15.23

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 22.85

Pumping rate (l/min / GPM): 54.6

Duration of pumping: 6 hrs + ____ min

Final water level end of pumping (m/ft): 9.99

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 22.85

Recommended pump rate (l/min / GPM): 45.5

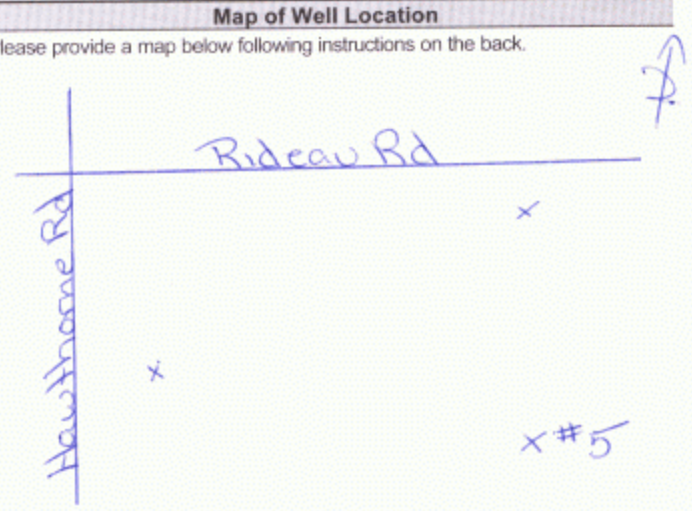
Well production (l/min / GPM):

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6.85		
1	8.03	1	8.97
2	8.35	2	8.69
3	8.60	3	8.55
4	8.76	4	8.46
5	8.88	5	8.40
10	9.20	10	8.23
15		15	
20	9.49	20	8.04
25	9.62	25	7.99
30	9.68	30	7.93
40	9.82	40	7.84
50	9.91	50	7.77
60	9.99	60	7.69

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: Capital Water Supply Ltd.

Well Contractor's Licence No.: 1558

Business Address (Street Number/Name): Box 490

Municipality: Stittsville

Province: Ontario

Postal Code: K2S1A6

Business E-mail Address: office@capitalwater.ca

Bus. Telephone No. (inc. area code): 6138361766

Name of Well Technician (Last Name, First Name): Miller, Stephen

Well Technician's Licence No.: 0097

Signature of Technician and/or Contractor:

Date Submitted: 2008 10 10

Well owner's information package delivered: [ ] Yes [X] No

Date Package Delivered: 2008 10 07

Date Work Completed: 2008 09 26

Ministry Use Only

Audit No. Z 84410

Received DEC 02 2008

0506E (12/2007)

Ministry's Copy

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Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: A068344 — A 068344

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name): TW #6 - Rideau Rd.

Township: Gloucestor

Lot: 26

Concession: 6

County/District/Municipality: Ottawa Carleton

City/Town/Village: Gloucestor

Province: Ontario

Postal Code:

UTM Coordinates: Zone | Easting | Northing — NAD 83 18 457102 5017690

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	Clay		Packed	0	3.65
Gray	Clay	Stones	Sticky	3.65	9.14
Gray	Shale		Soft	9.14	42.66
Gray	Limestone		Medium Soft	42.66	83.20

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
17.67	0	Grouted Cement	.525m^3

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[X] Rotary ~~(Reverse)~~ Air [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, *specify*

Well Use

[ ] Public [X] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[X] Industrial
[ ] Other, *specify* Test Well

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
15.86	Steel	.48	+.60	17.67

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] 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	Gas	Other, specify
	[ ] Fresh [ ] Untested	[ ]	
	[ ] Fresh [ ] Untested	[ ]	
	[ ] Fresh [ ] Untested	[ ]	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	17.67	15.86
17.67	83.20	15.23

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft): 79.24

Pumping rate (l/min / GPM): 13.65

Duration of pumping: 6 hrs + ____ min

Final water level end of pumping (m/ft): 30.57

If flowing give rate (l/min-/ GPM):

Recommended pump depth (m/ft): 60.95

Recommended pump rate (l/min / GPM): 13.65

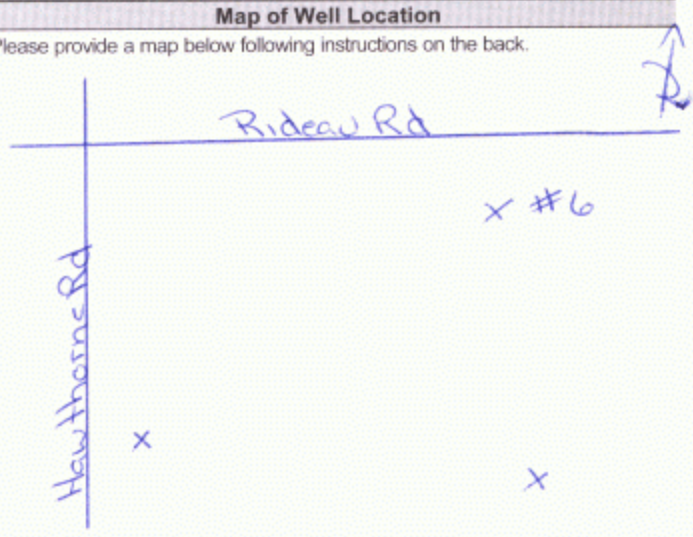
Well production (l/min / GPM):

Disinfected? [ ] Yes [X] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	3.18		
1	3.24	1	
2	4.23	2	
3	5.19	3	
4		4	
5	6.53	5	
10	8.06	10	
15	9.99	15	22.80
20	11.53	20	19.40
25	12.92	25	17.12
30	14.08	30	15.13
40		40	11.82
50		50	9.47
60		60	7.94

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: Capital Water Supply Ltd.

Well Contractor's Licence No.: 1558

Business Address (Street Number/Name): Box 490

Municipality: Stittsville

Province: Ontario

Postal Code: K2S1A6

Business E-mail Address: office@capitalwater.ca

Bus. Telephone No. (inc. area code): 6138361766

Name of Well Technician (Last Name, First Name): Miller, Stephen

Well Technician's Licence No.: 0097

Signature of Technician and/or Contractor:

Date Submitted: 2008/10/10

Well owner's information package delivered: [ ] Yes [X] No

Date Package Delivered: 2008/10/06

Date Work Completed: 2008/09/26

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Audit No. Z 84412

DEC 02 2008

Received

0506E (12/2007)

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Ontario Ministry of the Environment

Well Tag No. for Master Well (Place Sticker and/or Print Below)
A 074584 MW 6-08

Master Well Record for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Page 1 of 2

Master Well Owner's and Land Owner's Information

First Name	Last Name	E-
Orgaworld Canada Real Estate via Tomlinson Environmental Services Inc.		[redacted]

Mailing Address (Street Number/Name, RR)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
5597 Power Road	Ottawa	ON	K1G3NH	6138321067

Location and Construction of the Master Well in the Cluster

Address of Well Location (Street Number/Name, RR)	Township	Lot	Concession
Hawthorne Road at Ridlau Road		26; 27	6

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	GPS Unit Make	Model	Mode of Operation
NAD 83	18	456400	5016852	Garmin	Etrex	☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Overburden and Bedrock Materials *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From	Depth (Metres) To
Grey/Brown	very fine sand + silt		dense, moist	0	0.8
Brown	Fill - sand/silt/clay/gravels			0.8	4.7
Grey/Brown	Sand	with silt	compact oxitized	4.7	6.0
Brown	Till - silty sand, gravel			6.0	7.6

Hole Details

Depth (Metres) From	Depth (Metres) To	Diameter (Centimetres)
0	7.6	20

Water Use

☐ Public ☐ Industrial ☐ Not used ☐ Other, specify
☐ Domestic ☐ Commercial ☐ Dewatering
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☐ Test Hole ☐ Cooling & Air Conditioning

Method of Construction

☐ Cable Tool ☐ Air Percussion ☐ Digging
☐ Rotary (Conventional) ☐ Diamond ☐ Boring
☐ Rotary (Reverse) ☐ Jetting ☑ Other, specify HSA
☐ Rotary (Air) ☐ Driving

Status of Well

☑ Test Hole ☐ Abandoned, Insufficient Supply
☐ Replacement Well ☐ Abandoned, Poor Water Quality
☐ Dewatering Well ☐ Other, specify
☐ Alteration (Construction) ☐ Abandoned, other, specify

Construction Details

Inside Diameter (Centimetres)	Material (steel, plastic, fibreglass, concrete, galvanized)	Wall Thickness	Depth (Metres) From	Depth (Metres) To
5.1	PVC	Sched 40	0	3.0

No Casing and Screen Used

Open Hole ☐ Yes ☑ No

Static Water Level Test

1.7 Metres

Screen

☐ Galvanized ☐ Steel ☐ Fibreglass ☐ Concrete ☑ Plastic

Outside Diameter (Centimetres)	Slot No.
5.8	10

Annular Space/Abandonment Sealing Record

Depth Set at (Metres) From	Depth Set at (Metres) To	Type of Sealant Used (Material and Type)	Volume Used (Cubic Metres)
0.6	2.4	Bentonite	66 kgs

Water Details

Water found at Depth		Kind of Water
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals

Disinfected ☐ Yes ☑ No If no, provide reason: Monitoring Well

Date Master Well Completed (yyyy/mm/dd): 2008/07/14

Cluster Information *(Please also fill out the additional Cluster Well Information for Well Construction for each parcel of land and cluster.)*

Total Wells in Cluster	Please indicate Number of Cluster Well Information Log Sheets Submitted
10	1
Total Wells on this Property: unknown	

Location of Well Cluster

Detailed Map must be provided as an attachment no larger than legal size (8.5" x 14"). Sketches are not allowed.

☑ Check box to confirm detailed map is provided as per Section 11.1 (3)

Consent to release additional information concerning the cluster to the Director upon request

Signature of Technician/Contractor: Bruce Downing — Date (yyyy/mm/dd): 2008/10/20

Master Well Owner's/Land Owner's consent to use Cluster Form

[redacted]

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
George Downing Estate Drilling	1814

Business Address (Street No./Name, number, RR)	Municipality
410 Rue Principale	Grenville-sur-la-Rouge

Province	Postal Code	Business E-mail Address
QC	J0V1B0	downing@xplornet.com

Business Phone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
2646 09	Downing, Bruce

Well Technician's Licence No.	Signature of Technician	Date Submitted (yyyy/mm/dd)
	Bruce Downing	2008/10/20

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Audit No.	Well Contractor No.
M 02897	
Date Received (yyyy/mm/dd): NOV 26 2008	Date of Inspection (yyyy/mm/dd)
Remarks	

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Ontario

Ministry of the Environment

Well Tag No. for Master Well (Print Well Tag No.)
A 074584
A074584

Cluster Well Information for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Property Owner's Information

First Name	Last Name	Mailing Address (Street No./Name, RR)	Municipality
Orgaworld Canada Real Estate via	Tomlinson Environmental Services Inc.	5597 Power Road	Ottawa

Province	Postal Code	E-mail Address	Telephone No. (inc. area code)
Ontario	K1G3N4	rtomlinson@tomlinsongroup.com	6138221867

[redacted]

upon request

Cluster Well Information

Address of Well Location (Street Number/Name, RR)	Lot	Concession	Township	County/District/Municipality
Hawthorne Road at Rideau Road	26 & 27	6		

City/Town/Village	Province	Postal Code	GPS Unit Make	Model	Unit Mode of Operation
Ottawa	Ontario	K1G3N4			☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Signature of Technician/Contractor: Bruce Downing

Date (yyyy/mm/dd): 2008/10/20

Well # on Sketch	UTM Coordinates Zone	Easting	Northing	Full Depth of Hole (metres)	Hole Diameter (cm)	Method of Construction	Casing Material	Casing Length (metres)	Screen Interval (metres) From	To	Annular Space Sealant Used	Static Water Level (metres)	Abandonment Sealant Used	Comments	Date of Completion (yyyy/mm/dd)
MW 1-08	18	456831	5016712	2.97	20	HSA	PVC	1.5	1.5	2.97	Bentonite	1.3			2008/07/07
MW 2-08	18	456799	5016553	2.77	10	DiA		0.6	0.6	2.77		1.6		overburden from 0 to 0.18	2008/07/08
MW 3-08	18	456533	5016411	17.37	10	DiA		2.13	2.13	17.37		13.2		" " 0 to 0.30	2008/07/09
MW 4-08	18	456474	5016604	2.84	10/20	HSA/DiA		1.22	1.22	2.8		0.7			2008/07/08
MW 5-08	18	456598	5016675	2.77	20	HSA		1.5	1.5	2.77		1.0			2008/07/07
MW 7-08	18	456622	5017219	6.98	20	HSA		3.0	3.0	6.10		3.6			2008/07/14
MW 8-08	18	456687	5017036	4.72	20	HSA		3.0	3.0	4.2		3.0			2008/07/15
MW 9-08	18	457086	5017625	3.66	20	HSA		1.5	1.5	3.0		1.7			2008/07/15
MW 10-08	18	457206	5017303	2.90	20	HSA		1.37	1.37	2.90		1.6			2008/07/15

Well Contractor and Well Technician Information

Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province
George Downing Estate Drilling LTD.	410 Rue Principale	Grenville-sur-la-Rouge	Qc

Postal Code	Business Telephone No. (inc. area code)	Well Contractor's Licence No.	Business E-mail Address
J0V1B0	8192426469	1844	downing@xplornet.com

Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Date Submitted (yyyy/mm/dd)	Signature of Technician
Bruce Downing	2173	2008/10/20	Bruce Downing

Date 1st Well in Cluster Constructed (yyyy/mm/dd): 2008/07/07

Date Last Well in Cluster Constructed (yyyy/mm/dd): 2008/07/15

Ministry Use Only

Date Received (yyyy/mm/dd)	Date Inspected (yyyy/mm/dd)
NOV 26 2008	
Audit No. C 01984	Remarks m02897

1991 (11/2006)

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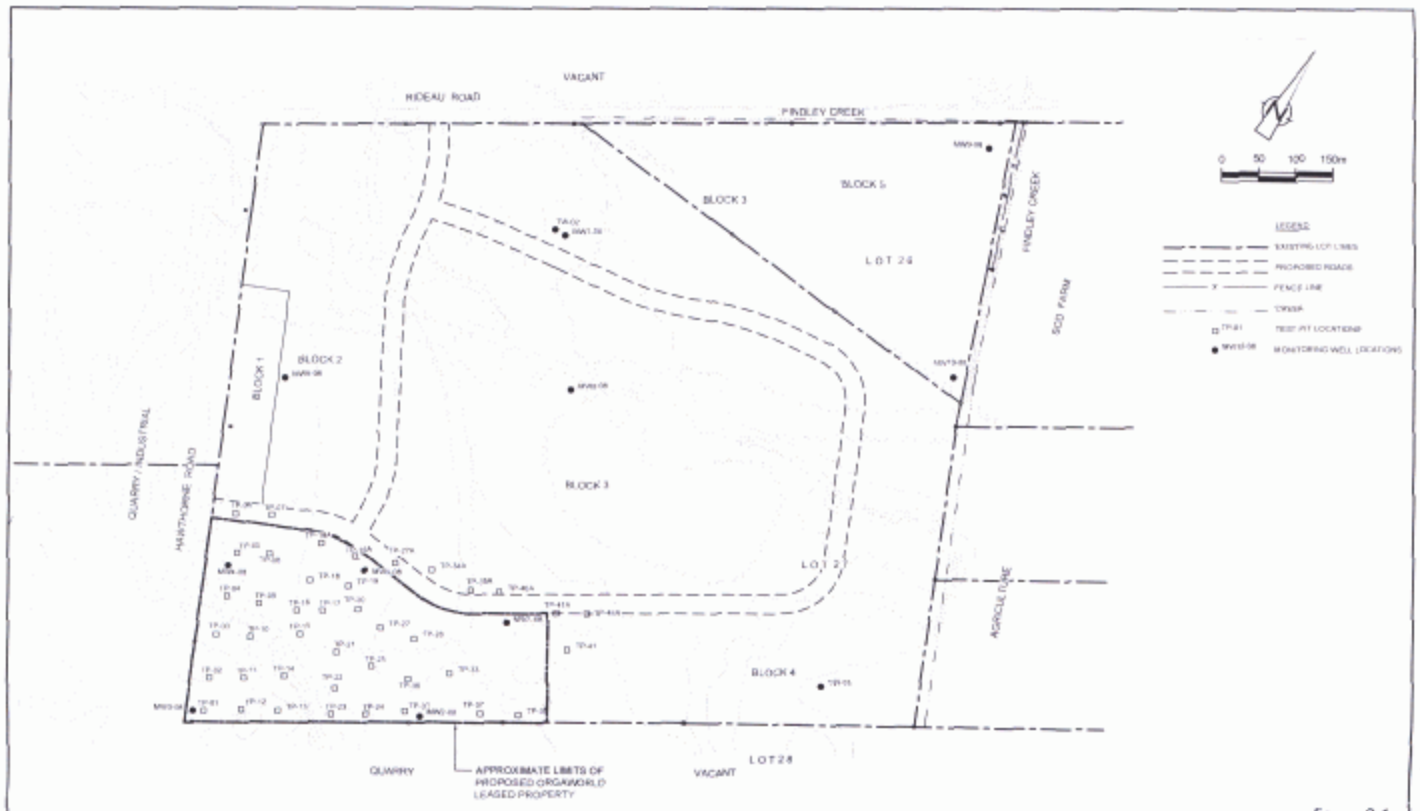


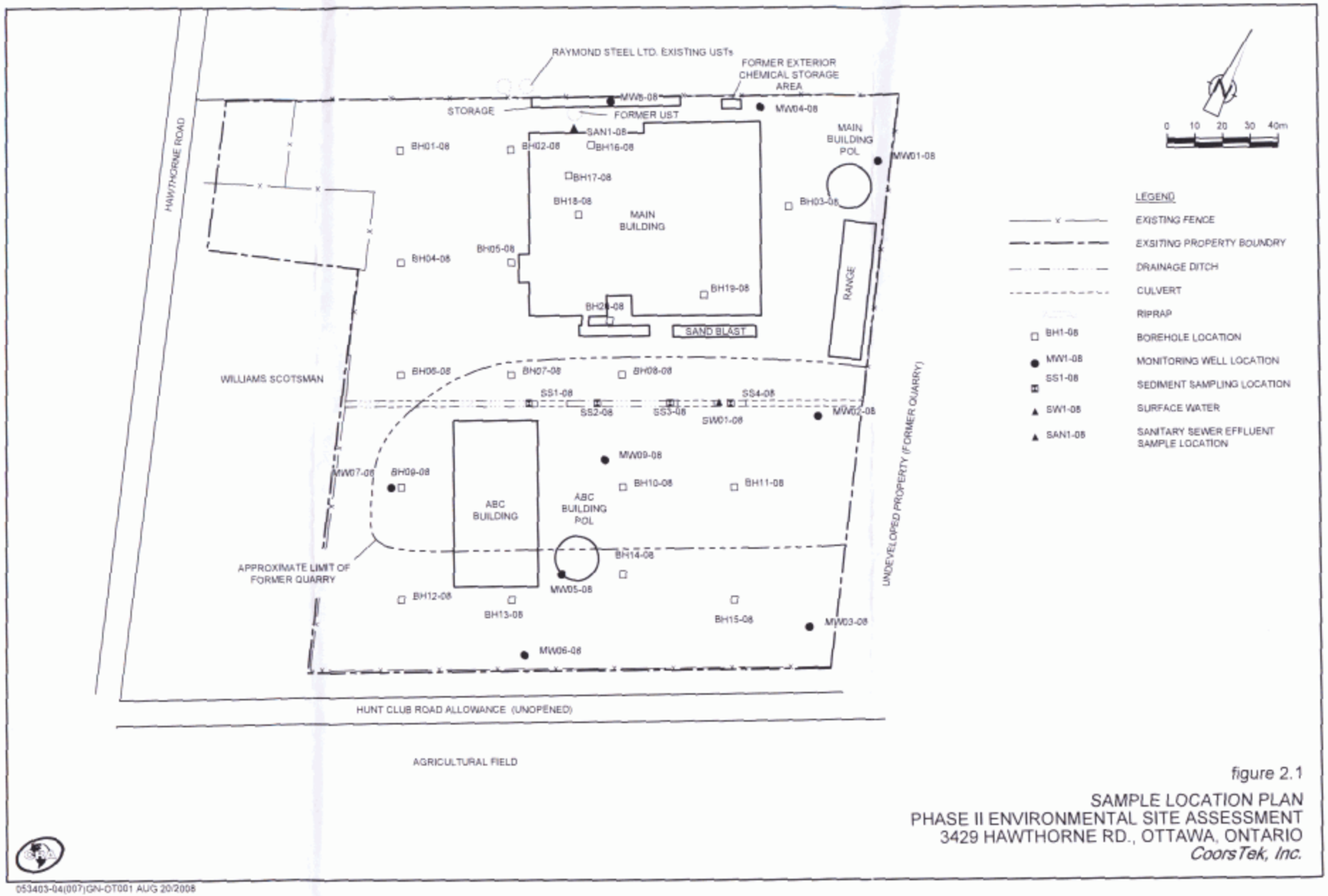
figure 2.1
TEST PIT AND MONITORING WELL LOCATION PLAN
PHASE II ENVIRONMENTAL SITE ASSESSMENT
LOT 26 AND 27, CONCESSION 6, OTTAWA, ONTARIO
R.W. Tomlinson Ltd.

SOURCE: J.L. RICHARDS & ASSOCIATES LIMITED
PROJECT No. 20983, DRAWING C1
COORDINATE SYSTEM: MTM ZONE 9, NAD27

045804-00(012)GN-OT001 AUG 08/2008

C-1844 M02897 C01984

NOV 26 2008



053403-04(007)GN-OT001 AUG 20/2008

figure 2.1

SAMPLE LOCATION PLAN
PHASE II ENVIRONMENTAL SITE ASSESSMENT
3429 HAWTHORNE RD., OTTAWA, ONTARIO
CoorsTek, Inc.

NOV 26 2008
C-18441 mo2888 c03068

Ontario Ministry of the Environment

Well Tag No. for Master Well (Place Sticker and/or Print Below)
A 074584 MW 6-08

Master Well Record for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Page 1 of 2

Master Well Owner's and Land Owner's Information

First Name	Last Name	E-
Orgaworld Canada Real Estate via Tomlinson Environmental Services Inc.		[redacted]

Mailing Address (Street Number/Name, RR)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
5597 Power Road	Ottawa	ON	K1G3NH	6138321067

Location and Construction of the Master Well in the Cluster

Address of Well Location (Street Number/Name, RR)	Township	Lot	Concession
Hawthorne Road at Ridlau Road		26; 27	6

County/District/Municipality	City/Town/Village	Province	Postal Code
	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	GPS Unit Make	Model	Mode of Operation
NAD 83	18	456400	5016852	Garmin	Etrex	☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Overburden and Bedrock Materials *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From	Depth (Metres) To
Grey/Brown	very fine sand + silt		dense, moist	0	0.8
Brown	Fill - sand/silt/clay/gravels			0.8	4.7
Grey/Brown	Sand	with silt	compact oxitized	4.7	6.0
Brown	Till - silty sand, gravel			6.0	7.6

Hole Details

Depth (Metres) From	Depth (Metres) To	Diameter (Centimetres)
0	7.6	20

Water Use

☐ Public ☐ Industrial ☐ Not used ☐ Other, specify
☐ Domestic ☐ Commercial ☐ Dewatering
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☐ Test Hole ☐ Cooling & Air Conditioning

Method of Construction

☐ Cable Tool ☐ Air Percussion ☐ Digging
☐ Rotary (Conventional) ☐ Diamond ☐ Boring
☐ Rotary (Reverse) ☐ Jetting ☑ Other, specify HSA
☐ Rotary (Air) ☐ Driving

Status of Well

☑ Test Hole ☐ Abandoned, Insufficient Supply
☐ Replacement Well ☐ Abandoned, Poor Water Quality
☐ Dewatering Well ☐ Other, specify
☐ Alteration (Construction) ☐ Abandoned, other, specify

Construction Details

Inside Diameter (Centimetres)	Material (steel, plastic, fibreglass, concrete, galvanized)	Wall Thickness	Depth (Metres) From	Depth (Metres) To
5.1	PVC	Sched 40	0	3.0

No Casing and Screen Used

Open Hole ☐ Yes ☑ No

Static Water Level Test

1.7 Metres

Screen

☐ Galvanized ☐ Steel ☐ Fibreglass ☐ Concrete ☑ Plastic

Outside Diameter (Centimetres)	Slot No.
5.8	10

Annular Space/Abandonment Sealing Record

Depth Set at (Metres) From	Depth Set at (Metres) To	Type of Sealant Used (Material and Type)	Volume Used (Cubic Metres)
0.6	2.4	Bentonite	66 kgs

Water Details

Water found at Depth		Kind of Water
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals

Disinfected ☐ Yes ☑ No If no, provide reason: Monitoring Well

Date Master Well Completed (yyyy/mm/dd): 2008/07/14

Cluster Information *(Please also fill out the additional Cluster Well Information for Well Construction for each parcel of land and cluster.)*

Total Wells in Cluster	Please indicate Number of Cluster Well Information Log Sheets Submitted
10	1
Total Wells on this Property: unknown	

Location of Well Cluster

Detailed Map must be provided as an attachment no larger than legal size (8.5" x 14"). Sketches are not allowed.

☑ Check box to confirm detailed map is provided as per Section 11.1 (3)

Consent to release additional information concerning the cluster to the Director upon request

Signature of Technician/Contractor: Bruce Downing — Date (yyyy/mm/dd): 2008/10/20

Master Well Owner's/Land Owner's consent to use Cluster Form

[redacted]

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
George Downing Estate Drilling	1814

Business Address (Street No./Name, number, RR)	Municipality
410 Rue Principale	Grenville-sur-la-Rouge

Province	Postal Code	Business E-mail Address
QC	J0V1B0	downing@xplornet.com

Business Phone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
2646 09	Downing, Bruce

Well Technician's Licence No.	Signature of Technician	Date Submitted (yyyy/mm/dd)
	Bruce Downing	2008/10/20

Ministry Use Only

Audit No.	Well Contractor No.
M 02897	
Date Received (yyyy/mm/dd): NOV 26 2008	Date of Inspection (yyyy/mm/dd)
Remarks	

Ministry's Copy

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Ontario

Ministry of the Environment

Well Tag No. for Master Well (Print Well Tag No.)
A 074584
A074584

Cluster Well Information for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Property Owner's Information

First Name	Last Name	Mailing Address (Street No./Name, RR)	Municipality
Orgaworld Canada Real Estate via	Tomlinson Environmental Services Inc.	5597 Power Road	Ottawa

Province	Postal Code	E-mail Address	Telephone No. (inc. area code)
Ontario	K1G3N4	rtomlinson@tomlinsongroup.com	6138221867

[redacted]

upon request

Cluster Well Information

Address of Well Location (Street Number/Name, RR)	Lot	Concession	Township	County/District/Municipality
Hawthorne Road at Rideau Road	26 & 27	6		

City/Town/Village	Province	Postal Code	GPS Unit Make	Model	Unit Mode of Operation
Ottawa	Ontario	K1G3N4			☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Signature of Technician/Contractor: Bruce Downing

Date (yyyy/mm/dd): 2008/10/20

Well # on Sketch	UTM Coordinates Zone	Easting	Northing	Full Depth of Hole (metres)	Hole Diameter (cm)	Method of Construction	Casing Material	Casing Length (metres)	Screen Interval (metres) From	To	Annular Space Sealant Used	Static Water Level (metres)	Abandonment Sealant Used	Comments	Date of Completion (yyyy/mm/dd)
MW 1-08	18	456831	5016712	2.97	20	HSA	PVC	1.5	1.5	2.97	Bentonite	1.3			2008/07/07
MW 2-08	18	456799	5016553	2.77	10	DiA		0.6	0.6	2.77		1.6		overburden from 0 to 0.18	2008/07/08
MW 3-08	18	456533	5016411	17.37	10	DiA		2.13	2.13	17.37		13.2		" " 0 to 0.30	2008/07/09
MW 4-08	18	456474	5016604	2.84	10/20	HSA/DiA		1.22	1.22	2.8		0.7			2008/07/08
MW 5-08	18	456598	5016675	2.77	20	HSA		1.5	1.5	2.77		1.0			2008/07/07
MW 7-08	18	456622	5017219	6.98	20	HSA		3.0	3.0	6.10		3.6			2008/07/14
MW 8-08	18	456687	5017036	4.72	20	HSA		3.0	3.0	4.2		3.0			2008/07/15
MW 9-08	18	457086	5017625	3.66	20	HSA		1.5	1.5	3.0		1.7			2008/07/15
MW 10-08	18	457206	5017303	2.90	20	HSA		1.37	1.37	2.90		1.6			2008/07/15

Well Contractor and Well Technician Information

Business Name of Well Contractor	Business Address (Street Number/Name, RR)	Municipality	Province
George Downing Estate Drilling LTD.	410 Rue Principale	Grenville-sur-la-Rouge	Qc

Postal Code	Business Telephone No. (inc. area code)	Well Contractor's Licence No.	Business E-mail Address
J0V1B0	8192426469	1844	downing@xplornet.com

Name of Well Technician (First Name, Last Name)	Well Technician's Licence No.	Date Submitted (yyyy/mm/dd)	Signature of Technician
Bruce Downing	2173	2008/10/20	Bruce Downing

Date 1st Well in Cluster Constructed (yyyy/mm/dd): 2008/07/07

Date Last Well in Cluster Constructed (yyyy/mm/dd): 2008/07/15

Ministry Use Only

Date Received (yyyy/mm/dd)	Date Inspected (yyyy/mm/dd)
NOV 26 2008	
Audit No. C 01984	Remarks m02897

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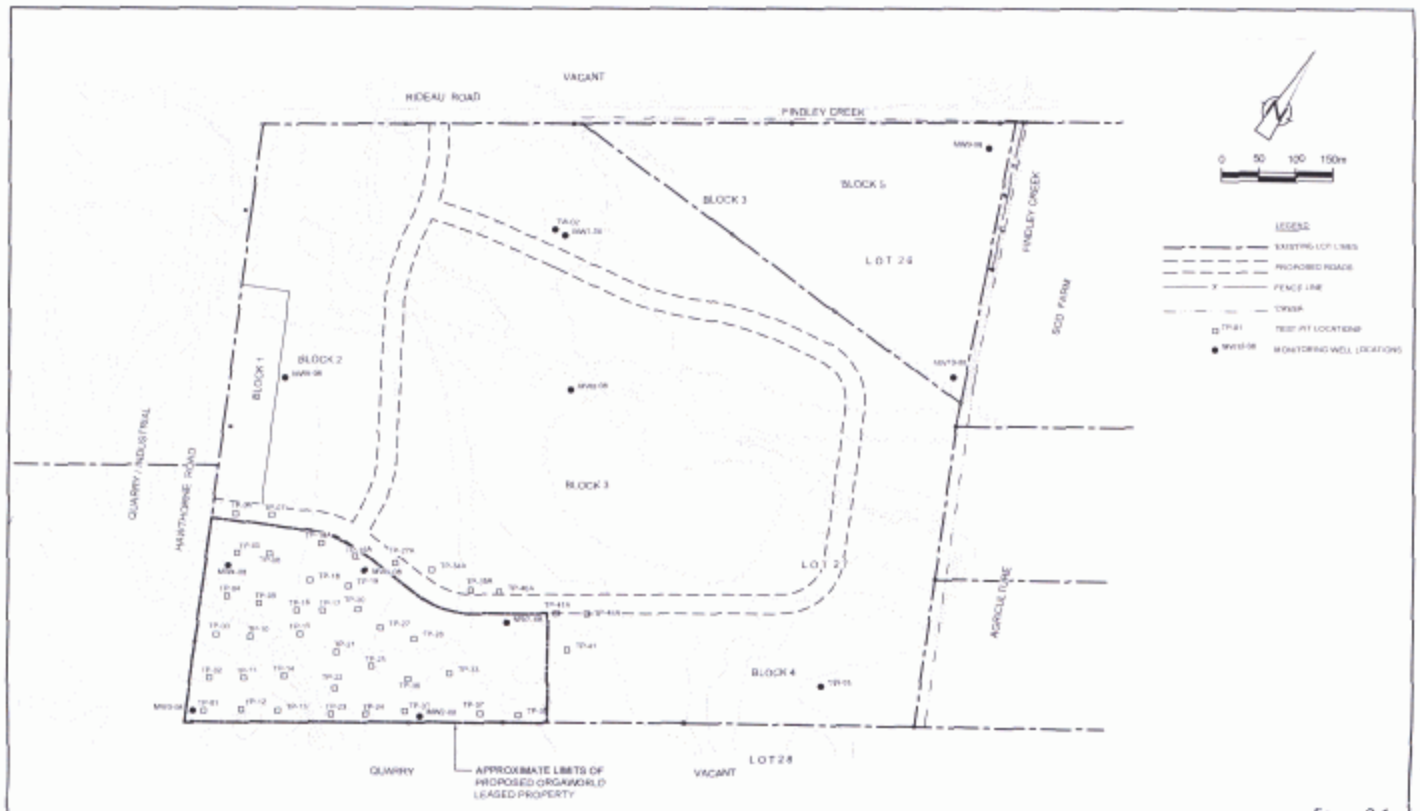


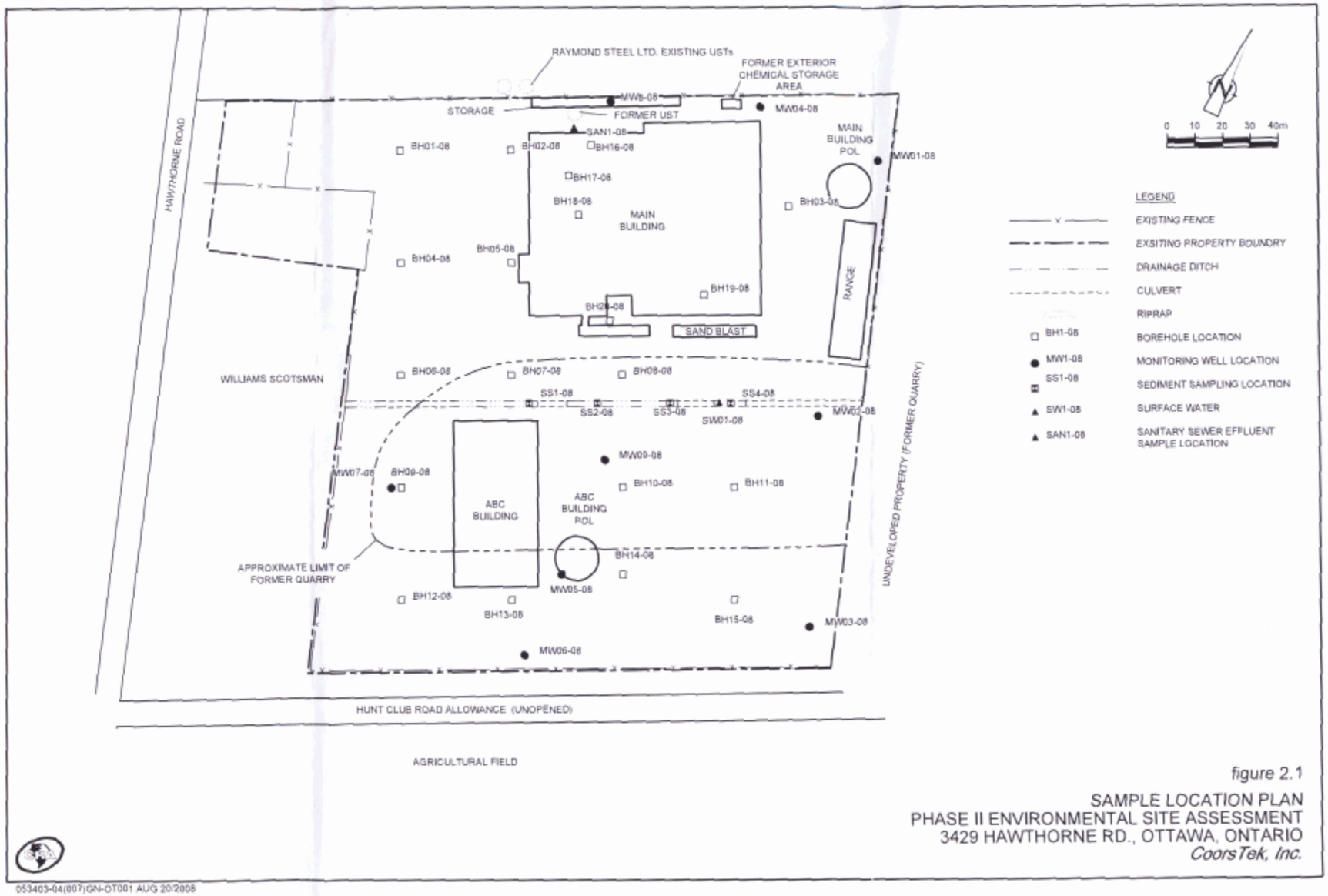
figure 2.1
TEST PIT AND MONITORING WELL LOCATION PLAN
PHASE II ENVIRONMENTAL SITE ASSESSMENT
LOT 26 AND 27, CONCESSION 6, OTTAWA, ONTARIO
R.W. Tomlinson Ltd.

SOURCE: J.L. RICHARDS & ASSOCIATES LIMITED
PROJECT No. 20983, DRAWING C1
COORDINATE SYSTEM: MTM ZONE 9, NAD27

045604-00(012)GN-OT001 AUG 08/2008

C-1844 M02897 C01984

NOV 26 2008



053403-04(007)GN-OT001 AUG 20/2008

figure 2.1

SAMPLE LOCATION PLAN
PHASE II ENVIRONMENTAL SITE ASSESSMENT
3429 HAWTHORNE RD., OTTAWA, ONTARIO
CoorsTek, Inc.

NOV 26 2008
C-18441 mo2888 c03068

Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A082844 **A 082844**

Well Record

...ion 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	[ ] Well Constructed by Well Owner
	Orgaworld		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
c/o 400-179 Colonnade Road	Ottawa	Ontario	K2E 7J4	613 727 0510

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
TW #7 Hawthorne Road	Gloucester	27	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	456879	5016752		

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	Soil Stones		Packed	0	4.26
Grey & White	Sandstone		Very Hard	4.26	29.86

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
6.40	0	Grouted Cement	.21m^3

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[X] Rotary (Reverse) Air [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, *specify* ____

Well Use

[ ] Public [ ] Commercial [ ] Not used
[ ] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [X] 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
15.86	Steel	.48	+.45	6.40

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[X] 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	
9.14-12.19	[ ] Gas	[ ] Fresh [X] Untested [ ] Other, *specify* ____
18.28-21.33	[ ] Gas	[ ] Fresh [X] Untested [ ] Other, *specify* ____
(m/ft)	[ ] Gas	[ ] Fresh [ ] Untested [ ] Other, *specify* ____

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6.40	15.86
6.40	29.86	15.23

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, *specify* ____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 24.38

Pumping rate (l/min / GPM): 27.3

Duration of pumping: 6 hrs + ____ min

Final water level end of pumping (m/ft): 7.01

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 24.38

Recommended pump rate (l/min / GPM): 27.3

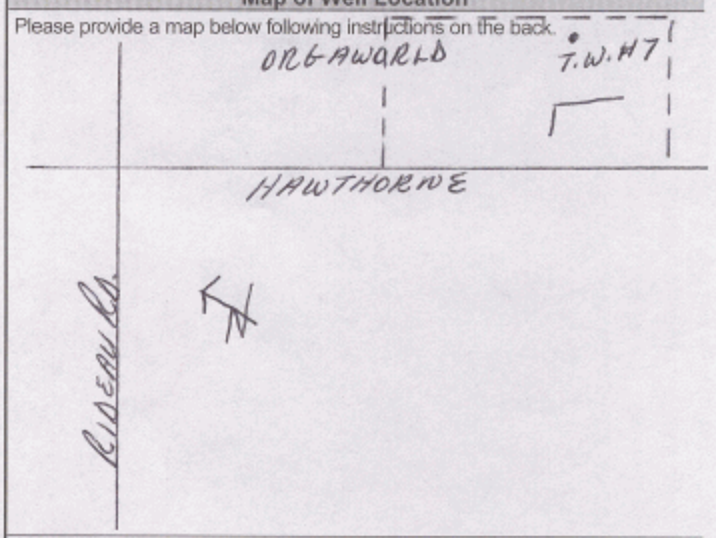
Well production (l/min / GPM):

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	4.41		
1	5.20	1	6.07
2	5.57	2	5.68
3	5.78	3	5.46
4	5.94	4	5.33
5	6.05	5	5.25
10	6.37	10	5.01
15	6.52	15	4.89
20	6.60	20	4.81
25	6.68	25	4.76
30	6.72	30	4.72
40	6.81	40	4.65
50	6.86	50	4.61
60	6.89	60	4.58

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.
Capital Water Supply Ltd.	1558

Business Address (Street Number/Name)	Municipality
Box 490	Stittsville

Province	Postal Code	Business E-mail Address
Ontario	K2S 1A6	office@capitalwater.ca

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
613 836 1766	Miller, Stephen

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0097		2010 05 28

Well owner's information package delivered: [ ] Yes [X] No

Date Package Delivered: 2010 05 27

Date Work Completed: 2010 05 25

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Audit No. Z 101832

AUG 04 2010 Received

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Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. A 089801

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
	APEX DEVELOPMENTS INC.	info@apexdevco.com	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
206 - 900 Morrison Drive	OHawa	ON	K2H8K7	6134226757

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
35 Sappers Ridge			

County/District/Municipality	City/Town/Village	Province	Postal Code
	OHawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	75	75 33' 10	45 18' 31		

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
	Fill		loose	0	8
grey	Clay limestone	gravel	packed	8	24
				24	155

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
40	0	High Early Cement	13.95

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): 130

Pumping rate (l/min / GPM): 10

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 34'

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 130

Recommended pump rate (l/min / GPM):

Well production (l/min / GPM): 15

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	25		
1	27'	1	31.8
2	28'	2	30.5
3	29'4"	3	29.5
4	30'	4	29.0
5	30'2"	5	28.6
10	31'4"	10	28.3
15	32'2"	15	28.0
20	32'7"	20	27.5
25	33'2"	25	27.0
30	33'5"	30	26.0
40	34'	40	25.0
50	34'6"	50	25.0
60	34'	60	25.0

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
5 5/8	Steel	1.88	40	+2.

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

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Water Details

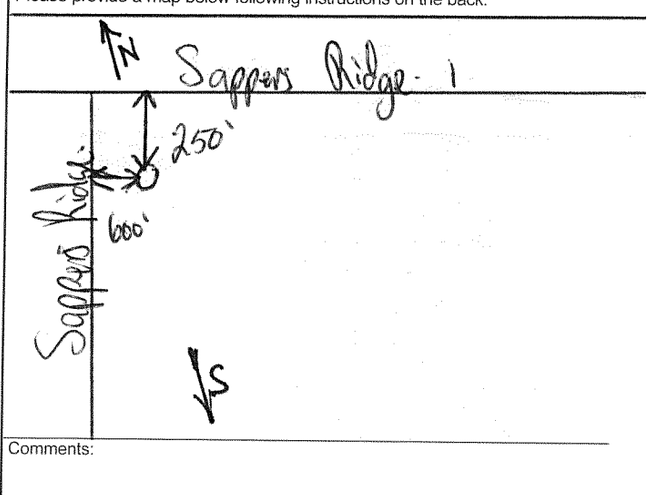
Water found at Depth (m/ft)	Kind of Water	
135	☑ Fresh ☑ Untested ☐ Gas ☐ Other, specify	
	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	
	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	40	10 5/8
40	155	6 1/8

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.
J.R. Drilling Co. Ltd.	3749

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
C23 Mitchem Rd., R.R.#5	Shawville	QC	J0X2Y0	info@jrwaterwelldrilling.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
8196475184	Moloughney, Brady	3641		2013 08 08

Well owner's information package delivered ☑ Yes ☐ No

Date Package Delivered: 2013 08 06

Date Work Completed: 2013 07 18

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Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. (Place Sticker and/or Print Below): A296142 Tag#:A296142

Well Record

Regulation 903 Ontario Water Resources Act

S-25542 Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name): 60 Sappers Ridge

Township | Lot | Concession

County/District/Municipality | City/Town/Village: Ottawa | Province: Ontario | Postal Code

UTM Coordinates: NAD 83 Zone 18 Easting 456521 Northing 5016904

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
GRY	gravel	sand	loose	0	.31
BRN	sand	silt, stones	dense	.31	2.44
BLK	peat	sand, silt	soft	2.44	4.57

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/Christmount	
.31	1.22	bentonite	
1.22	4.57	filter sand	

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
5.20	PVC	.390	0	1.52

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6.03	PVC	10	1.52	4.57

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

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)

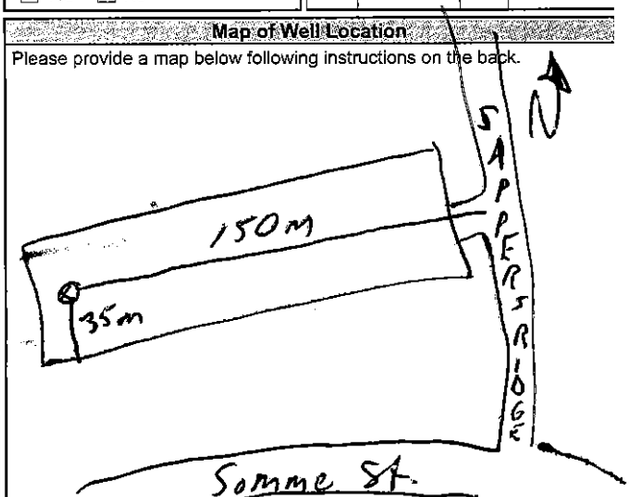
Well production (l/min / GPM)

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:

Water Details

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	4.57	11.43

Well Contractor and Well Technician Information

Business Name of Well Contractor: Strata Drilling Group | Well Contractor's Licence No.: 7214

Business Address (Street Number/Name): 129 Ringwood Dr. | Municipality: Stouffville

Province: ON | Postal Code: L4A 8C1 | Business E-mail Address: wrecords@stratasoil.com

Bus. Telephone No. (inc. area code): 905 940 7919 | Name of Well Technician (Last Name, First Name): McCoy, James

Well Technician's Licence No.: 7101 | Signature of Technician and/or Contractor | Date Submitted: 2020 09 04

Well owner's information package delivered: ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 20200817

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Audit No. Z333475

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Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A296141 Tag#:A296141

Well Record

Regulation 903 Ontario Water Resources Act

S-25542 Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name): 60 Sappers Ridge

Township | Lot | Concession

County/District/Municipality | City/Town/Village: Ottawa | Province: Ontario | Postal Code

UTM Coordinates: NAD 83 Zone 18 Easting 456497 Northing 5016652

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
GRY	gravel	sand	loose	0	.31
BRN	sand	silt, stones	dense	.31	2.44
BLK	peat	sand, silt	soft	2.44	4.57

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/flushmount	
.31	1.22	bentonite	
1.22	4.57	filter sand	

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
5.20	PVC	.340	0	1.52

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6.03	PVC	10	1.52	4.57

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
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	4.57	11.43

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)

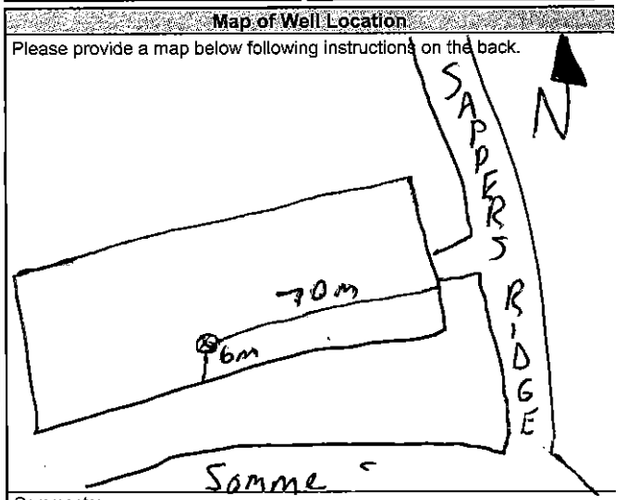
Well production (l/min / GPM)

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: Strata Drilling Group | Well Contractor's Licence No.: 7241

Business Address (Street Number/Name): 129 Ringwood Dr. | Municipality: Stouffville

Province: ON | Postal Code: L4A 8C1 | Business E-mail Address: wrecord@strata-soil.com

Bus. Telephone No. (inc. area code): 905 940 7919 | Name of Well Technician (Last Name, First Name): McCoy, James

Well Technician's Licence No.: 7107 | Signature of Technician and/or Contractor | Date Submitted: 2020 09 04

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2020 08 17

Ministry Use Only

Audit No. Z333474

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Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A296140 Tag#:A296140

Well Record

Regulation 903 Ontario Water Resources Act

5-25542 Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name): 60 Sappers Ridge

Township | Lot | Concession

County/District/Municipality

City/Town/Village: Ottawa

Province: Ontario | Postal Code

UTM Coordinates: NAD 83 Zone 18 Easting 456436 Northing 5016842

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
GRY	gravel	sand	loose	0	.31
BRN	sand	silt, stones	dense	.31	1.52
GRY	silt	sand	soft	1.52	4.57
BRN	silt	clay	soft	4.57	5.18

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	.31	concrete/flushmount	
.31	1.83	bentonite	
1.83	5.18	filter sand	

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
5.20	PVC	.340	0	2.13

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
6.03	PVC	10	2.13	5.18

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	5.18	11.43

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)

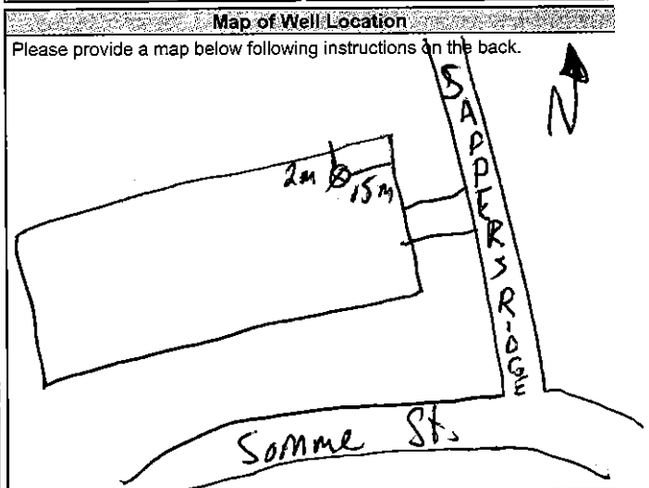
Well production (l/min / GPM)

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: Strata Drilling Group | Well Contractor's Licence No.: 7241

Business Address (Street Number/Name): 129 Ringwood Dr. | Municipality: Stouffville

Province: ON | Postal Code: L4A 8C1 | Business E-mail Address: wrecords@stratasoil.com

Bus. Telephone No. (inc. area code): 9058407919 | Name of Well Technician (Last Name, First Name): McCoy, James

Well Technician's Licence No.: 7167 | Signature of Technician and/or Contractor | Date Submitted: 2020/09/04

Well owner's information package delivered ☐ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2020/08/17

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Audit No. Z333473

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Ministry of the Environment, Conservation and Parks

Well Tag No. *(Place Sticker and/or Print Below)* A251312 MW1

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☒ Well Constructed by Well Owner
	R.W. TOMLINSON LIMITED		

Mailing Address (Street Number/Name)	~~Municipality~~	Province	Postal Code	Telephone No. *(inc. area code)*
100 CITIGATE DRIVE	OTTAWA	ON	K2J6K7	6138221867

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
300 SOMME STREET			

County/District/Municipality	City/Town/Village	Province	Postal Code
	OTTAWA	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	456685	5017423		

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
	BACKFILL			0	4.62

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used *(Material and Type)*	Volume Placed (m^3/ft^3)
0	2.4	BENTONITE	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☒ Other, *specify* HSA

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
5.08	PVC	SCHED 40	0	3.05

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
5.88	PVC	25	3.05	4.57

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☒ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth (m/ft) From	Hole Diameter Depth (m/ft) To	Hole Diameter (cm/in)
2.34 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	0	4.62	20.3
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

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)*

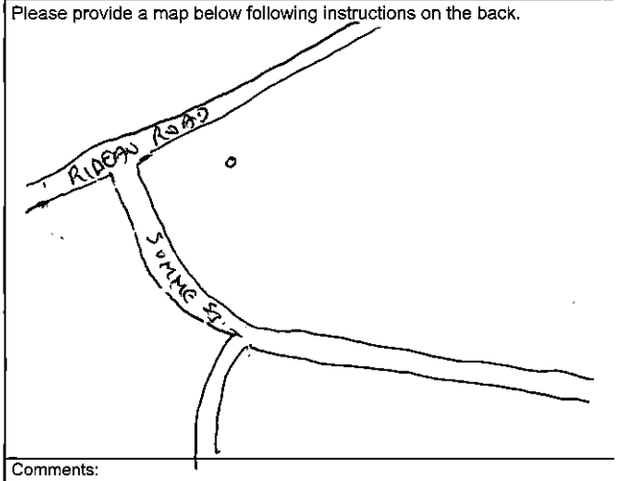
Well production *(l/min / GPM)*

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:

SEE ATTACHED

Well Contractor and Well Technician Information

Business Licence No.

George Downing Estate Drilling # 1844
410 rue Principale Grenville-sur-la-Rouge
QC J0V 1B0 downing@hawk.igs.net
(819) 242-6469 Downing, Stephen

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3326		2020 09 18

Well owner's information package delivered ☐ Yes ☒ No

Date Package Delivered: YYYY MM DD

Date Work Completed: 2020 05 09

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Audit No. Z340902

Received OCT 16 2020

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OCT 16 2020
C-1844
E340902

Ontario — Ministry of the Environment, Conservation and Parks

Tag#:A295280

A295280

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	TECHO-BLOC INC.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
#5255 Albert-Millichamp	Saint-Hubert	Quebec	J3Y 8Z8	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5123 Hawthorne Road	[redacted] Gloucester	27	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	[redacted] Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	457054	5016813	4m-1388 Part 3-4 / 4R-32280	Block 2

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
	Sandy	Clay & Gravel		0'	15'
Grey	Limestone			15'	80'
Grey & White	Sandstone			80'	83'
Grey & White	Sandstone			83'	116'
Grey & White	Sandstone			116'	122'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
41'	31'	Neat cement	18.7
31'	0'	Bentonite slurry	10.8

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason: X Not tested

Pump intake set at (m/ft): 100

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 33.5'

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min/GPM): 20

Well production (l/min/GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	26.5'		1' 33.5
1	29.8	1	26.5
2	30.5	2	26.5
3	30.8	3	26.5
4	31.1	4	26.5
5	31.3	5	26.5
10	31.9	10	26.5
15	32.3	15	26.5
20	32.6	20	26.5
25	32.9	25	26.5
30	33.1	30	26.5
40	33.3	40	26.5
50	33.5	50	26.5
60	33.5'	60	26.5'

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	.188"	+2'	41'
6"	Open Hole		41'	122'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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

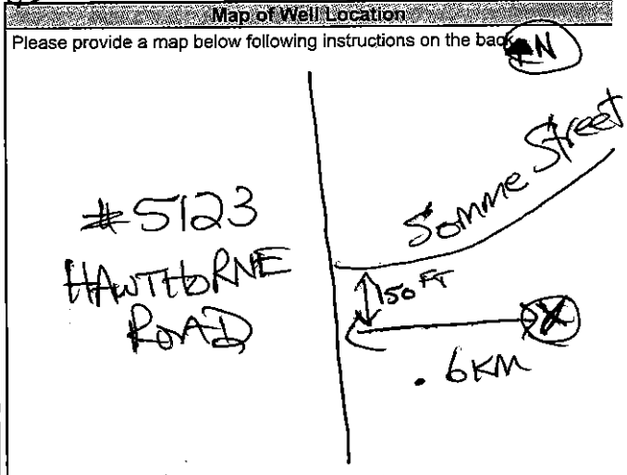
Water found at Depth (m/ft)	Gas	Kind of Water	
83	☐	☐ Fresh ☐ Untested	☐ Other, specify X
116	☐	☐ Fresh ☐ Untested	☐ Other, specify X
(m/ft)	☐	☐ Fresh ☐ Untested	☐ Other, specify

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	41'	9 3/4
41'	122'	6"

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4" th-15 GPM Sat @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	7681

Business Address (Street Number/Name)	Municipality
6659 Franktown Road	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058		2020 08 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2020 08 22	2020 08 20

Ministry Use Only

Audit No. Z344019

OCT 30 2020

Received

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Ministry's Copy

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#:A305146 (Print Below)

A305146

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	COPART		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
14185 Dallas Parkway Suite 300	Dallas, Texas	USA	75254	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
300 Somme Street	Gloucester	P/L 26&27	6 R.F.

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	456627	5017085	4M-1388	

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
	Sand	Clay	+ Gravel	0'	13'
Grey & White	Sandstone	w/ Grey limestone mix		13'	103'
Grey & White	Sandstone	w/ Grey limestone mix		103'	134'
Grey & White	Sandstone	w/ Grey Limestone mix		134'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
60'	50'	Neat cement	9.36
50'	0'	Bentonite slurry	16.8

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
6 1/4"	Steel	.188"	+2'	60'
6 1/8"	Open Hole		60'	140'

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)	Gas	Kind of Water: Fresh	Untested	Other, specify
103	☐	☐	☒	
134	☐	☐	☒	
	☐	☐	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	60'	9 3/4"
60'	140'	6 1/8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify **Not tested**

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 100

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 30'8"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min/GPM): 20

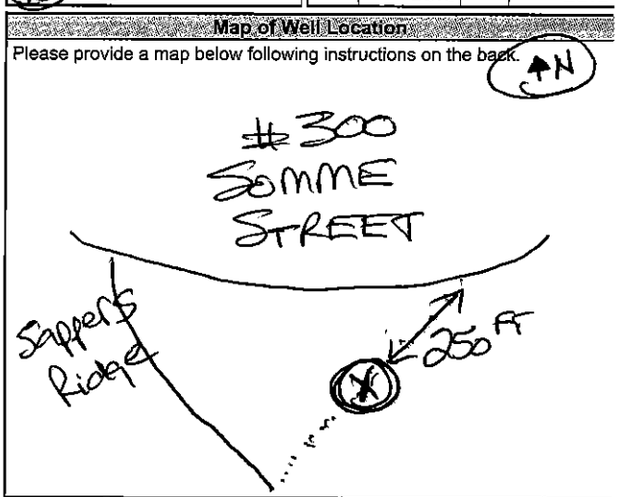
Well production (l/min/GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	25'6"		30'8"
1	27.6	1	25.5
2	28	2	25.5
3	28.2	3	25.5
4	28.3	4	25.5
5	28.4	5	25.5
10	28.6	10	25.5
15	28.7	15	25.5
20	28.8	20	25.5
25	28.9	25	25.8
30	30	30	25.5
40	30.2	40	25.5
50	30.5	50	25.5
60	30'8"	60	25'5"

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4HR 15GPM Set @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	7681

Business Address (Street Number/Name)	Municipality
6659 Franktown Road	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058		2020 09 30

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2020 09 03	2020 09 02

Ministry Use Only

Audit No. Z344053

OCT 30 2020

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Ontario — Ministry of the Environment, Conservation and Parks

Well Tag#:A295342 (Below)

A295342

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	Paul Lalonde Holdings Inc		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
5146 Bank Street	Ottawa	ON	K1X 1G8	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
5123 Hawthorne Road	Gloucester	27	6

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Ottawa	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	456956	5016788	4M-1388	Parts 2,3,4

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
	Sandy Till	& Boulders		0′	6′
Grey	Limestone			6′	45′
Grey & White	Sandstone			45′	60′
Grey & White	Sandstone			60′	96′
Grey & White	Sandstone			96′	153′
Grey & White	Sandstone			153′	159′

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³)
40′	30′	Neat cement	9.36
30′	0′	Bentonite slurry	16.8

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	.188"	+2′	40′
6"	Open Hole		40′	159′

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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	
60	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	X
96	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	X
154	☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	X

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0′	40′	9 1/4"
40′	159′	6"

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	7681

Business Address (Street Number/Name)	Municipality
6659 Franktown Road	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (YYYY MM DD)
13058		2020 08 31

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify **Not tested**

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 140

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 32'8"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 100′

Recommended pump rate (l/min/GPM): 20

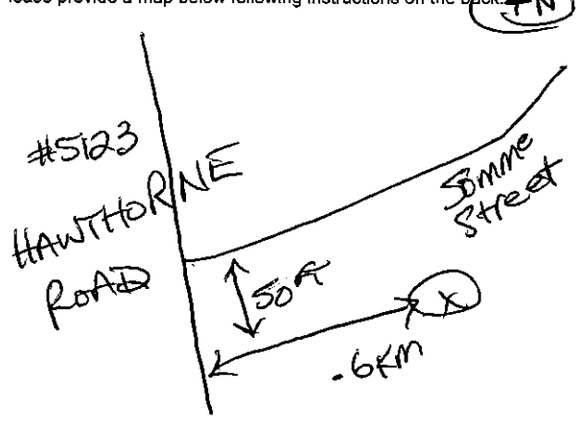
Well production (l/min/GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	27'5"		32'8"
1	29	1	29
2	29.2	2	27.5
3	29.3	3	27.5
4	29.4	4	27.5
5	29.5	5	27.5
10	30.1	10	27.5
15	30.5	15	27.5
20	30.8	20	27.5
25	31	25	27.5
30	31.3	30	27.5
40	31.9	40	27.5
50	32.3	50	27.5
60	32'8"	60	27'5"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1 HP - 20 GPM SET @ 100 FT

Well owner's information package delivered	Date Package Delivered (YYYY MM DD)	Ministry Use Only
☒ Yes ☐ No	2020 08 28	Audit No. Z344069
	Date Work Completed (YYYY MM DD)	Received OCT 30 2020
	2020 08 26	

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Ontario — Ministry of the Environment, Conservation and Parks

Well Tag No. (Place Sticker and/or Print Below)

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: [X] Metric [ ] Imperial

Page 1 of 1

Well Owner's Information

First Name: CONSOLIDATED FASTFRATE (OTTAWA) | Last Name/Organization: C/O TOMLINSON | E-mail Address: | [ ] Well Constructed by Well Owner

Mailing Address (Street Number/Name): 100 CITIGATE DRIVE | Municipality: OTTAWA | Province: ON | Postal Code: K2J 6K7 | Telephone No. (inc. area code):

Well Location

Address of Well Location (Street Number/Name): 301 SOUME ST. | Township: GLOUCESTER (RF) | Lot: 26 | Concession: 6

County/District/Municipality: OTTAWA | City/Town/Village: OTTAWA. | Province: Ontario | Postal Code: K1G 3W4

UTM Coordinates: Zone | Easting | Northing — NAD 8 3 — SEE TABLE BELOW | 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
WELL	DIA (mm)	STATIC WATER LEVEL (m)	GPS EASTING	GPS NORTHING	DEPTH (m)
1	50mm	3.13	18456635	5017304	6.07	
2	50mm	3.34	18456521	5017225	6.03	
3	150mm	6.74	18456613	5017210	36.2m	
4	50mm	6.70	18456624	5017214	6.60	

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
(SEE ABOVE)		BENTONITE PELPLUG & HOLEPLUG BENTONITE GROUT	0.90

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 [X] 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
SEE ABOVE				

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[ ] Water Supply [ ] Replacement Well [ ] Test Hole [ ] Recharge Well [ ] Dewatering Well [X] Observation and/or Monitoring Hole [ ] Alteration (Construction) [ ] Abandoned, Insufficient Supply [ ] Abandoned, Poor Water Quality [X] Abandoned, other, specify Construction [ ] Other, specify 2022

Water Details

Water found at Depth (m/ft)	Kind of Water	
	[ ] Gas	[ ] Fresh [ ] Untested [ ] Other, specify
	[ ] Gas	[ ] Fresh [ ] Untested [ ] Other, specify
	[ ] Gas	[ ] Fresh [ ] Untested [ ] Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
SEE ABOVE		

Results of Well Yield Testing

After test of well yield, water was: [ ] Clear and sand free [ ] Other, specify

If pumping discontinued, give reason: N/A

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)

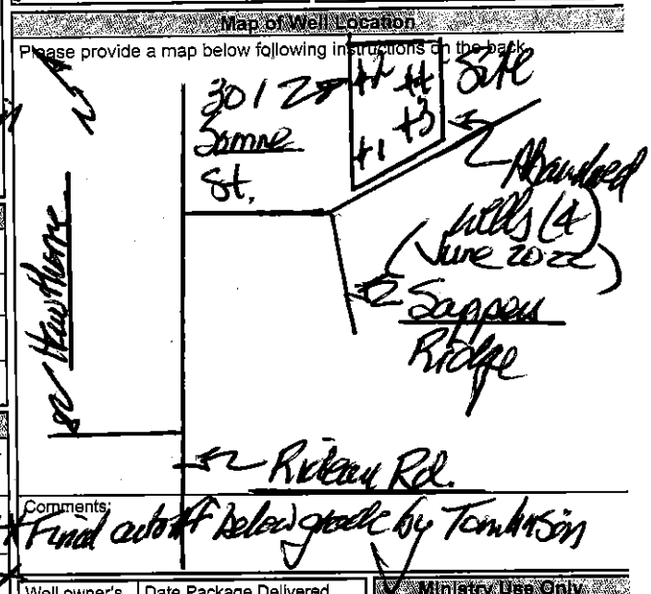
Well production (l/min/GPM)

Disinfected? [ ] Yes [ ] No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	SEE ABOVE			
1				
2				
3				
4				
5				
10				
15				
20				
25				
30				
40				
50				
60				

Map of Well Location

Please provide a map below following instructions on the back.



Well Contractor and Well Technician Information

Business Name of Well Contractor: STANTON DRILLING INC | Well Contractor's Licence No.: 4875

Business Address (Street Number/Name): 57 FIVE ARCHES DR, BOX 29 | Municipality: PAKENHAM

Province: ON | Postal Code: K0A 2X0 | Business E-mail Address: stanton.drilling@bell.net

Bus. Telephone No. (inc. area code): (613) 624-5662 | Name of Well Technician (Last Name, First Name): STANTON, PETER

Well Technician's Licence No.: 0086 | Signature of Technician and/or Contractor: [signature] | Date Submitted: 2022/10

Well owner's information package delivered: [ ] Yes [X] No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2022/06/15

Ministry Use Only

Audit No.: Z375700

Received: JUL 18 2022

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eurofins | Environment Testing
146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS : 4432589

WORK REQUEST : 100377108

Report Date : 2025-08-20

Paterson Group
9 Auriga Dr
Nepean, Ontario
K2E 7T9
Attention : Alex Schopf

Reception Date : 2025-08-12
Project : PH5075
Sampler : NA
PO Number : 63782
Temperature : 9 °C

Analysis	Quantity	External Method
Alkalinity (Water, Automated)	1	Modified from SM 2320 B
Ammonia, Total (Water, Colorimetry)	1	Modified from EPA 350.1
Chloride (Water, IC)	1	Modified from SM 4110 B and C
Colour, True (Water, Spectrophotometry)	1	Modified from SM 2120 C
Conductivity (Water, Automated)	1	Modified from SM 2510 B
DOC (Water, IR)	1	Modified from SM 5310 B
Escherichia coli (DC Plate)	1	Modified from MECP E3407
Fluoride (Water, Auto/ISE)	1	Modified from SM 4500-F A and 4500-F C
Hardness (Water, Calculation Only)	1	SM 2340 B
Ion Balance (Water, Calculation)	1	Modified from SM1030 E
Metals Scan (Water, ICP/MS)	1	Modified from EPA 200.8
Metals Scan (Water, ICP/OES)	1	Modified from SM 3120 B
Nitrate (Water, IC)	1	Modified from SM 4110 B and C
Nitrite (Water, IC)	1	Modified from SM 4110 B and C
pH (25°C) (Water, Automated)	1	Modified from SM 4500-H+ B
Phenols (Water, Colorimetry)	1	Modified from EPA 420.2
Sulphate (Water, IC)	1	Modified from SM 4110 B and C
Sulphide (Water, Colorimetry)	1	Modified from SM 4500-S2 D
Tannin and Lignin (Water, Spec)	1	Modified from SM 5550 B
TDS (Estimated)	1	Modified from SM 2510 A
Total Coliforms (DC Plate)	1	Modified from MECP E3407
Total Kjeldahl Nitrogen (Water, Colorimetry)	1	Modified from EPA 351.2
Turbidity (Water, Turbidimeter)	1	Modified from SM 2130 B
VOCs (Water, GC/MS)	1	Modified from EPA 8260

Criteria :
A : Ontario Regulation 169/03 (Non-Regulated Drinking Water)

Sample status upon receipt :
8908634
Compliant

Certificate Comments :
Revision 1: This is an amendment and supersedes certificate 4431403. Full VOC scan added as per client's request.
8908634
N-NO2 and N-NO3 MRL increased due to matrix interference, dilution was done.

Notes :
- All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated.
- Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at https://directory.cala.ca/
- Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Legend :
RL : Reporting limit
QC : Reference material (QC)
N/A : Not applicable
1 : Results in annex
* : Analysis conducted by external subcontracting
^ : Analysis not accredited

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OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Paterson Group
Project : PH5075

Reception Date : 2025-08-12

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
Hardness (Water, Calculation Only)							
8908634	TW1 - GW1	Hardness as CaCO3 (Calculation)	567	mg/L	80-100		
Metals Scan (Water, ICP/MS)							
8908634	TW1 - GW1	Iron	0.55	mg/L	0.3		
8908634	TW1 - GW1	Manganese	0.18	mg/L	0.05		
TDS (Estimated)							
8908634	TW1 - GW1	TDS (Estimated)^	787	mg/L	500		

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

					Eurofins Sample No :	**8908634**				
					Matrix :	Groundwater				
					Sampling Date :	2025-08-12				
					Client Sample Identification :	TW1 - GW1				
Anions	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**					
Chloride	0.5	mg/L	250			78.8				
Sulphate	1	mg/L	500			285				

			Eurofins Sample No :	**8908634**						
			Matrix :	Groundwater						
			Sampling Date :	2025-08-12						
			Client Sample Identification :	TW1 - GW1						
Calculations	**RL**	**Unit**								
Ion Balance (Calculation)^	0.1		1.01							

					Eurofins Sample No :	**8908634**				
					Matrix :	Groundwater				
					Sampling Date :	2025-08-12				
					Client Sample Identification :	TW1 - GW1				
General Chemistry	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**					
Alkalinity (as CaCO3)	5	mg/L	500			306				
Colour (True)	2	TCU				<2				
Conductivity @ 25°C	5	µS/cm				1210				
Dissolved Organic Carbon	0.5	mg/L	5			2.2				
Fluoride	0.1	mg/L	1.5			0.35				
Hardness as CaCO3 (Calculation)	1	mg/L	80-100			567				
pH @ 25°C	1		6.5-8.5			8.20				
Phenols-4AAP	0.001	mg/L				<0.001				
Sulphide (S2-)	0.01	mg/L	0.05			<0.01				
Tannin and Lignin	0.1	mg/L				0.1				
TDS (Estimated)^	5	mg/L	500			787				
Turbidity	0.1	NTU	5			2.3				

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

					Eurofins Sample No :	8908634				
					Matrix :	Groundwater				
					Sampling Date :	2025-08-12				
					Client Sample Identification :	TW1 - GW1				
Metals			**Criteria**							
	RL	**Unit**	**A**	**B**	**C**					
Metals Scan (Water, ICP/MS)										
Aluminum	0.01	mg/L	0.1			<0.01				
Antimony	0.0005	mg/L	0.006			<0.0005				
Arsenic	0.001	mg/L	0.01			<0.001				
Barium	0.001	mg/L	1			0.087				
Beryllium	0.0005	mg/L				<0.0005				
Boron	0.01	mg/L	5			0.24				
Cadmium	0.0001	mg/L	0.005			<0.0001				
Chromium	0.001	mg/L	0.05			<0.001				
Cobalt	0.0002	mg/L				<0.0002				
Copper	0.001	mg/L	1			<0.001				
Iron	0.03	mg/L	0.3			0.55				
Lead	0.001	mg/L	0.01			<0.001				
Manganese	0.01	mg/L	0.05			0.18				
Mercury	0.0001	mg/L	0.001			<0.0001				
Molybdenum	0.005	mg/L				0.018				
Nickel	0.005	mg/L				<0.005				
Selenium	0.001	mg/L	0.05			<0.001				
Silver	0.0001	mg/L				<0.0001				
Strontium	0.001	mg/L				6.25				
Thallium	0.0001	mg/L				<0.0001				
Uranium	0.001	mg/L	0.02			<0.001				
Vanadium	0.001	mg/L				<0.001				
Zinc	0.01	mg/L	5			<0.01				
Metals Scan (Water, ICP/OES)										
Calcium	1	mg/L				128				
Magnesium	1	mg/L				60				
Potassium	1	mg/L				8				
Sodium	1	mg/L	200			65				

					Eurofins Sample No :	8908634				
					Matrix :	Groundwater				
					Sampling Date :	2025-08-12				
					Client Sample Identification :	TW1 - GW1				
Microbiology			**Criteria**							
	RL	**Unit**	**A**	**B**	**C**					
Escherichia coli (DC)	0	CFU/100mL	0			0				
Total Coliforms (DC)	0	CFU/100mL	0			0				

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

						Eurofins Sample No :	**8908634**			
						Matrix :	Groundwater			
						Sampling Date :	2025-08-12			
						Client Sample Identification :	TW1 - GW1			
Nutrients	**RL**	**Unit**	**Criteria**							
			A	**B**	**C**					
Ammonia (Total, as Nitrogen)	0.02	mg/L				0.240				
Nitrate (as Nitrogen)	0.1	mg/L	10.0			<0.5				
Nitrite (as Nitrogen)	0.1	mg/L	1.0			<0.5				
Total Kjeldahl Nitrogen	0.1	mg/L				0.332				

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

					Eurofins Sample No :	8908634				
					Matrix :	Groundwater				
					Sampling Date :	2025-08-12				
					Client Sample Identification :	TW1 - GW1				
Volatile Organic Compounds	**RL**	**Unit**	**Criteria**							
			A	**B**	**C**					
VOCs (Water, GC/MS)										
1,1,1,2-Tetrachloroethane	0.5	ug/L				<0.5				
1,1,1-Trichloroethane	0.4	ug/L				<0.4				
1,1,2,2-Tetrachloroethane	0.5	ug/L				<0.5				
1,1,2-Trichloroethane	0.4	ug/L				<0.4				
1,1-Dichloroethane	0.4	ug/L				<0.4				
1,1-Dichloroethene	0.5	ug/L	14			<0.5				
1,2,4-Trichlorobenzene	0.5	ug/L				<0.5				
1,2-Dibromoethane	0.2	ug/L				<0.2				
1,2-Dichlorobenzene	0.4	ug/L	200			<0.4				
1,2-Dichloroethane	0.2	ug/L	5			<0.2				
1,2-dichloroethene, cis + trans^	0.5	ug/L				<0.5				
1,2-Dichloropropane	0.5	ug/L				<0.5				
1,3,5-Trimethylbenzene	0.3	ug/L				<0.3				
1,3-Dichlorobenzene	0.4	ug/L				<0.4				
1,3-Dichloropropene, cis + trans	0.5	ug/L				<0.5				
1,4-Dichlorobenzene	0.4	ug/L	5			<0.4				
Acetone	5	ug/L				<5				
Benzene	0.5	ug/L	1			<0.5				
Bromodichloromethane	0.3	ug/L				<0.3				
Bromoform	0.4	ug/L				<0.4				
Bromomethane	0.5	ug/L				<0.5				
Carbon tetrachloride	0.2	ug/L	2			<0.2				
Chloroethane	0.5	ug/L				<0.5				
Chloroform	0.5	ug/L				<0.5				
Chloromethane	0.2	ug/L				<0.2				
cis-1,2-Dichloroethene	0.4	ug/L				<0.4				
cis-1,3-Dichloropropene	0.5	ug/L				<0.5				
Dibromochloromethane	0.3	ug/L				<0.3				
Dichlorodifluoromethane	0.5	ug/L				<0.5				
Dichloromethane	4	ug/L	50			<4				
Diethyl ether	5	ug/L				<5				
Ethylbenzene	0.5	ug/L	140			<0.5				
Hexane	5	ug/L				<5				
m/p-Xylene	0.4	ug/L				<0.4				
Methyl butyl ketone (MBK)	5	ug/L				<5				
Methyl ethyl ketone (MEK)	2	ug/L				<2				
Methyl isobutyl ketone (MIBK)	5	ug/L				<5				
Methyl tert-butyl ether (MTBE)	2	ug/L				<2				
Monochlorobenzene	0.5	ug/L	80			<0.5				
o-Xylene	0.4	ug/L				<0.4				
Styrene	0.5	ug/L				<0.5				
Tetrachloroethylene (PCE)	0.3	ug/L	10			<0.3				
Toluene	0.4	ug/L	60			<0.4				
trans-1,2-dichloroethene	0.4	ug/L				<0.4				
trans-1,3-dichloropropene	0.5	ug/L				<0.5				

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

						Eurofins Sample No :	8908634			
						Matrix :	Groundwater			
						Sampling Date :	2025-08-12			
						Client Sample Identification :	TW1 - GW1			
Volatile Organic Compounds	**RL**	**Unit**	**Criteria**							
			A	**B**	**C**					
Trichloroethylene (TCE)	0.3	ug/L	5			<0.3				
Trichlorofluoromethane	0.5	ug/L				<0.5				
Vinyl chloride	0.2	ug/L	1			<0.2				
Xylene (Total)	0.5	ug/L	90			<0.5				
1,2-dichloroethane-d4 (surrogate)	0	%				85				
4-bromofluorobenzene (surrogate)	0	%				111				
Toluene-d8 (surrogate)	0	%				115				

Approved by :
Addrine Thomas,
Inorganic supervisor, Ottawa

Approved by :
Patrick Jacques, B.Sc, C.Chem,
Environmental Chemist, Ottawa

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Alkalinity (Water, Automated)									
Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.									
Alkalinity (as CaCO3)	mg/L	5	<5	97	95-105			2	0-20
Associated Samples : 8908634								Prep Date: 2025-08-15 Analysis Date: 2025-08-18	
Ammonia, Total (Water, Colorimetry)									
Method : Ammonia (Water, Colorimetry). Internal method: OTT-I-NUT-WI46201.									
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	98	80-120	105	80-120	2	0-20
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-13	
Chloride (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Chloride	mg/L	0.5	<0.5	106	80-120	106	80-120	2	0-20
Associated Samples : 8908634								Prep Date: 2025-08-14 Analysis Date: 2025-08-14	
Colour, True (Water, Spectrophotometry)									
Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.									
Colour (True)	TCU	2	<2	91	78-116			-	0-40
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-13	
Conductivity (Water, Automated)									
Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.									
Conductivity @ 25°C	uS/cm	5	<5	99	98-102			1	0-20
Associated Samples : 8908634								Prep Date: 2025-08-15 Analysis Date: 2025-08-18	
DOC (Water, IR)									
Method : Organic carbon (water, IR, combustion). Internal method: OTT-I-DEM-WI46148.									
Dissolved Organic Carbon	mg/L	0.5	<0.5	96	88-112	92	80-120	-	0-15
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-14	
Escherichia coli (DC Plate)									
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 8908634								Prep Date: 2025-08-12 Analysis Date: 2025-08-13	
Fluoride (Water, Auto/ISE)									
Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.									
Fluoride	mg/L	0.1	<0.10	96	90-110			1	0-20
Associated Samples : 8908634								Prep Date: 2025-08-15 Analysis Date: 2025-08-18	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.									
Aluminum	mg/L	0.01	<0.01	100	80-120	103	70-130	9	0-20
Antimony	mg/L	0.0005	<0.0005	86	80-120	80	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	99	80-120	92	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	71	70-130	8	0-20
Beryllium	mg/L	0.0005	<0.0005	105	80-120	109	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-120	110	70-130	-	0-20
Cadmium	mg/L	0.0001	<0.0001	104	80-120	95	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	110	80-120	95	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	104	80-120	89	70-130	-	0-20
Copper	mg/L	0.001	<0.001	100	80-120	84	70-130	12	0-20
Iron	mg/L	0.03	<0.03	100	80-120	81	70-130	11	0-20
Lead	mg/L	0.001	<0.001	100	80-120	86	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	91	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	107	80-120	100	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	90	80-120	90	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	100	80-120	88	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	100	80-120	94	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	92	80-120	92	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	88	70-130	7	0-20
Thallium	mg/L	0.0001	<0.0001	104	80-120	86	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-120	86	70-130	-	0-20
Vanadium	mg/L	0.001	<0.001	100	80-120	95	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	110	80-120	90	70-130	-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-13	
Metals Scan (Water, ICP/OES)									
Method : Metals (Water, ICP/OES). Internal method: OTT-I-MET-WI48491.									
Calcium	mg/L	1	<1	103	86-115	100	70-130	0	0-20
Magnesium	mg/L	1	<1	100	91-109	103	70-130	7	0-20
Potassium	mg/L	1	<1	101	87-113	106	70-130	-	0-20
Sodium	mg/L	1	<1	103	85-115	102	70-130	-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-12	
Nitrate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	107	80-120	109	80-120	-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-14 Analysis Date: 2025-08-14	
Nitrite (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	104	80-120	115	80-120	-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-14 Analysis Date: 2025-08-14	
pH (25°C) (Water, Automated)									
Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.									
pH @ 25°C		1	7.25	100	97-103			1	0-20
Associated Samples : 8908634								Prep Date: 2025-08-15 Analysis Date: 2025-08-18	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Phenols (Water, Colorimetry)									
Method : Phenols (Water, Colorimetry). Internal method: OTT-I-4AAP-WI46150.									
Phenols-4AAP	mg/L	0.001	<0.001	104	75-125	106	70-130	-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-14 Analysis Date: 2025-08-15	
Sulphate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Sulphate	mg/L	1	<1	100	90-110	98	80-120	2	0-20
Associated Samples : 8908634								Prep Date: 2025-08-14 Analysis Date: 2025-08-14	
Sulphide (Water, Colorimetry)									
Method : Sulphide, S2- (Water, Colorimetry). Internal method: OTT-I-SPEC-WI45931.									
Sulphide (S2-)	mg/L	0.01	<0.01	94	80-120			-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-13	
Tannin and Lignin (Water, Spec)									
Method : Tannin and Lignin (Water, Spec), Internal method: OTT-I-SPEC-WI57693.									
Tannin and Lignin	mg/L	0.1	<0.1	94	80-120			-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-19 Analysis Date: 2025-08-19	
Total Coliforms (DC Plate)									
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 8908634								Prep Date: 2025-08-12 Analysis Date: 2025-08-13	
Total Kjeldahl Nitrogen (Water, Colorimetry)									
Method : TKN (Water, colorimetry). Internal method: OTT-I-NUT-WI46201.									
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	98	70-130	95	70-130	-	0-20
Associated Samples : 8908634								Prep Date: 2025-08-13 Analysis Date: 2025-08-13	
Turbidity (Water, Turbidimeter)									
Method : Turbidity (Water, Turbidimeter). Internal method: OTT-I-TUR-WI46288.									
Turbidity	NTU	0.1	<0.1	102	80-120			4	0-30
Associated Samples : 8908634								Prep Date: 2025-08-14 Analysis Date: 2025-08-15	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
VOCs (Water, GC/MS)									
Method : Volatile Organic Compounds (Water, GC/MS). Internal method: AMVOMSE8.									
1,1,1,2-Tetrachloroethane	ug/L	0.5	<0.5	112	70-130	112	70-130	-	0-30
1,1,1-Trichloroethane	ug/L	0.4	<0.4	119	70-130	119	70-130	-	0-30
1,1,2,2-Tetrachloroethane	ug/L	0.5	<0.5	130	70-130	130	70-130	-	0-30
1,1,2-Trichloroethane	ug/L	0.4	<0.4	121	70-130	121	70-130	-	0-30
1,1-Dichloroethane	ug/L	0.4	<0.4	87	70-130	87	70-130	-	0-30
1,1-Dichloroethene	ug/L	0.5	<0.5	70	70-130	70	70-130	-	0-30
1,2,4-Trichlorobenzene	ug/L	0.5	<0.5	91	70-130	91	70-130	-	0-30
1,2-Dibromoethane	ug/L	0.2	<0.2	121	70-130	121	70-130	-	0-30
1,2-Dichlorobenzene	ug/L	0.4	<0.4	86	70-130	86	70-130	-	0-30
1,2-Dichloroethane	ug/L	0.2	<0.2	91	70-130	91	70-130	-	0-30
1,2-dichloroethene, cis + trans^	ug/L	0.5	<0.5				-		-
1,2-Dichloropropane	ug/L	0.5	<0.5	121	70-130	121	70-130	-	0-30
1,3,5-Trimethylbenzene	ug/L	0.3	<0.3	119	70-130	119	70-130	-	0-30
1,3-Dichlorobenzene	ug/L	0.4	<0.4	117	70-130	117	70-130	-	0-30
1,3-Dichloropropene, cis + trans	ug/L	0.5	<0.5				-		-
1,4-Dichlorobenzene	ug/L	0.4	<0.4	111	70-130	130	70-130	-	0-30
Acetone	ug/L	5	<5	101	70-130	101	70-130	-	0-30
Benzene	ug/L	0.5	<0.5	109	70-130	109	70-130	-	0-30
Bromodichloromethane	ug/L	0.3	<0.3	112	70-130	112	70-130	-	0-30
Bromoform	ug/L	0.4	<0.4	112	70-130	112	70-130	-	0-30
Bromomethane	ug/L	0.5	<0.5	119	70-130	119	70-130	-	0-30
Carbon tetrachloride	ug/L	0.2	<0.2	130	70-130	130	70-130	-	0-30
Chloroethane	ug/L	0.5	<0.5	129	70-130	129	70-130	-	0-30
Chloroform	ug/L	0.5	<0.5	79	70-130	79	70-130	-	0-30
Chloromethane	ug/L	0.2	<0.2	81	70-130	81	70-130	-	0-30
cis-1,2-Dichloroethene	ug/L	0.4	<0.4	100	70-130	100	70-130	-	0-30
cis-1,3-Dichloropropene	ug/L	0.5	<0.5	100	70-130	100	70-130	-	0-30
Dibromochloromethane	ug/L	0.3	<0.3	112	70-130	112	70-130	-	0-30
Dichlorodifluoromethane	ug/L	0.5	<0.5	102	70-130	102	70-130	-	0-30
Dichloromethane	ug/L	4	<4	119	70-130	119	70-130	-	0-30
Diethyl ether	ug/L	5	<5	117	70-130	117	70-130	-	0-30
Ethylbenzene	ug/L	0.5	<0.5	127	70-130	127	70-130	-	0-30
Hexane	ug/L	5	<5	121	70-130	121	70-130	-	0-30
m/p-Xylene	ug/L	0.4	<0.4	100	70-130	100	70-130	-	0-30
Methyl butyl ketone (MBK)	ug/L	5	<5	120	70-130	120	70-130	-	0-30
Methyl ethyl ketone (MEK)	ug/L	2	<2	102	70-130	102	70-130	-	0-30
Methyl isobutyl ketone (MIBK)	ug/L	5	<5	119	70-130	119	70-130	-	0-30
Methyl tert-butyl ether (MTBE)	ug/L	2	<2	130	70-130	130	70-130	-	0-30
Monochlorobenzene	ug/L	0.5	<0.5	118	70-130	118	70-130	-	0-30
o-Xylene	ug/L	0.4	<0.4	100	70-130	100	70-130	-	0-30
Styrene	ug/L	0.5	<0.5	71	70-130	71	70-130	-	0-30
Tetrachloroethylene (PCE)	ug/L	0.3	<0.3	85	70-130	85	70-130	-	0-30
Toluene	ug/L	0.4	<0.4	96	70-130	96	70-130	-	0-30
trans-1,2-dichloroethene	ug/L	0.4	<0.4	100	70-130	100	70-130	-	0-30
trans-1,3-dichloropropene	ug/L	0.5	<0.5	100	70-130	100	70-130	-	0-30
Trichloroethylene (TCE)	ug/L	0.3	<0.3	102	70-130	102	70-130	-	0-30
Trichlorofluoromethane	ug/L	0.5	<0.5	112	70-130	112	70-130	-	0-30

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eurofins | Environment Testing
146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH5075

Reception Date: 2025-08-12

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
VOCs (Water, GC/MS)									
Method : Volatile Organic Compounds (Water, GC/MS). Internal method: AMVOMSE8.									
Vinyl chloride	ug/L	0.2	<0.2	130	70-130	130	70-130	-	0-30
Xylene (Total)	ug/L	0.5	<0.5				-		-
Associated Samples : 8908634								Prep Date: 2025-08-20 Analysis Date: 2025-08-20	

Where RPD % is reported as "-" the calculation is not available because one or both of the duplicates is within 5 times the RL.

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Method references and/or additional QA/QC information available on request.

eurofins STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

100377108

Printed On : 2025-08-12 17:11:44

CLIENT INFORMATION

Company: Paterson Group
Contact: Alex Schopf
Address: 9 Auriga Drive
Telephone: 613-218-3444 Cell:
Email: #1: eardley@patersongroup.ca, mlaflamme@patersongroup.ca;
Email: #2: aschopf@patersongroup.ca;
Project: PH5075 Quote #:

INVOICE INFORMATION (SAME AS CLIENT INF

Company: Fax:
Contact: Email: #1:
Address: Email: #2.
Telephone: PO #: 63782

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☑ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: Ottawa
☐ Storm Sewer, City: Ottawa
☑ ODWSOG
☐ PWQO
☐ O. Reg 347/558
☐ Other:
☐ None

☐ O. Reg 153
Table # ___, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: Type:

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details / Sample Analysis Required

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	Field Filtered -->	O.Reg.153 parameters: PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	See attached paper	Subdivision Supply Bach 2 (Eo/TC only)	TSS	pH	Total Metals	Hg	True Colour			RN# (Lab Use Only)
TW1 - GW1	August 12, 2025	GW	8		☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☑	☐	☑	☐	☐	8908634
					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
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					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	Alex Schopf		August 12, 2025	
Relinquished By:	Alex Schopf		August 12, 2025	9
Received By:	S-Situ		Aug 12/25 @ 15:20	

COMMENTS: Total and Trace Metals, True Colour

CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No

SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379013.78 **NORTHING:** 5019022.56 **ELEVATION:** 91.31

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 1-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)	ELEVATION (m)
GROUND SURFACE							91.31
FILL: Gravel and crushed stone, trace sand (0.15m [91.16m])		0	AU 1				
FILL: Compact to very dense, brown silty sand, with gravel, crushed stone, concrete and ash		1	SS 2	50	10-10-15-21 25		
		2	SS 3	27	5-50-/-/ 50/0.13		
		3	SS 4	50	12-9-8-9 17		
		4	SS 5	42	4-6-6-11 12		
		5	SS 6	46	4-20-52-21 72		
(5.26m [86.05m])		6	SS 7	37	2-20-10-5 30		
FILL: Brown silty sand to sandy silt, some gravel, cobbles and boulders		7	SS 8	42	2-3-5-13 8		
(6.78m [84.53m])		8	SS 9	71	11-23-15-25 38		
GLACIAL TILL: Loose to dense, silty sand to sandy silt, some gravel, cobbles and boulders		9	SS 10	46	9-12-12-23 24		
		10	SS 11	33	6-15-12-16 27		
		11	SS 12	37	11-12-15-12 27		
		12	SS 13	43	7-18-22-50 40		
(10.26m [81.05m])		13	SS 14	51	10-51-50-/ 101/0.2		
End of Borehole		14					
Practical refusal to augering at 10.26 m depth							
(GWL at 3.44 m depth - June 5, 2025)							

PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) — 20 40 60 80

REMOULDED SHEAR STRENGTH (kPa)

UNDRAINED SHEAR STRENGTH (kPa) — 20 40 60 80

PL (%) WATER CONTENT (%) LL (%) — 20 40 60 80

MONITORING WELL CONSTRUCTION

3.44 m 2025-06-05

4.09m

5.61m

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379026.72 **NORTHING:** 5019097.92 **ELEVATION:** 91.06

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 2-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											91
FILL: Gravel and crushed stone, some sand 0.10m [90.96m]		0	AU 1								
FILL: Compact, brown silty sand to sandy silt, with gravel and crushed stone 1.45m [89.61m]		1	SS 2	58	6-9-4-6 13						90
FILL: Stiff, brown to grey silty clay 2.21m [88.85m]		2	SS 3	71	4-4-3-3 7						89
FILL: Stiff to firm, grey silty clay		3	SS 4	75	P		10	58		3.01 m – 2025-06-05	88
			SS 5	83	P		6	43			
		4	SS 6	25	P		10	58			87
		5	SS 7	50	P		7	56			86
			G 8	0			10	68			
5.79m [85.27m]		6	SS 9	67	2-3-9-20 12						85
FILL: Compact, grey silty clay, with gravel , cobbles and boulders 6.78m [84.28m]											
FILL: Very dense, brown silty sand, with gravel, cobbles and boulders 7.52m [83.54m]		7	SS 10	44	26-50-/-/ 50/0.08						84
End of Borehole		8									83
Practical refusal to augering at 7.52 m depth		9									82
(GWL at 3.01 m depth - June 5, 2025)		10									81
		11									80
		12									79
		13									78
		14									

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379085.67 **NORTHING:** 5019059.58 **ELEVATION:** 90.73

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 3-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
TOPSOIL and organics 0.08m [90.65m]			AU 1						90
FILL: Compact to very dense, brown silty sand, some clay, trace gravel, crushed stone and asphalt		1	SS 2	43	3-10-50-/ 60/0.25				89
1.68m [89.05m]			SS 3	48	50-/-/-/ 50/0.15				
End of Borehole		2							88
Practical refusal to augering at 1.63 m depth		3							87
		4							86
		5							85
		6							84
		7							83
		8							82
		9							81
		10							80
		11							79
		12							78
		13							77
		14							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379084.55 **NORTHING:** 5019060.27 **ELEVATION:** 90.64

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 3A-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE: TYPE AND NO.	SAMPLE: RECOVERY (%)	SAMPLE: N OR RQD	SAMPLE: WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE		0									90
0.94m [89.70m]		1									89
End of Borehole		2									88
Practical refusal to augering at 0.94 m depth		3									87
		4									86
		5									85
		6									84
		7									83
		8									82
		9									81
		10									80
		11									79
		12									78
		13									77
		14									

DISCLAIMER: THE DATA PRESENTED IN THIS SHEET IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHOM IT WAS PRODUCED. THIS SHEET SHOULD BE READ IN CONJUNCTION WITH ITS CORRESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379087.71 **NORTHING:** 5019059.84 **ELEVATION:** 90.80

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 2, 2025

FILE NO. : PG7567

HOLE NO. : BH 3B-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	ELEVATION (m)
GROUND SURFACE							90.80
Overburden							
1.52m [89.28m]							
FILL: Crushed stone, with concrete 1.83m [88.97m]			SS 1	17	24-25-7-12 32		
FILL: Stiff, brown silty clay, some sand and gravel, trace asphalt			SS 2	29	9-2-2-2 4		
2.97m [87.83m]							
FILL: Loose, brown silty sand, with rock fragments, trace clay 3.73m [87.07m]			SS 3	17	1-2-4-12 6		
FILL: Stiff, brown silty clay, some sand, trace gravel and crushed stone 4.50m [86.30m]			SS 4	12	1-7-2-3 9		
FILL: Loose, brown silty sand, with gravel 5.26m [85.54m]			SS 5	25	9-3-3-3 6		
FILL: Compact to dense, grey silty sand, with gravel, cobbles and boulders, trace clay			SS 6	8	1-9-22-25 31		
6.78m [84.02m]			SS 7	33	3-6-4-4 10		
FILL: Stiff, grey silty clay, some topsoil and organics, trace sand 7.54m [83.26m]			SS 8	33	27-9-3-4 12		
FILL: Very stiff, brown , silty clay			SS 9	50	5-4-4-6 8		
8.53m [82.27m]			SS 10	62	3-2-2-2 4		
FILL: Stiff, brown clayey silt, trace sand - Trace gravel by 9.6 m depth			SS 11	62	2-4-4-5 8		
10.21m [80.59m]			SS 12	50	7-4-1-1 5		
GLACIAL TILL: Stiff, grey silty clay, with gravel, cobbles and boulders, some sand			SS 13	42	P		
11.40m [79.40m]							
End of Borehole Practical refusal to augering at 11.40 m depth (GWL at 3.31 m depth - June 5, 2025)							

PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80

△ REMOULDED SHEAR STRENGTH (kPa)

▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80

PL (%) WATER CONTENT (%) LL (%) 20 40 60 80

△12 ▲68 242

MONITORING WELL CONSTRUCTION

3.31 m 2025-06-05

4.57m

6.10m

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379135.75 **NORTHING:** 5019162.49 **ELEVATION:** 92.18

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 3, 2025

FILE NO. : PG7567

HOLE NO. : BH 4-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									92
FILL: Stiff brown silty clay, some gravel, trace sand - trace organics to 0.08 m depth			AU 1						
1.22m [90.96m]		1	SS 2	33	3-5-5-25 10				91
FILL: Compact, brown silty sand, with gravel, trace topsoil and organics			SS 3	75	11-13-11-11 24				
2.21m [89.97m]		2							90
FILL: Stiff, brown silty clay, with gravel, some crushed stone and sand			SS 4	25	2-5-2-3 7				
2.97m [89.21m]		3							89
FILL: Loose, brown silty sand, some clay, trace wood and topsoil			SS 5	42	1-4-4-4 8				
3.73m [88.45m]		4	SS 6	12	1-2-2-4 4				88
FILL: Firm, brown silty clay, with gravel, some sand and crushed stone			SS 7	31	2-2-50-/ 52/0.25				
- Trace asphalt to 5.18 m depth		5							87
6.02m [86.16m]			SS 8	25	1-2-2-2 4				
FILL: Firm, grey silty clay, with gravel, cobbles and boulders, trace crushed stone and asphalt		6	SS 9	29	1-2-4-4 6				86
		7	SS 10	46	1-2-1-1 3				85
		8	SS 11	58	1-3-2-2 5				84
8.69m [83.49m]			SS 12	71	1-2-2-6 4				
TOPSOIL and organics		9	SS 13	62	5-11-8-/ 19				83
8.99m [83.19m]									
Compact, grey **SILTY SAND** to **SANDY SILT**		10	SS 14	83	1-1-1-1 2				82
9.45m [82.73m]			SS 15	100	1-1-1-2 2		242		
GLACIAL TILL: Firm to stiff, brown clayey silt, trace gravel and sand		11	SS 16	83	0-0-0-0 0		242		81
		12	SS 17	100	P		242		80
- Clay content increasing by 12.2 m depth			SS 18	100	1-2-3-1 5				
		13	SS 19						79
		14							

6.15m

7.54 m 2025-06-05

7.67m

DISCLAIMER: THE DATA PRESENTED IN THIS SHEET IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHOM IT WAS PRODUCED. THIS SHEET SHOULD BE READ IN CONJUNCTION WITH ITS CORRESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation & Slope Stability Study

301 Somme Street

COORD. SYS.: MTM ZONE 9 **EASTING:** 379135.75 **NORTHING:** 5019162.49 **ELEVATION:** 92.18

PROJECT: Proposed Commercial Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 3, 2025

FILE NO. : PG7567

HOLE NO. : BH 4-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
14.33m [77.85m]		14	SS 19	83	1-2-4-4 6		■ 11				78
Dynamic cone penetration test commenced at 14.33 m depth		15									77
15.42m [76.76m]		16					■ 100				76
End of Borehole		17									75
Practical refusal to DCPT at 15.42 m depth		18									74
DCPT Pushed from 14.33 m to 15.01 m depth		19									73
(GWL at 7.54 m depth - June 5, 2025)		20									72
		21									71
		22									70
		23									69
		24									68
		25									67
		26									66
		27									65
		28									

DISCLAIMER: THE DATA PRESENTED IN THIS SHEET IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHOM IT WAS PRODUCED. THIS SHEET SHOULD BE READ IN CONJUNCTION WITH ITS CORRESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.

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REFERENCE No.: 11231101 ENCLOSURE No.:

BOREHOLE No.: BH1-21

ELEVATION: 91.07 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.

PROJECT: ConFastfrate, New Warehouse & Offices

LOCATION: Somme Street, Ottawa, ON

DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos

DATE (START): 26 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	91.07		GROUND SURFACE			%		N	
	90.99		**TOPSOIL** (75 mm)						
			FILL - SILTY SAND, trace gravel, trace clay, dark grey, moist, compact		SS1	96	7-15-10-9	25	
					SS2A	71	9-6-3-4	9	
1.0	90.20		**FILL** - SAND, trace silt, trace gravel, brown, moist, loose Gravel - 17%, Sand - 60%, Silt - 19%, Clay - 4%		SS2B		--		
	89.54		**FILL** - SILTY SAND, with clay, trace gravel, dark grey, moist, dense cobble encountered at 1.83 mbgs		SS3	71	7-13-33-40	46	
2.0					SS4	42	5-2-3-50/76 mm	5	
3.0					SS5A	67	8-8-5-3	13	
			with organics and wood fragments		SS5B		--		>>
					SS6	0	50/51 mm	50/51 mm	
4.0			augers grinding at 3.96 mbgs, inferred boulders or construction debri						
	86.49		**SILTY SAND** - trace gravel, trace clay, brown, moist, dense to very dense		SS7	83	10-21-37 -50/127 mm	58	
5.0					SS8A	100	43-31-36-47	67	
6.0	85.27		grey, very moist, augers grinding at 9.85 mbgs, inferred boulder		SS8B		--		
					SS9	83	24-23-18-26	41	
7.0			cobble encoutered at 6.86 mbgs		SS10	75	13-11-15-12	26	
8.0					SS11	71	6-4-12-23	16	
					SS12	67	50-15-15-18	30	
9.0					SS13	67	13-17-19-17	36	
			Gravel - 16%, Sand - 32%, Silt - 36%, Clay - 16%						
10.0	81.21		**LIMESTONE** - interbedded sandstone, grey, poor to excellent quality based on RQD - highly weatherd from 9.86 mbgs to 9.93 mbgs		RC1	58	38	38	
11.0			silty sand seam at 10.92 mbgs						

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

BOREHOLE No.: BH1-21
ELEVATION: 91.07 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos
DATE (START): 26 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	91.07		GROUND SURFACE			%		N	
			vertical fracture at 11.58 mbgs		RC2	98	95	95	
12.0									
13.0					RC3	95	58	58	
14.0	77.25		Borehole terminated at 13.82 mbgs Note: Borehole Coordinate - UTM Zone 18 - Northing: 5017223.9 - Easting: 456487.2						
15.0									
16.0									
17.0									
18.0									
19.0									
20.0									
21.0									
22.0									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

REFERENCE No.: 11231101 ENCLOSURE No.:

BOREHOLE No.: BH2-21

ELEVATION: 90.79 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.

PROJECT: ConFastfrate, New Warehouse & Offices

LOCATION: Somme Street, Ottawa, ON

DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos

DATE (START): 27 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	90.79		GROUND SURFACE			%		N	
	90.71		**TOPSOIL** (75 mm)		SS1A	92	3-12-11-15	23	
			FILL - SILTY SAND, trace clay, trace bricks, trace asphalt, brown to black, moist, compact		SS1B		--		
	90.33		**FILL** - SAND AND GRAVEL, trace silt, brown, moist, compact		SS2	88	6-14-17-15	31	
1.0	90.03		**FILL** - SILTY SAND, with gravel, trace clay, brown to grey, moist, dense		SS3A	46	7-9-6-6	15	
			with clay at 1.65 mbgs		SS3B		--		
2.0			trace clay at 2.89 mbgs		SS4	67	28-13-12-38	25	
3.0			asphalt at 3.35 mbgs		SS5	63	8-7-5-12	12	
					SS6A	67	3-1-1-1	2	
4.0	86.93		**ORGANIC**		SS6B		--		
			FILL - SILTY SAND, trace gravel, trace clay, brown, wet, loose		SS6C		--		
	86.88		with topsoil at 4.57 mbgs		SS7A	88	2-3-7-8	10	
5.0			with clay, bricks fragments at 4.72 mbgs		SS7B		--		
	85.45		**SILTY SAND** - with clay, trace gravel, brown, moist to wet, compact to dense		SS8	83	8-19-22-40	41	
6.0			grey at 6.10 mbgs		SS9	54	9-14-12-13	26	
7.0					SS10	79	5-3-5-6	8	
8.0					SS11	75	5-7-8-10	15	
			Gravel - 20%, Sand - 38%, Silt - 33%, Clay - 9%		SS12	63	6-10-11-17	21	
9.0			wet at 9.14 mbgs		SS13	71	11-18-18-21	36	
10.0			augers grinding at 10.08 mbgs, inferred boulder		SS14	71	19-50/25 mm	50/25 mm	
11.0					SS15	25	11-14-15-21	29	

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

BOREHOLE No.: BH2-21
ELEVATION: 90.79 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: L. Ramos
DATE (START): 27 July 2021 DATE (FINISH): 27 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
metres	90.79		GROUND SURFACE			%		N	
	79.36		**SAND** - trace silt, grey, wet, dense		SS16A	92	11-15-18-31	23	
12.0	79.23		**SILTY CLAY** - with sand, trace gravel reddish brown, moist, hard		SS16B		–		
					SS17	0	21-31-31-40	62	
13.0					SS18	100	9-21-38-50/127 mm	59	
14.0					SS19	100	17-26-48-50/127 mm	59	
15.0	76.01		**LIMESTONE** - interbedded sandstone, grey, good quality based on RQD UCS = 139.1 MPa		RC1	100	78	78	
16.0									
					RC2	98	76	76	
17.0									
18.0					RC3	100	89	89	
19.0	71.92		Borehole terminated at 18.87 mbgs Note: Borehole Coordinates - UTM Zone 18N - Northing: 5017221.2 - Easting: 456581.5						
20.0									
21.0									
22.0									

NOTES:
m bgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3-21
ELEVATION: 90.55 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: L. Ramos
DATE (START): 26 July 2021 DATE (FINISH): 26 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.55		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	90.48		**TOPSOIL** (75 mm)						
			FILL - SILTY SAND, with gravel, trace clay, brown, moist, compact		SS1	71	2-6-4-10	10	
					SS2A	42	5-5-7-14	12	
1.0	89.64		with presence of organics/topsoil		SS2B		–		
					SS3	33	5-5-6-15	11	
2.0									
			with to trace clay at 2.5 m bgs		SS4	42	7-6-4-3	10	
3.0			grey at 3.0 m bgs		SS5	86	2-2-8-27	10	
			moist						
	87.20		**ASPHALT**						
4.0	87.15		**FILL** - SANDY GRAVEL, dark grey, wet, compact		SS6	46	12-12-5-7	17	
	86.74		**SILTY SAND** - trace gravel, some clay, brown, moist, compact						
5.0			loose at 4.75 m bgs		SS7	0	3-2-3-4	5	
			compact to very dense at 5.5 m bgs Gravel - 19%, Sand - 49%, Silt - 26%, Clay - 6%		SS8	73	10-16-21-46	37	H
6.0	WL6.2				SS9	100	13-26-27-41	53	
	2021-07-26								
7.0					SS10A	100	9-11-11-15	22	
	83.54		with clay, trace gravel, trace cobbles, grey, moist, compact		SS10B		–		
8.0					SS11	71	8-13-20-28	33	
					SS12	79	5-10-16-36	26	
9.0			wet at 9.14 m bgs		SS13	80	18-50/102 mm	100+	
	81.11		Borehole terminated due to auger refusal at 9.45 mbgs. Bedrock or boulder inferred						
10.0			Noted: Borehole Location - UTM Zone 18N - Northing: 5017286.1 - Easting: 456612.6						
11.0									

NOTES:
m bgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH4-21
ELEVATION: 90.23 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: L. Ramos
DATE (START): 8 July 2021 DATE (FINISH): 28 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.23		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	90.16		**TOPSOIL** (75 mm)						
			FILL - SILTY SAND, with clay, trace rootlets, brown to grey, moist, stiff		SS1	43	1-2-7-4	9	
1.0			asphalt at 0.8 m bgs cobble at 0.9 m bgs		SS2	54	7-8-4-9	12	
			cobble at 1.5 m bgs		SS3	21	9-10-7-5	17	
2.0					SS4	0	4-2-1-2	3	
3.0	87.19		**FILL** - very loose fill mixed with organics/top soil and wood fragments - dark brown, moist		SS5	67	2-1-1-4	2	
4.0					SS6	13	5-1-0-1	1	
5.0					SS7	17	2-1-1-2	2	
					SS8	42	2-1-2-2	3	
6.0 ▼	WL6.1 2021-07-26				SS9A	83	1-3-2-3	5	
	83.68		**SILTY SAND** - with clay, trace rootlets, brown, moist		SS9B		–		
7.0			wet at 6.86 mbgs trace gravel, rootlets stopped at 7.01 mbgs		SS10	42	4-11-11-15	22	
8.0			brown with grey mottling, moist at 7.62 m bgs		SS11	83	5-10-12-11	22	
			wet at 8.69 mbgs		SS12	100	21-27-31-30	58	
9.0					SS13	0	22-22-19-36	41	
10.0					SS14	71	8-21-20-31	41	
11.0			moist at 10.82 mbgs		SS15	67	20-16-25-25	41	

NOTES:
m bgs: meters below ground surface
RQD: Rock Quality Designation

File: G:\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS - COPY.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 24/1/22

REFERENCE No.: 11231101 ENCLOSURE No.:

BOREHOLE No.: BH4-21

ELEVATION: 90.23 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.

PROJECT: ConFastfrate, New Warehouse & Offices

LOCATION: Somme Street, Ottawa, ON

DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos

DATE (START): 8 July 2021 DATE (FINISH): 28 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.23		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	78.80		**SILTY CLAY** - with sand, trace gravel, reddish brown, moist, hard		SS16	100	13-24-26-22	50	
12.0	78.19		Borehole terminated due to auger refusal at 12.04 mbgs. Bedrock or boulder inferred Note: Borehole Coordinate - UTM 18 Zone - Northing: 5017343.6 - Easting: 456673.6						
13.0									
14.0									
15.0									
16.0									
17.0									
18.0									
19.0									
20.0									
21.0									
22.0									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

BOREHOLE No.: BH5-21
ELEVATION: 90.39 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Consolidated Fastfrate (Ottawa) Holdings Ltd.
PROJECT: ConFastfrate, New Warehouse & Offices
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: J. Scott CHECKED BY: Leandro Ramos
DATE (START): 26 July 2021 DATE (FINISH): 26 July 2021

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Blows per 6 in. / 15 cm	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	90.39		GROUND SURFACE			%		N	10 20 30 40 50 60 70 80 90
	90.32		**TOPSOIL** (75 mm)						
			FILL - SILTY CLAY, trace sand, grey, moist, very soft		SS1	21	1-0-0-1	0	
					SS2A	24	2-5-6-7	11	
1.0	89.48		**FILL** - SANDY SILT, trace clay, trace gravel, dark brown, moist, compact		SS2B		--		
			loose at 1.52 mbgs		SS3	24	12-5-4-6	9	
2.0			Gravel - 25%, Sand - 38%, Silt - 29%, Clay - 8%						
			with clay, some gravel at 2.29 mbgs		SS4	24	5-4-2-5-6	6	
3.0									
			shale cobble at 3.2 mbgs		SS5	24	4-3-6-7	9	
4.0					SS6	24	4-3-3-5	6	
	85.82		**SILTY SAND** - trace clay, trace gravel, brown, moist, compact to very dense		SS7	24	3-5-8-9	13	
5.0			Gravel - 10%, Sand - 38%, Silt - 41%, Clay - 11% wet at 5.03 mbgs						
			moist, containing cobbles at 5.33 mbgs		SS8	24	14-20-42-42	62	
6.0			grey at 6.1 mbgs		SS9	24	8-16-20-20	36	
7.0			wet, with clay at 6.86 mbgs		SS10	16	15-34-50/102 mm	84/254 mm	
			moist at 7.62		SS11A	15	23-40-50/76 mm	90/229 mm	
8.0	82.52		**SANDY SILT** - trace clay, grey, moist, very loose		SS11B		--		
	82.39		Borehole terminated due to auger refusal at 8.0 mbgs. Bedrock or boulder inferred						
			Note: Borehole Coordinate - UTM 18 Zone - Northing: 5017293.2 - Easting: 456532.1						
9.0									
10.0									
11.0									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\11231101\WORKSHARE\FIELD\GINT LOG\11231101 LOGS.GPJ Library File: 11231101 GHD_GEOTECH_V10.GLB Report: 11231101 BOREHOLE LOG Date: 12/8/21

BOREHOLE No.: BH1
ELEVATION: 90.21 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
meters	90.21		GROUND SURFACE	1.01			%	ppm	N	10 20 30 40 50 60 70 80 90
	90.1		TOPSOIL (75 mm thickness)							
0.5			FILL - Silty sand, trace gravel, loose, brown, damp			SS1	50		5	
	89.4									
1.0			FILL - Gravel, trace sand, possible cobble/boulder, compact to dense, grey, damp			SS2	50		47	
1.5	88.7			Riser						
			FILL - Silty sand, some clay, trace gravel, compact, brown and grey, damp			SS3	42		20	
2.0				Cuttings						
2.5						SS4	58		19	
3.0	87.2									
			FILL - Silty clay, some sand, trace gravel, very stiff, brown and grey, damp			SS5	33		10	
3.5			becoming sandy at 3.8 mbgs							
	86.3									
4.0			FILL - Clayey silty sand, compact, grey and brown, moist	WL 3.99		SS6	58		14	
4.5				4.57						
				Bentonite		SS7	21		14	
5.0				5.18						
5.5				5.49		SS8	46		12	
	84.3									
6.0			SILTY SAND- some clay, trace to some gravel, compact, brown and grey, moist	Sand						
				Screen		SS9	54		12	
6.5										

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH1
ELEVATION: 90.21 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
meters	90.21		GROUND SURFACE				%	ppm	N	10 20 30 40 50 60 70 80 90
			Refusal encountered at 7.2 mbgs Cobbles and boulders encountered from 7.3 to 8.2 mbgs	7.01		SS10	71		50+	
7.5										
8.0						RC1	49			
	82.0		LIMESTONE- interbedded sandstone, grey, fair becoming good quality with depth based on RQD							
8.5										
9.0						RC2	94		73	
9.5										
10.0						RC3	100		82	
10.5										
11.0						RC4	100		90	
	78.9		Borehole terminated at 11.3 mbgs							
11.5										
12.0										
12.5										
13.0										
13.5										

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH2
ELEVATION: 89.80 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	89.80		GROUND SURFACE			%	ppm	N	
	89.7		TOPSOIL (75 mm thickness)						
			FILL - Silty clay, firm to stiff, grey, moist		SS1	58		2	
0.5									
1.0					SS2	100		2	
1.5									
2.0					SS3	100		1	
2.5					SS4	100		WH	
3.0									
3.5					FV5				
	86.0		FILL - Clayey sand, some gravel, organics, loose, grey and brown, moist						
4.0					SS6	75		5	
4.5	85.2		FILL - Gravelly sandy silt, compact to very dense, brown and grey, saturated						
5.0					SS7	83		33	
5.5					SS8	63		70	
6.0	83.7		SILTY SAND- some gravel, compact to very dense, grey, moist to saturated						
6.5					SS9	100		27	

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH2
ELEVATION: 89.80 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 6 August 2020 DATE (FINISH): 6 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	89.80		GROUND SURFACE			%	ppm	N	
					SS10	83		57	
7.5									
					SS11	91		70	
8.0									
			Cobbles and boulders encountered from 8.4 to 9.3 mbgs		SS12	100		50+	
8.5									
9.0			Refusal encountered at 9.3 mbgs		SS13	100		50+	
	80.5		LIMESTONE- interbedded sandstone, grey, fair to good quality based on RQD						
9.5					RC1	100		85	
10.0									
10.5									
					RC2	100		83	
11.0									
11.5									
					RC3	100		52	
12.0									
	77.6		Borehole terminated at 12.2 mbgs						
12.5									
13.0									
13.5									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3
ELEVATION: 90.88 m

BOREHOLE LOG

Page: 1 of 3

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.88		GROUND SURFACE			%	ppm	N	
	90.8		TOPSOIL (125 mm thickness)						
0.5			FILL - Clayey silty sand, trace to some gravel, compact, brown and grey, damp		SS1	63		11	
1.0	90.0		FILL - Crushed limestone, asphalt, compact, grey and black, damp		SS2	58		42	
1.5	89.4		FILL - Sand, trace gravel, clay pockets, asphalt, compact, grey and black, damp to moist		SS3	38		15	
2.0									
2.5	88.6		FILL - Silty sand, some gravel, trace clay, possible cobbles/boulders, compact , grey, moist		SS4	33		54	
3.0	87.8		FILL - Clayey sand, asphalt, loose to compact, grey and brown, moist		SS5	33		22	
3.5									
4.0					SS6	4		8	
4.5	86.3		FILL - Silty sand, trace gravel, trace to some clay, dense to very dense, brown and grey, damp to moist, possible cobbles/boulders		SS7	50		54	
5.0									
5.5					SS8	33		44	
6.0	84.8		SANDY SILT- some gravel, compact to very dense, grey, damp						
6.5					SS9	83		31	

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3
ELEVATION: 90.88 m

BOREHOLE LOG

Page: 2 of 3

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- ○ Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.88		GROUND SURFACE			%	ppm	N	
					SS10	83		28	
7.5			Possible cobbles/boulders encountered from 7.6 to 9.1 mbgs						
8.0					SS11	83		24	
8.5					SS12	25		80	
9.0									
9.5					SS13	100		42	
			Refusal encountered at 10 mbgs						
10.0			Cobbles and boulders encountered from 10.0 to 11.9 mbgs						
10.5									
11.0					RC1	32			
11.5									
	79.0								
12.0			LIMESTONE- interbedded sandstone, grey, poor to fair quality based on RQD						
12.5					RC2	100		57	
13.0									
13.5			Rock core mechanical breaks during coring from 13.4 to 14.9 mbgs						

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH3
ELEVATION: 90.88 m

BOREHOLE LOG

Page: 3 of 3

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- ○ Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.88		GROUND SURFACE			%	ppm	N	
					RC3	92		37	
14.5									
15.0	75.9		Borehole terminated at 14.9 mbgs						
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									
19.0									
19.5									
20.0									
20.5									

NOTES:
mbgs: meters below ground surface
RQD: Rock Quality Designation

BOREHOLE No.: BH4
ELEVATION: 90.44 m

BOREHOLE LOG

Page: 1 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.44		GROUND SURFACE			%	ppm	N	
	90.3		TOPSOIL (125 mm thickness)						
0.5			FILL - Gravelly sand, compact, grey, damp		SS1	63		33	
	89.7		FILL - Sand and gravel, compact, grey, damp						
1.0					SS2	50		17	
1.5			Asphalt encountered at 1.5 mbgs						
2.0					SS3	54		27	
2.5					SS4	58		28	
3.0	87.4		FILL - Silty sand, trace clay, trace to some gravel, possible cobbles/boulders, brown and grey, damp to moist		SS5	100		50+	
3.5									
			Wood encountered at 3.8 mbgs						
4.0					SS6	17		19	
4.5									
5.0					SS7	0		4	
5.5					SS8	75		29	
6.0	84.3		SILTY SAND- trace to some gravel, trace clay, compact to dense, grey and brown, moist						
6.5					SS9	79		49	

NOTES:
mbgs: meters below ground surface

BOREHOLE No.: BH4
ELEVATION: 90.44 m

BOREHOLE LOG

Page: 2 of 2

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.44		GROUND SURFACE			%	ppm	N	
					SS10	4		32	
7.5									
8.0					SS11	58		18	
8.5					SS12	58		44	
9.0									
9.5					SS13	67		50	
10.0									
10.5									
11.0	79.3		Borehole terminated at refusal at 11.1 mbgs		SS14	88		50+	
11.5									
12.0									
12.5									
13.0									
13.5									

NOTES:
mbgs: meters below ground surface

BOREHOLE No.: DCPT5
ELEVATION: 90.76 m

BOREHOLE LOG

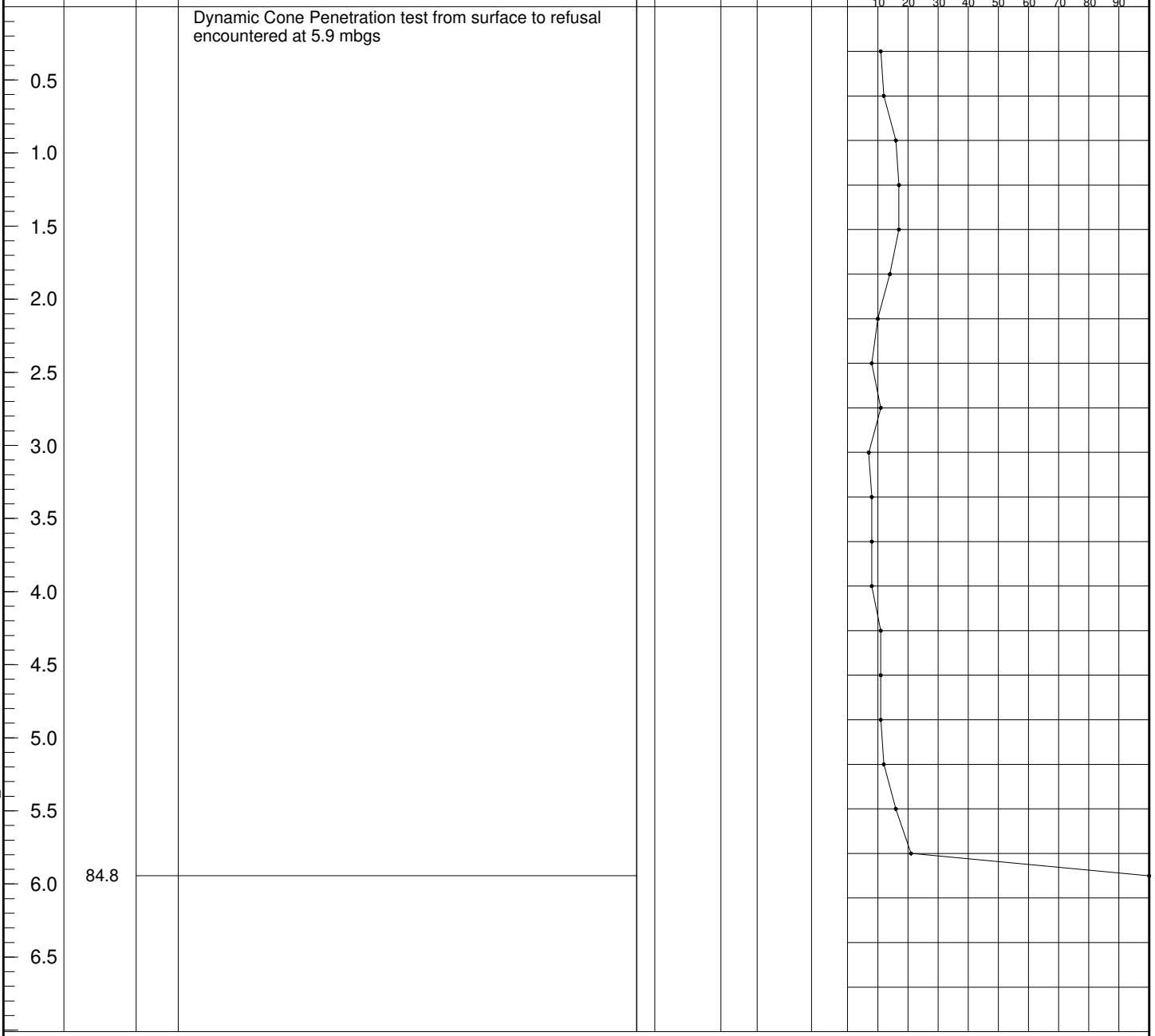
Page: 1 of 1

CLIENT: Consolidated Fastrate (Ottawa) Holdings Ltd.
PROJECT: New Warehouse
LOCATION: Somme Street, Ottawa, ON
DESCRIBED BY: RVT CHECKED BY: BV
DATE (START): 7 August 2020 DATE (FINISH): 7 August 2020

LEGEND
- SS Split Spoon
- GS Auger Sample
- ST Shelby Tube
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	OVC	Penetration Index / RQD
meters	90.76		GROUND SURFACE			%	ppm	N
			Dynamic Cone Penetration test from surface to refusal encountered at 5.9 mbgs					
	84.8							

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90



NOTES:
mbgs: meters below ground surface

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Part of 5123 Hawthorne Road - Part 1
Ottawa, Ontario

DATUM Ground surface elevations provided R. W. Tomlinson Limited.

FILE NO. PE4621

REMARKS

HOLE NO. BH 1

BORINGS BY CME 55 Power Auger **DATE** 2019 May 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	91.80
		AU	1				
FILL: Brown to black mixture of silt, clay, sand and gravel with asphalt, concrete and limestone						1	90.80
		SS	1	50			
		SS	2	10		2	89.80
		SS	3	60		3	88.80
3.96		SS	4	50			
		SS	5	60		4	87.80
Very stiff, grey **CLAYEY SILT/SILTY CLAY**		SS	6	60		5	86.80
6.00		SS	7	70			
		SS	8	70		6	85.80
Brown **SILTY FINE SAND,** some gravel		SS	9	30		7	84.80
		SS	10	30		8	83.80
8.35							
End of Borehole							
Practical refusal to augering at 8.35m depth							
(GWL @ 2.92m - May 28, 2019)							

Photo Ionization Detector

● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Part of 5123 Hawthorne Road - Part 1
Ottawa, Ontario

DATUM Ground surface elevations provided R. W. Tomlinson Limited.

FILE NO. PE4621

REMARKS

HOLE NO. BH 2

BORINGS BY CME 55 Power Auger **DATE** 2019 May 15

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	92.38
FILL: Dark brown clayey sand		AU	1				
0.91						1	91.38
FILL: Dark grey gravelly clay, some shale		SS	1	70			
1.52						2	90.38
FILL: Dark grey gravelly silty sandy clay with shale and cobbles		SS	2	70			
2.30						3	89.38
		SS	3	90			
		SS	4	90			
Stiff to firm, grey **SILTY CLAY**						4	88.38
		SS	5				
		SS	6			5	87.38
5.30							
End of Borehole							
Practical refusal to augering at 5.30m depth							
(GWL @ 3.82m - May 28, 2019)							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)

○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Phase II - Environmental Site Assessment
Part of 5123 Hawthorne Road - Part 1
Ottawa, Ontario

DATUM Ground surface elevations provided R. W. Tomlinson Limited.

FILE NO. PE4621

REMARKS

HOLE NO. BH 3

BORINGS BY CME 55 Power Auger **DATE** 2019 May 14

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	91.00
FILL: Dark grey-brown gravelly sandy clay with shale		AU	1				
0.76							
		SS	1	50		1	90.00
		SS	2	50		2	89.00
		SS	3	50			
FILL: Dark grey mixture of clay, silt, sand and gravel with concrete, asphalt and shaley limestone		SS	4	60		3	88.00
		SS	5	50		4	87.00
		SS	6	60		5	86.00
5.79		SS	7	60			
						6	85.00
		SS	8	40		7	84.00
Grey **SILTY SAND**		SS	9	50		8	83.00
		SS	10	0			
9.45		SS	11			9	82.00
Light grey **SANDY SILT** with clay and gravel		SS	12			10	81.00
10.67							
End of Borehole							
Practical refusal to augering at 10.67m depth							

Photo Ionization Detector
● Volatile Organic Rdg. (ppm)
○ **Lower Explosive Limit %**

20 40 60 80

100 200 300 400 500
RKI Eagle Rdg. (ppm)
▲ Full Gas Resp. △ Methane Elim.

Monitoring Well Construction

INSPEC-SOL

BOREHOLE No.: B5-1
ELEVATION: 90.48 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: R.W.Tomlinson Ltd.
PROJECT: Geotechnical Investigation
LOCATION: Lot 26 and 27, concession 6, Ottawa, Ontario
DESCRIBED BY: B.Beveridge CHECKED BY: J.Bennett
DATE (START): October 30, 2008 DATE (FINISH): October 30, 2008

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- o Water content (%)
- Atterberg limits (%)
- • N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	Organic Vapour ppm or %LEL	Penetration Index / RQD
meters	90.48		GROUND SURFACE	91.70 91.60			%	ppm	N
1.0			FILL - silty clay, some sand, gravel, concrete, asphalt and organics, loose to dense, green/brown/grey, moist			SS1	46		6
2.0						SS2	25		10
3.0						SS3	50		4
4.0						SS4	50		9
5.0						SS5	75		50+
6.0	85.15		SANDY SILT- some sand, gravel, trace oxidation, very stiff, greenish brown, moist			SS6	59		10
7.0	83.62		SANDY CLAY- some gravel, trace oxidation, very soft, red / green / grey, moist	6.98 7.29		SS7	67		50+
8.0	83.16		SILTY CLAY- some gravel, very stiff, grey, moist	WL 7.63		SS8	25		50+
9.0				8.81		SS9	42		50+
10.0	80.45		End of Borehole Auger Refusal Assumed Bedrock	10.03		SS10	0		R
11.0						SS11	50		R
12.0						SS12	46		R
13.0						SS13	17		R

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90

NOTES:

BOREHOLE LOG T020556-A1-BH(OCT-31-08).GPJ INSPEC_SOL.GDT 5/12/09

INSPEC-SOL

BOREHOLE No.: B5-2
ELEVATION: 90.78 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: R.W.Tomlinson Ltd.
PROJECT: Geotechnical Investigation
LOCATION: Lot 26 and 27, concession 6, Ottawa, Ontario
DESCRIBED BY: B.Beveridge CHECKED BY: J.Bennett
DATE (START): October 23, 2008 DATE (FINISH): October 23, 2008

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- ● N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Organic Vapour ppm or %LEL	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.78		GROUND SURFACE			%	ppm	N	
			FILL - silty clay, some asphalt, sand and gravel, trace organics, compact to dense, brown/black, moist						
1.0					SS1	92		49	
2.0					SS2	55		12	
					SS3	75		50+	
3.0					SS4	63		17	
4.0					SS5	71		32	
	86.21		SILTY CLAY - some gravel, trace oxidation, firm to stiff, brown/grey, moist to wet		SS6	38		2	
5.0					SS7	100		7	
6.0					SS8	84		R	
	84.07		End of Borehole						
7.0									
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									

NOTES:

BOREHOLE LOG T020556-A1-BH(OCT-31-08).GPJ INSPEC_SOL.GDT 5/12/09

INSPEC•SOL

BOREHOLE No.: B5-3

ELEVATION: 90.51 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: R.W.Tomlinson Ltd.

PROJECT: Geotechnical Investigation

LOCATION: Lot 26 and 27, concession 6, Ottawa, Ontario

DESCRIBED BY: B.Beveridge CHECKED BY: J.Bennett

DATE (START): October 23, 2008 DATE (FINISH): October 23, 2008

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- o Water content (%)
- Atterberg limits (%)
- • N Penetration Index based on Split Spoon sample
- • N Penetration Index based on Dynamic Cone sample
- △ Cu Shear Strength based on Field Vane
- □ Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- ▲ Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery	Organic Vapour ppm or %LEL	Penetration Index / RQD	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa 10 20 30 40 50 60 70 80 90
meters	90.51		GROUND SURFACE			%	ppm	N	
			FILL- concrete and asphalt fragments, some sand, trace organics						
1.0	89.75		FILL- silty clay, some gravel, trace oxidation, stiff, brown, moist		SS1	42		50+	
2.0	88.99		FILL- sandy silt, some gravel, trace clay, organics, very stiff, brownish green, moist		SS2	58		15	
3.0	88.22		FILL- silty clay, some asphalt, gravel and sand, trace organics, hard, brown, moist		SS3	50		38	
					SS4	59		13	
4.0	86.70		FILL- silty clay, trace organics, oxidation, gravel, sand, hard, moist		SS5	21		17	
5.0			-becoming trace to some gravel		SS6	84		32	
			-becoming more asphalt fragments, hard to very stiff		SS7	71		22	
6.0	84.41		SILTY CLAY- some sand, trace organics, firm, grey, moist		SS8	25		7	
7.0			-becoming very stiff		SS9	59		39	
	82.89		End of Borehole						
8.0									
9.0									
10.0									
11.0									
12.0									
13.0									

NOTES:

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301 somme street

PREDICTIVE NITRATE IMPACT ASSESSEMENT

Infiltration Factors		
Topography	0.20	
Soil	0.20	
Cover	0.10	
Total	**0.50**	
Site Characteristics		
Area of Site :	60893	m^2
Total of roof areas:	5312	m^2
Total area of paved driveway areas:	43365	m^2
Roof + paved driveway areas	48677	m^2
Impervious Area	48677	m^2
Percent Impervious Area =	80	%
Infiltration Area =	12216	m^2
Septic Effluent		
Concentration of Effluent (Cs) =	20	mg/L
Daily Sewage Flow (Qs)=	4.1	m^3
See Notes below.		
Infiltration Calculation		
Nitrate concentration in precipitation (C_i) =	0	mg/L
Surplus Water (Environment Canada)	361	mm/yr
Factored Water Surplus =	181	mm/yr
Infiltration % due to stormwater management measures	-	%
Infiltration rate from stormwater management measures =	0	mm/yr
Infiltration Flow Entering the System (Q_i) =	6	m^3/day
Mass Balance Model (MOEE, 1995)		
$C_T = (Q_bC_b+Q_eC_e+Q_iC_i)/(Q_b+Q_e+Q_i)$ = Cumulative Nitrate Concentration		
Q_b = flow entering the system across the upgradient area	0	m^3/day
C_b = background nitrate concentration	0	mg/L
Q_e = flow entering the system from the septic drainfield	4.1	m^3/day
C_e = concentration of nitrates in the septic effluent	20	mg/L
Q_i = flow entering the system from infiltration	6	m^3/day
C_i = Concentration of nitrates in the infiltrate	0	mg/L
C_T =	**8.09**	**mg/L**
Estimate Number of Lots	**1**	**lots**

Notes: Site characteristic values were measured as approximate values from the available site plan. Daily Sewage Flow volume was calculted by Paterson Group as a preliminary design flow.

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301 Somme Street

PH5075

MW1	inputs		
pH	8.2	A	0.19
TDS	787	B	2.35
Calcium	128	C	1.71
Alkalinity	306	D	2.49
Temp.	11.4		
		pHs =	7.651109829

Langelier Saturation Index (LSI) Calculation

(Langelier, 1936)

LSI = pH - pHs

pHs = (9.3 + A + B) - (C + D)

Where:

A = (Log10 [TDS] - 1) / 10

B = -13.12 x Log10 (oC + 273) + 34.55

C = Log10 [Ca2+ as CaCO3] - 0.4

D = Log10 [alkalinity as CaCO3]

LSI =	0.5

LSI	Effect
0.5 to 2	Water is super saturated and tends to precipitate a scale layer of calcium carbonate (scale forming but non-corrosive)
0 to 0.5	**Water is super saturated and tends to precipitate a scale layer of calcium carbonate (slightly scale forming and corrosive).**
0	Water is saturated (in equilibrium) with calcium carbonate. A scale layer of calcium carbonate is neither precipitated nor dissolved.
0 to -0.5	Water is under saturated and tends to dissolve solid calcium carbonate (slightly corrosivebut non-scale forming).
-0.5 to -2	Water is under saturated and tends to dissolve solid calcium carbonate (seriously corrosive).

Manganese in Drinking Water Fact Sheet

WHAT IS MANGANESE?

Manganese is a naturally occurring element that is an essential nutrient for humans and animals. It is found in many foods, as well as in air, water, soil, and rocks.[1] Manganese makes up 0.1% of the Earth's crust, and can be found as a component of other minerals like sulfides, oxides, carbonates, and silicates.[2] Manganese is used in the manufacture of various products including iron and steel alloys, batteries, glass, fireworks, fertilizers, cosmetics, paints, and cleaning and disinfection products.[1,2] Manganese can also be purchased as a nutritional supplement.[2]

HOW DOES MANGANESE GET INTO DRINKING WATER?

Manganese is naturally occurring in many surface and ground waters. Manganese can also be dissolved from soils, sand and rocks to enter surface and ground waters.[1] Human activities like mining, industrial discharges, or landfills may also contribute to manganese in surface and ground waters.[1,2] In general, manganese can be found at higher concentrations in groundwater compared to surface water.[2] Some lakes and reservoirs can also have higher levels of manganese due to natural water chemistry.[2]

Permanganate, a compound that contains manganese, may also be added to water during the treatment of drinking water to remove other chemicals (e.g., for the removal of iron).[2,3]

HOW DOES MANGANESE INTAKE AFFECT MY HEALTH?

Too much or too little manganese in your body can lead to health problems.

Manganese deficiency: Manganese deficiency is rare and symptoms are not well defined. Health effects observed in individuals with diets very low in manganese include skin rashes, slow nail growth, reduced bone density, loss of pigmentation in hair, and low cholesterol levels.[2]

Manganese excess: There are few reports of adverse health effects from people who ingest too much manganese from food and water.[1] Recent evidence reviewed by Health Canada indicates that high levels of manganese in drinking water may impact memory and learning, behaviour, and fine motor control in infants and young children.[2,4] Formula-fed infants may be more susceptible to health risks if water with high concentrations of manganese is used to prepare formula. This is because infant brains are rapidly developing, they drink more water in proportion to their body weight, and they absorb more manganese and are less able to remove

it from their bodies compared to other age groups.[3] For adults and older children, short term exposure to manganese in drinking water at levels slightly above the guideline is unlikely to cause negative health effects.[3]

Health Canada notes that exposure to manganese while showering (either through breathing in water vapour or absorption through skin) is likely to be negligible.[2]

WHAT ARE THE LEVELS OF MANGANESE FOUND IN CANADIANS?

For most Canadians, diet is the main source of manganese. The Canadian Health Measures Survey (CHMS) is a national survey that collects information about the general health of Canadians and includes measurements of chemicals in blood and urine samples.[5] The objective of the chemical measurements in the CHMS survey is to establish baseline levels in the Canadian population. Given that manganese is an essential trace element, its presence in the blood and urine of Canadians is expected. Manganese in blood and urine can be interpreted as an indicator of exposure, but does not necessarily mean that health effects will occur.[5] Data collected from 2007 to 2011 for the CHMS found that the average levels of manganese measured in the blood of people in the Canadian population (aged 3 to 79) ranged from 8.8 – 11 µg/L.[6] More information on the CHMS and the levels of manganese in Canadians can be obtained by visiting the Canadian Biomonitoring Dashboard.[6]

ARE THERE STANDARDS FOR MANGANESE IN DRINKING WATER?

The Ontario Drinking Water Standard (ODWS) published in 2006 sets an aesthetic objective for manganese in drinking water at 0.05 mg/L.[7] The aesthetic objective is not intended to prevent health effects (e.g., not a health-based standard), but instead is intended to prevent the discolouration and staining of fixtures, and the undesirable taste caused by higher levels of manganese in water.

The Canadian Drinking Water Guideline for manganese developed by Health Canada stipulates a maximum acceptable concentration (MAC) in drinking water of 0.12 mg/L and an aesthetic objective of 0.02 mg/L.[2] The MAC is a health-based value intended to be protective of neurological effects in infants, the most sensitive population, and therefore it is also protective for chronic exposure in children and adults.[2]

ARE THERE OTHER STANDARDS OR GUIDELINE VALUES FOR MANGANESE?

The main source of exposure to manganese is via food, with grains, nuts and vegetables contributing the most to a person's daily intake of manganese. The average dietary intakes of manganese across all age groups according to the Canadian Total Diet Study (TDS) were estimated to range between 44.0 to 61.3 µg/kg of bodyweight per day (based on data gathered from different Canadian cities for the TDS).[2] Health Canada has also established Adequate Intake Levels for manganese ranging with age or lifestage from 0.003 to 2.6 mg/day and Tolerable Upper Intake Levels ranging from 2 to 11 mg/day.[8]

Infant formula sold in Canada is regulated to contain a minimum of 5 µg of manganese per 100 available kilocalories (equivalent to 3.33 µg per 100 mL of ready-to-feed formula); a maximum amount of manganese has not been set for infant formula.[9]

HOW CAN I TELL IF MY DRINKING WATER HAS HIGH MANGANESE LEVELS?

Water testing is the only way to know if manganese is present. Although water with elevated levels of manganese may impart a bitter metallic taste, tint water purplish brown or black (water discolouration may occur at concentrations as low as 0.005 to 0.02 mg/L), and stain laundry and plumbing fixtures;[2,10,11] but these issues can also be caused by other chemicals.

WHAT SHOULD I DO IF A HIGH LEVEL OF MANGANESE IS FOUND IN MY WELL WATER?

For households who do not obtain their drinking water from a municipal source, a residential drinking water treatment device may be an option to reduce manganese concentrations in drinking water. Options can be explored with professionals specialized in water treatment, but examples of treatment processes effective at removing manganese include reverse osmosis, ion exchange (including water softeners and other cation exchange systems) and oxidizing filters.[2] As with any water treatment system, it is important to follow the manufacturer's recommendations for operation and maintenance (e.g., replacement of filter media).

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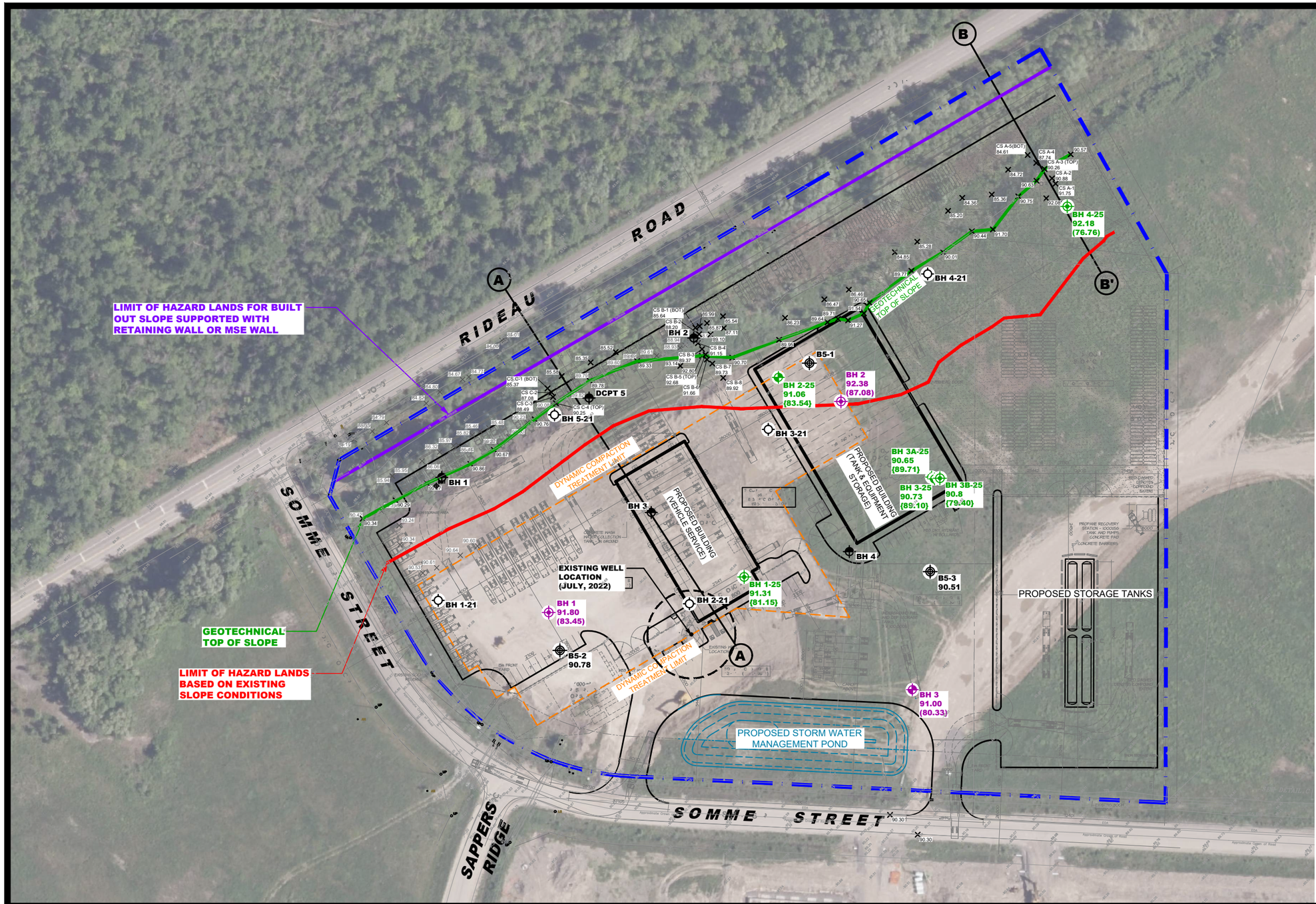
Please note: This fact sheet was created by Ottawa Public Health in consultation with Public Health Ontario.



LEGEND:

- BOREHOLE LOCATION
- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION (PATERSON GROUP REPORT: PE4621, MAY 2019)
- BOREHOLE WITH MONITORING WELL LOCATION (PATERSON GROUP REPORT: PE4621, MAY 2019)
- BOREHOLE LOCATION (GHD, JULY 2021)
- BOREHOLE LOCATION (GHD, AUGUST 2020)
- BOREHOLE LOCATION (INSPECSOL, 2008)
- 85.48 SURVEY SHOT LOCATION (DECEMBER 8, 2023)
- 85.48 SURVEY SHOTS LOCATION (JUNE 3, 2025)
- A—A' SLOPE STABILITY CROSS SECTION
- 92.85 GROUND SURFACE ELEVATION (m)
- {79.40} PRACTICAL REFUSAL TO AUGERING ELEVATION (m)
- (89.90) PRACTICAL DCPT REFUSAL ELEVATION (m)

CONCEPTUAL PLAN PREPARED BY HOBIN ARCHITECTURE

GROUND SURFACE ELEVATION AT PATERSON 2019 BOREHOLE LOCATIONS WERE PROVIDED BY R.W. TOMLINSON LIMITED.

SCALE: 1:1500

0 25 50 75 100m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DD/MM/YYYY	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	14/08/2025	SD

W.O. STINSON & SON LTD.
GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL DEVELOPMENT
301 SOMME STREET
OTTAWA, ONTARIO

Title:
TEST HOLE LOCATION PLAN

Scale: 1:1500	Date: 07/2025
Drawn by: ZS	Report No.: PG7567-1
Checked by: PB	Dwg. No.: PG7567-1
Approved by: SD	Revision No.: 1

p:\autocad drawings\geotechnical\pg75xx\pg7567\pg7567-1-test hole location plan (rev.01).dwg

11x17

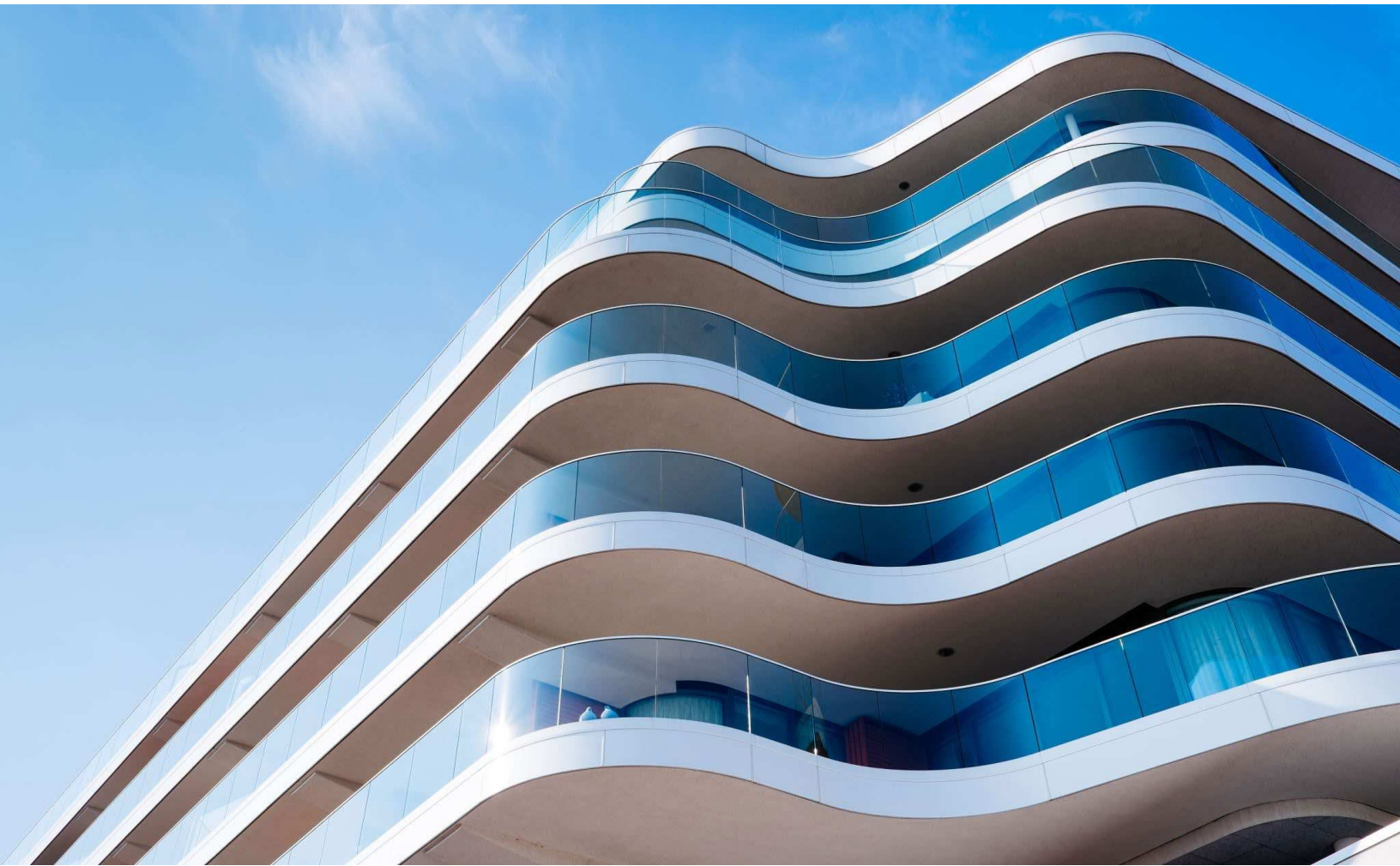
Hydrogeological and Impact Assessment Report

Proposed Commercial Development, 301 Somme Street, Ottawa, Ontario

Consolidated Fastfrate (Ottawa) Holdings Inc.

September 22, 2022

→ **The Power of Commitment**



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1. Introduction

GHD Limited (GHD) was retained by Consolidated Fastfrate (Ottawa) Holdings Inc. to conduct a hydrogeological impact assessment in support of a proposed commercial development at the intersection of Rideau Road and Somme Street in Ottawa (the Site). The municipal address is 301 Somme Street, Ottawa, Ontario and is geographically located at Lot 26, Gloucester Concession 6 from the Rideau River. The Site encompasses an area on the order of 7.0 ha (17.4 acres) and is currently vacant of structures. The development will be privately serviced with a well and septic system. The location of the Site is provided on the **Site Location Plan, Figure 1**.

The purpose of this hydrogeological and impact assessment was to assess the groundwater conditions to evaluate that sufficient drinking water supply exists for the proposed development in accordance with the City of Ottawa Hydrogeological and Terrain Analysis Guidelines (HTAG). Groundwater conditions were assessed through a constant rate pumping test and data collection to evaluate potential impacts to the local groundwater regime (quality and quantity).

The scope of work included a desktop review of available geological and groundwater mapping; a review of the Ministry of the Environment, Conservation and Parks (MECP) well records; a water well survey within 500 m of the development; and a 12-hour, constant rate pumping test with recovery measurements.

This report is organized into the following sections:

Section 1.0 – Introduction: Outlines the purpose, objectives and scope of work, and presents the report organization.

Section 2.0 – Background: Provides a description of the existing Site conditions, background information and surrounding land uses, as well as an outline of the proposed development. The regional environmental setting, including the physiography, topography, surface water features in the vicinity, and the surficial geology is presented.

Section 3.0 – Methodology: Describes the field activities and methodologies used to assess the groundwater supply and quality and to evaluate potential impacts associated with the undertaking.

Section 4.0 – Geology and Hydrogeology: Provides a detailed description of the Site geology, hydrogeology, and the hydraulic properties of the underlying stratigraphy and aquifer.

Section 5.0 – Water Quality Impact Assessment: Provides information regarding the water quality impact related to the proposed septic system.

Section 6.0 – Construction Dewatering: Provides a summary of the shallow groundwater quality compared to the Ottawa Storm Sewer Use By-Law 2003-514, which addresses discharge to the Municipal sewage system for potential construction dewatering.

Section 7.0 – Summary and Conclusions: Provides a summary of the assessment findings. Sections 8 and 9 provide a Statement of Limitations and References. The Figures and Appendices are provided following the text of this report, as indicated in the Table of Contents. Tabulated data is presented in tables within the text.

The factual data, interpretations and recommendations contained in this report pertain to a specific project as described in the report and are not applicable to any other project or site location. This report should be read in conjunction with the Statement of Limitations appended to this report. The reader's attention is specifically drawn to this information, as it is essential for the proper use and interpretation of this report.

2. Background

2.1 Site Description

The Site is located at the intersection of Rideau Road and Somme Street in Ottawa, Ontario. The parcel has the municipal address of 301 Somme Street and currently vacant of structures. Surrounding lots consisted of commercial / industrial lots to the west and south, undeveloped and forested lands and a few residential lots. The lands to the north, east and south are privately serviced for water and sanitary services; with municipally services lots located to the west of the Site. Findlay Creek flows from west to east along the northern Site boundary on the south side of Rideau Road.

The proposed development is to consist of a one-storey warehouse with office space and various amenities covering a total building area of 8,641 square metres (m^2) with a projected occupancy of 36 staff. The Site will also have asphalt parking, a stormwater pond and septic bed area as depicted in the **Concept Plan, Figure 2**. The drilled water well location is also shown on **Figure 2** and will service the development.

2.2 Regional Setting

The Site is relatively flat with the regional topography sloping generally towards the east / northeast. Topographic relief is on the order of 3 to 4 metres across the Site. Regional topography is provided as **Figure 3**. Excess surface water is directed towards ditches alongside the Site with drainage generally to the east / northeast.

The Site is situated within the physiographic region known as the Russell and Prescott Sand Plains. In the United Counties of Prescott and Russell, and the Regional Municipality of Ottawa-Carleton, there is a group of large sand plains separated by the clays of the lower Ottawa Valley. The plains cover an area of nearly 1500 square kilometers and a level surface of about 85 metres above sea level. The plains were originally a continuous delta that was built by the Ottawa River into the Champlain Sea. The plains are as thick as 6 to 10 m in some areas (Chapman and Putnam, 1984). The local physiography is illustrated on **Figure 4** showing the Site is within a sand plains with Peat and Muck to the north and Limestone Plains to the west.

Surficial geology mapping on **Figure 5** indicates the Site is a mix of organic deposits, coarse textured glaciolacustrine deposits and Paleozoic bedrock. Based upon GHD's previous geotechnical work (GHD, 2020), the upper soils are comprised of fill. Underlying the fill is native silty sand / sandy silt followed by a glacial till (GHD, 2020).

The Quaternary geology (**Figure 6**) suggests carbonate and clastic sedimentary rock exposed at surface or covered by a discontinuous thin layer of drift. Bedrock outcrops are common in the area; however, were not observed on the Site.

The bedrock is Dolostone / Sandstone of the Beekmantown group (**Figure 7**). Based upon water well records, bedrock was found varying from 8.5 metres below ground surface (mbgs) to 14.0 mbgs at the Site. Golder's report also outlined the Gloucester Fault, a major northwest-southeast trending, steeply dipping structural feature in close proximity and northeast of the Site.

2.3 Previous Investigations

GHD and others have completed various studies at the Site. GHD has considered them, where applicable, in this report. The studies include:

– GHD Limited, November 2, 2021. Hydrogeological Assessment – Large Sewage Disposal System. Rideau Road and Somme Street. Ottawa Ontario. Project No. 12565773-01

– GHD Limited, April 12, 2021. Terrain Analysis. Septic Assessment and Percolation Rate Evaluation. Proposed Commercial Development – Rideau Road and Somme Street. Gloucester Con 6 from Rideau River, Lot 26, Ottawa Ontario. Project No. 11220832-01

- GHD Limited, January 19, 2021. Hydrogeological Assessment Report. Proposed Commercial Development – Rideau Road and Somme Street. Gloucester Con 6 from Rideau River, Lot 26, Ottawa Ontario. Project No. 11220832-01;
- GHD Limited, September 10, 2020. Geotechnical Investigation. Warehouse and Offices. Intersection of Rideau Street and Somme Street, Ottawa Ontario. Project No. 11215612-01;
- Stormwater Management Report. Hawthorne Industrial Park, Report Reference. No. JLR 20983, by J.L. Richards & Associates Limited, dated February 2009 (Revised May 2009);
- Geotechnical Study Subdivision Plan, Hawthorne Industrial Park, Report Reference No. T020556-A1, by Inspec-Sol, dated May 4, 2009;
- Phase II Environmental Site Assessment and Hydrogeological Assessment, Report Reference No. 045804 (12), by Conestoga-Rovers & Associates, dated September 2008; and
- Hydrogeological Investigation, Terrain Analysis and Impact Assessment, Proposed Industrial Subdivision, Report Reference. No. 08-1122-0215, by Golder Associates, dated December 2008.

3. Methodology

To achieve the purpose and objectives of this assessment, the following activities were undertaken:

- Review of existing local water supplies by reviewing MECP water well records within 500 m of the Site;
- Completion of a Health and Safety Plan for field activities;
- Site inspection and well survey of local water wells within approximately 500 m of the pumping test wellhead;
- Aquifer performance testing and water level monitoring of observation wells

3.1 Existing Local Water Supplies

The Site and areas surrounding the Site are generally privately serviced with municipal services present to the west of the Site. Physical and hydraulic data are presented on MECP well records (**Appendix A**). The well records indicate a mix of overburden materials (fill, sand, clay, gravel etc.) overlying bedrock including shale, sandstone, limestone and quartz. Based upon the well records, there is one (1) primary bedrock aquifer in this immediate area that is tapped by drilled wells. Of the 17 records, seven (7) are for monitoring wells and will not be considered further within this discussion.

The groundwater was generally described as “fresh” in the well records reviewed. The information from the MECP data indicates that all ten (10) wells were drilled bedrock wells averaging a depth of about 41 m. The bedrock wells encountered water at an average depth of 31 m with pumping rates averaging nearly 100 L/min. No flowing artesian wells were reported.

No dug / bored well records were reviewed. Shallow dug / bored wells are susceptible to large seasonal fluctuations in the groundwater. The result is that shallow wells are also more prone to becoming dry in the winter and summer months. From a quality perspective, shallow dug / bored wells are generally difficult to seal at the surface and therefore considered to be susceptible to shallow sources of contamination and are not recommended for this commercial development.

Table 3.1 summarizes the data reviewed in the well records within 500 m of the Site:

Table 3.1 Summary of MECP Well Record Data

Total Number of Wells Inventoried:	17
Dug/Bored Wells:	0 (0%)
Drilled Wells (Overburden):	0 (0%)
Drilled Wells (Bedrock):	10 (59%)
NOT INCLUDED IN STATISTICAL SUMMARY:	
Abandonments, Monitoring Wells, Unknown Wells:	7 (41%)

Parameters	Statistical Summary			
	Drilled – Overburden		Drilled– Bedrock	
WELL YIELDS				
Range	--	--	19 to 680 L/min	5 to 180 USgpm
Average	--	--	99.1 L/min	26.2 USgpm
REPORTED YIELDS	Frequency		Frequency	
Not Reported	0	0%	0	0%
Dry	0	0%	0	0%
0 to 1 USgpm	0	0%	0	0%
2 to 4 USgpm	0	0%	0	0%
5 to 9 USgpm	0	0%	6	60%
≥10 USgpm	0	0%	4	40%
STATIC WATER LEVELS				
Range	--	--	2.3 to 14.2 m	7.5 to 46.6 ft
Average	--	--	8.4 m	27.6 ft
WATER ENCOUNTERED				
Range	--	--	9.1 to 75.0 m	30 to 246 ft
Average	--	--	31.2 m	103.5 ft
WELL DEPTH				
Range	--	--	17.4 to 75.6 m	57 to 248 ft
Average	--	--	40.8 m	133.9 ft

Notes:
Data based on MECP well record information (refer to **Appendix A** for well information).
*Abandonments, well upgrades and unknown well records are not included in the statistical data summarized in **Table 3.1**

3.2 Health and Safety

A Site-specific Health and Safety Plan (HASP) was prepared for implementation during the field investigation program. The HASP presents the visually observed Site conditions to identify potential physical hazards to field personnel. Required personal protective equipment was also listed in the HASP. It is mandatory for all GHD personnel involved in the field program, to read and have a copy of the HASP available at the Site during the investigative work. Health and Safety requirements in the HASP were implemented during the field investigation program.

In addition to the abovementioned safety measures, GHD's safety protocol related to COVID-19 issues was implemented and preventive measures were reinforced.

3.3 Site Inspection and Well Survey

The field work was conducted on August 9 and 10, 2022 by GHD to observe the general surficial characteristics of the Site, neighbouring lands and complete the well survey and pumping test. The Site consists of undeveloped lands. Photographs are provided in **Appendix B**.

GHD observed the drilled water well and a monitoring well on the Site. Other water wells in the vicinity of the Site were also observed. No surface water was observed on the Site.

The well survey was conducted on August 9, 2022 and involved collecting water levels from local area wells. There is one home within 500 m of the Site located at 4885 Hawthorne Road. This residential dwelling utilizes a drilled well that was measured by GHD to be 15 metres deep. The owner did not indicate any issues with water quantity or quality. The owner also provided authorization to use the well for monitoring purposes during our pumping test.

GHD also collected information from commercial properties located at 3500 Rideau Road to the west (MECP tag no. A018916), 5213 Hawthorne Road to the south (MECP tag no. A342260) and 300 Somme Street to the south (MECP tag no. A305146). No issues were communicated to GHD regarding the wells from these commercial properties. These wells were also monitored during GHD' s pumping test. The locations of the various water wells / observation wells utilized for monitoring in this assessment and included in the well survey is provided on the **Well Location Plan, Figure 8**. The MECP tag numbers are referenced on **Figure 8**.

3.4 Aquifer Performance Testing

3.4.1 Test Well Information

An onsite drilled well was utilized for assessment of the local aquifer via a pumping test. The well was constructed by Air Rock Drilling Co Ltd with drilling completed on July 27, 2022. The well has a MECP well tag number of A342117 and its location is shown on **Figure 2**. The water well record and Certificate of Well Compliance is provided in **Appendix C**.

A summary of the information presented on the water well record, is as follows:

– Drilled to total depth of 42.7 m (140 feet). The well record indicates overburden materials consisting of gravel, hardpan and boulders to 14 m (46 feet) followed by grey and black limestone with white sandstone mix to the depth of the well. The well is considered to be a confined well within the sandstone;
– Water was encountered at 39 m and 40.8 m (128 and 134 feet) and was not tested. The static water level was 8.6 m resulting in an available drawdown of 34.1 m to the bottom of the well;
– Construction was completed on July 27, 2022. Constructed with steel casing to 15.8 m (52 feet) then open hole to the bottom of the well. From grade to 15.8 m, the annular space was grouted and sealed with neat cement slurry with a total volume of about 0.4 cubic metres (~12.5 cubic feet). As per previous recommendations, the well was constructed with greater than 6 m of casing and 2 m into the bedrock;
– The well was tested by the drillers at 75.6 litres per minute or L/min (20 gallons per minute or gpm) resulting in a drawdown of 0.7 m or about 2% of the available drawdown. The well is recommended for pumping at 75.6 L/min; and
– The well is drilled 4 m from the proposed building and 3 m from a proposed paved walkway. The ground surface is to be positively sloped away from the water well in all directions (refer to the inset illustrated on **Figure 2**).

Adjacent water wells, monitoring well MW22-1 and a residential well that were monitored during testing are illustrated on **Figure 8**.

3.4.2 Pumping Test Methodology

GHD completed a constant rate pumping test of well A342117 on August 9, 2022 to assess aquifer conditions and evaluate the availability of a suitable groundwater resource for the proposed commercial development. The pumping test was conducted for twelve (12) hours at a constant rate of 37.8 L/min (10 gpm). Recovery measurements were collected after the pumping was completed.

A submersible pump was installed in the well to conduct the testing. Water levels in the pumped water well, adjacent observation wells and an onsite shallow monitoring well were monitored throughout the aquifer performance testing. Measurements were collected manually and through the use of data loggers to evaluate drawdown, recovery and the potential of mutual interference with adjacent wells. The discharge water was directed away from the pumped well a distance of about 30 m downgradient and also away from observation wells. This practice safeguards against artificial recharge of the well from occurring during the pumping test.

The pumped water well was chlorinated in advance of the pumping test. Non-detect chlorine levels were confirmed in the field prior to bacteria sampling conducted at the water well.

Water samples were collected throughout the testing and submitted to SGS Environmental Laboratories (SGS), a CALA accredited analytical laboratory for the testing. Water samples were collected for the following parameters:

- Polycyclic aromatic hydrocarbons (sampled after 12 hours of pumping);
- Volatile organic compounds (sampled after 12 hours of pumping);
- Petroleum hydrocarbons fractions F1 – F4 (sampled after 12 hours of pumping);
- Trace metals (filtered) (sampled after 12 hours of pumping);
- Bacteriological parameters including total coliform; E.coli, fecal coliform (sampled after 1, 6 and 12 hours of pumping); and
- General chemistry, Ottawa subdivision package and D-5-5 parameters.

Field measurements of methane, pH, temperature, free chlorine, turbidity, and conductivity were completed with a turbidity meter, Hach Pocket Pro+ Multi 2 and chlorine meter. Water levels were collected from the pumped water well using a dedicated, audible water level meter and a data logger. Water levels were also collected from neighbouring wells using an audible water level meter. Calibration of these instruments / equipment was completed prior to the pumping test. The calibration records are provided in **Appendix D**.

4. Geology and Hydrogeology

The following sections provide a detailed description of the geology and hydrogeology of the Site, based on the results of the investigations completed and on the available background information.

4.1 Site Geology

Based upon information reviewed within GHD's geotechnical report, the following are the predominant surficial materials and geologic deposits that underlie the Site:

- Ground Cover and Fill (ground surface up to 6 m thick) – topsoil, silty sand to gravel to silty clay fill
- Native sandy silt / silty sand (depths ranging from 8.2 to 11.9 mbgs)
- Bedrock (8.2 to 14.0 mbgs)

The depths of the materials listed above vary within the Site and have been simplified for purposes of this report.

4.2 Site Hydrogeology

4.2.1 Hydrostratigraphic Units

The primary hydrostratigraphic units (i.e. aquifer/aquitard units) underlying the Site include the following:

- Shallow, unconfined unit of fill and native soil and upper bedrock zone
  - Shallow groundwater found within the fill
  - Shallow unit is not suitable as a water supply
- Deeper confined aquifer within the sandstone bedrock generally at depths between about 25 m and 40 mbgs. This is the aquifer tapped by the drilled well on the Site.

4.2.2 Groundwater Levels

Water levels were obtained from the new supply well (MECP tag no. A342117), a monitoring well installed on the Site (MW22-1), and the nearby commercial and residential wells shown in **Table 4.1** on August 9, 2022 prior to the commencement of the pumping test. The data is summarized in **Table 4.1**. Based upon the water levels obtained from these wells, the groundwater flow tapped by the drilled wells is generally in an easterly direction including northeast and southeast components (note: groundwater elevations are based upon regional topographic contours and are for the purposes of evaluation potentiometric elevations only). Shallow groundwater flow tapped by monitoring wells was not assessed.

Table 4.1 Water Level Summary

Location	Description	Ground Elevation* (m)	Depth of Well (mbgs)	Water Level (mbgs)	Potentiometric Elevation (masl)
				August 9, 2022	
A342117	New Site water well	91.1	42.7	7.31	85.8
MW22-1	New Site monitoring well	91.4	3.7	2.05	89.4
4885 Hawthorne Rd	Residential well	85	15.2	0.95	84.1
3500 Rideau Rd	A018916 – Commercial property	100	35.4	11.80	88.2
5213 Hawthorne Rd	A342260 – Commercial property	95	>30	10.60	84.4
TW-5	A295342	90	29.9	6.70	83.3
300 Somme St	A305146 – Commercial property	85	42.7	7.42	77.6

Notes:
masl = metres above sea level
*Elevations estimated from regional topographic contours provided on Figure 3; and elevations on the Site are based upon a topographic elevations provided to GHD. The elevations provided are for the purposes of evaluating potentiometric elevations and should not be relied upon as a legal survey or topographic elevation survey.

4.3 Aquifer Performance Assessment

The following sections discuss the pumping test results and coefficients, well interference and water quality.

4.3.1 Pumping Test

The pumping test was commenced on August 9, 2022. The results of the constant rate pumping test including field testing data are graphically presented in **Appendix E**.

The water level during the pumping test at A342117 is illustrated on **Figures E-1** and **E-2** showing water level versus time. The plot shows a slow, minimal drawdown of the water level over the course of the 12-hour test at 37.8 L/min. After 12 hours of pumping, the water level was 8.7 metres below top of pipe (mbtp). The maximum drawdown was about 0.8 m over the course of the testing with about 30.3 m of available drawdown above the pump remaining. Approximately 2.5% of the available drawdown was used during the pumping test. A total groundwater volume of about 27,215 L was pumped during the testing. Based upon the septic design flow calculations, about 12,000 L/day has been estimated. Actual groundwater usage is expected to be much less than 12,000 L/day for the warehouse and offices.

Recovery measurements were collected manually for 60 minutes after pumping ceased. The water level recovered about 50% in one (1) hour and fully recovered 100% in seven (7) hours. The estimated transmissivity for the pumped water well was 33.4 m^2/day (2238 gpd/ft) based on the drawdown and 26.7 m^2/day (1791 gpd/ft) based on the recovery period and represents a high transmissivity. The specific capacity for this well is calculated to be 48.5 L/min/m based upon the pumping test completed.

The plotted data indicates the aquifer that this well is tapped into can safely provide long-term quantities of groundwater at a pumping rate of 37.8 L/min (10 gpm) based upon the pumping test completed.

Pumping tests were completed previously within a test well located on the Site (i.e. TW2) within the same sandstone aquifer. The test well, TW2, was pumped in 1994, 2008 and in 2020 at 67 L/min, 55 L/min, and 60 L/min, respectively. The drawdowns of these tests were similar to our drawdown at the new well ranging from about 1.1 m to 1.2 m. Static water levels from TW-2 were also similar ranging from 3.15 mbgs in 1994 to 6.90 mbgs in 2020, indicating that development in this area including quarries on nearby properties has not resulted in significant negative effects to the underlying water supply aquifer.

4.3.2 Summary of Aquifer Performance

The following **Table 4.2** summarizes the data and coefficients obtained from the pumping test.

Table 4.2 Aquifer Performance Testing Summary

Well No.	Step No.	Yield		Test Type	Time	Maximum drawdown		Available Drawdown*		Specific Capacity		Estimated Transmissivity	
		gpm	L/min		min	feet	metres	feet	metres	gpm/ft	L/min/m	gpd/ft	m^2/day
A342117	1	0	0	Static	0	0	0	103.3	31.5	--	--	--	--
	2	10	37.8	Const.	720	2.6	0.8	100.7	30.7	3.9	48.5	2238	33.4
	3	0	0	Recvy.	50% recovery in 1 hour; 100% recovery in 7 hours							1791	26.7

Notes:
gpm = gallons per minute; gpd/ft = gallons per day per foot
"Recvy" refers to Recovery measurements; "Const" refers to the Constant Rate test conducted for 720 minutes.
*Available Drawdown refers to the height of water in the well above the pump.
Static water level at the pumped well A342117 was 7.96 metres below top of pipe (7.31 metres below ground surface) at the start of the testing.

4.3.3 Water Quality

Groundwater samples from the pumped well were obtained for laboratory testing during the course of the pumping test for the purpose of water quality analyses. The well was sampled after one (1) hour; at six (6) hours; and at the end of the constant rate test on August 9, 2022. The water samples were delivered to SGS laboratories in Lakefield, ON. Certificates of chemical analyses are presented in **Appendix F**. The water quality data are summarized and compared with the Ontario Drinking Water Standards (ODWS)[1] in **Table 4.3**. Regulation 153/04 parameters are also compared with the Table 2 Standards in a Potable Ground Water Condition for all property uses including a commercial property use[2]. For the Regulation 153/04 parameters, the most stringent standard was used for comparison purposes.

Table 4.3 Test Well Water Quality Summary

Parameter	Pumped Water Well A342117			O.Reg. 153 – Table 2	ODWS	
	1 hr	6 hrs	12 hrs		MAC / IMAC	AO/OG
Bacteriological (Colony Forming Units)						
Total Coliform	--	--	3	NS	<6*	NS
E.coli	--	--	0	NS	0	NS
Fecal coliform	--	--	0	NS	0	NS
Background	--	--	33	NS	NS	NS
Heterotrophic Plate Count	--	--	55	NS	NS	NS
Semi-Volatile Organic Compounds (µg/L)						
Acenaphthene	--	--	<0.1	4.1	NS	NS
Acenaphthylene	--	--	<0.1	1	NS	NS
Anthracene	--	--	<0.1	2.4	NS	NS
Benzo(a)anthracene	--	--	<0.1	1	NS	NS
Benzo(a)pyrene	--	--	<0.01	0.01	0.01	NS
Benzo(b+j)fluoranthene	--	--	<0.1	NS	NS	NS
Benzo(ghi)perylene	--	--	<0.2	0.2	NS	NS
Benzo(k)fluoranthene	--	--	<0.1	0.1	NS	NS
Chrysene	--	--	<0.1	0.1	NS	NS
Dibenzo(a,h)anthracene	--	--	<0.1	0.2	NS	NS
Fluoranthene	--	--	<0.1	0.41	NS	NS
Fluorene	--	--	<0.1	120	NS	NS
Indeno(1,2,3-cd)pyrene	--	--	<0.2	0.2	NS	NS
1-Methylnaphthalene	--	--	<0.5	3.2	NS	NS
2-Methylnaphthalene	--	--	<0.5		NS	NS
Naphthalene	--	--	<0.5	11	NS	NS
Phenanthrene	--	--	<0.1	1	NS	NS
Pyrene	--	--	<0.1	4.1	NS	NS

[1] Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines. June 2003, revised June 2006.
[2] Ministry of the Environment, April 15, 2011. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.

Parameter	Pumped Water Well A342117			O.Reg. 153 – Table 2	ODWS	
	1 hr	6 hrs	12 hrs		MAC / IMAC	AO/OG
Volatile Organic Compounds (µg/L)						
Acetone	--	--	<30	2700	NS	NS
Bromomethane	--	--	<0.5	0.89	NS	NS
Carbon tetrachloride	--	--	<0.2	0.79	5	NS
Chlorobenzene	--	--	<0.5	30	NS	NS
Chloroform	--	--	<0.5	2.4	NS	NS
1,2-Dichlorobenzene	--	--	<0.5	3	20	3
1,3-Dichlorobenzene	--	--	<0.5	59	NS	NS
1,4-Dichlorobenzene	--	--	<0.5	1	5	1
Dichlorofluoromethane	--	--	<2	590	NS	NS
1,1-Dichloroethane	--	--	<0.5	5	NS	NS
1,2-Dichloroethane	--	--	<0.5	1.6	5	NS
1,1-Dichloroethylene	--	--	<0.5	1.6	NS	NS
trans-1,2-Dichloroethane	--	--	<0.5	1.6	NS	NS
cis-1,2-Dichloroethane	--	--	<0.5	1.6	NS	NS
1,2-Dichloropropane	--	--	<0.5	5	NS	NS
cis-1,3-Dichloropropane	--	--	<0.5	NS	NS	NS
trans-1,3-Dichloropropane	--	--	<0.5	NS	NS	NS
1,3-Dichloropropene	--	--	<0.5	0.5	NS	NS
Ethylene Dibromide	--	--	<0.2	0.2	NS	NS
Hexane	--	--	<1	51	NS	NS
Methyl Ethyl Ketone	--	--	<20	1000	NS	NS
Methyl Isobutyl Ketone	--	--	<20	400	NS	NS
Methyl Tert-Butyl Ether	--	--	<2	15	NS	NS
Methylene Chloride	--	--	<0.5	50	NS	NS
Styrene	--	--	<0.5	5.4	NS	NS
Tetrachloroethylene	--	--	<0.5	1.6	30	NS
1,1,1,2-Tetrachloroethane	--	--	<0.5	1.1	NS	NS
1,1,2,2-Tetrachloroethane	--	--	<0.5	1	NS	NS
1,1,1-Trichloroethane	--	--	<0.5	200	NS	NS
1,1,2-Trichloroethane	--	--	<0.5	4.7	NS	NS
Trichloroethylene	--	--	<0.5	1.6	5	NS
Trichlorofluoromethane	--	--	<5	150	NS	NS
Vinyl Chloride	--	--	<0.2	0.5	2	NS
Benzene	--	--	<0.5	5	5	NS
Toluene	--	--	<0.5	24	NS	24
Ethylbenzene	--	--	<0.5	2.4	NS	2.4

Parameter	Pumped Water Well A342117			O.Reg. 153 – Table 2	ODWS	
	1 hr	6 hrs	12 hrs		MAC / IMAC	AO/OG
Xylenes	--	--	<0.5	300	NS	300
Bromodichloromethane	--	--	<0.5	16	NS	NS
Bromoform	--	--	<0.5	25	NS	NS
Dibromochloromethane	--	--	<0.5	25	NS	NS
Petroleum Hydrocarbons						
PHC F1 (C_6 – C_{10})	--	--	<25	750	NS	NS
PHC F2 (C_{10} – C_{16})	--	--	<100	150	NS	NS
PHC F3 (C_{16} – C_{34})	--	--	<200	500	NS	NS
PHC F4 (C_{34} – C_{50})	--	--	<200	500	NS	NS
PHC F4 Gravimetric	--	--	Yes[1]	500	NS	NS
Trace Metals (dissolved) (mg/L)						
Aluminum	<0.001	<0.001	<0.001	NS	NS	0.1
Arsenic	0.0006	0.0004	0.0004	0.25	0.025	NS
Boron	0.199	0.216	0.216	5	5	NS
Barium	0.09451	0.09889	0.09880	1	1	NS
Beryllium	<0.000007	<0.000007	0.000011	0.004	NS	NS
Cobalt	0.000094	0.0000910	0.000082	0.0038	NS	NS
Calcium	103	112	117	NS	NS	NS
Cadmium	0.000016	0.000017	0.000020	0.0027	0.005	NS
Copper	<0.0002	<0.0002	<0.0002	0.087	NS	1
Chromium	0.00012	<0.00008	<0.00008	0.05	0.05	NS
Iron	**0.369**	0.276	**0.481**	NS	NS	0.3
Magnesium	47.8	53.4	53.5	NS	NS	NS
Manganese	**0.175**	**0.173**	**0.171**	NS	NS	0.05
Mercury	<0.00001	<0.00001	<0.00001	0.00029	0.001	NS
Molybdenum	0.02195	0.02931	0.03188	0.07	NS	NS
Nickel	0.0014	0.0013	0.0012	0.1	NS	NS
Sodium	54.5	57.4	57.0	490	NS	200 (20*)
Lead	<0.00009	<0.00009	<0.00009	0.01	0.01	NS
Silver	<0.00005	<0.00005	<0.00005	0.0015	NS	NS
Strontium	5.15	5.91	5.92	NS	NS	NS
Thallium	<0.000005	<0.000005	<0.000005	0.002	NS	NS
Antimony	<0.0009	<0.0009	<0.0009	0.006	0.006	NS
Selenium	0.00015	0.00020	0.00011	0.01	0.01	NS
Uranium	0.000219	0.000227	0.000219	0.02	0.02	NS
Vanadium	0.00011	0.00008	0.00009	0.0062	NS	NS
Zinc	<0.002	<0.002	<0.002	1.1	NS	5

Parameter	Pumped Water Well A342117			O.Reg. 153 – Table 2	ODWS	
	1 hr	6 hrs	12 hrs		MAC / IMAC	AO/OG
General Chemistry Parameters (units listed per parameter)						
Tannin + Lignin (mg phenol/L)	0.32	0.34	0.40	NS	NS	NS
Alkalinity (mg/L as $CaCO_3$)	265	261	261	NS	NS	30 – 500
Carbonate (mg/L as $CaCO_3$)	<2	<2	<2	NS	NS	NS
Bicarbonate (mg/L as $CaCO_3$)	265	261	261	NS	NS	NS
pH	8.14	8.20	8.23	NS	NS	6.5 – 8.5
Conductivity (µS/cm)	1180	1290	1350	NS	NS	NS
Total Dissolved Solids (mg/L)	**763**	**914**	**914**	NS	NS	500
Colour (TCU)	3	<3	<3	NS	NS	5
Turbidity (NTU)	2.5	2.89	4.21	NS	NS	5
Organic Nitrogen (mg/L)	<0.05	<0.05	<0.05	NS	NS	0.15
Total Kjeldahl Nitrogen (mg/L)	0.18	0.17	0.16	NS	NS	NS
Ammonia + Ammonium (mg/L)	0.19	0.17	0.17	NS	NS	NS
Nitrite (as N mg/L)	<0.003	<0.003	<0.003	NS	1	NS
Nitrate (as N mg/L)	<0.006	<0.006	<0.006	NS	10	NS
Chloride (mg/L)	62	66	68	790	NS	250
Hydrogen Sulphide	<0.02	<0.02	<0.02	NS	NS	0.05
Sulphide (mg/L)	<0.02	<0.02	<0.02	NS	NS	NS
Sulphate (mg/L)	300	370	400	NS	NS	500
Dissolved Organic Carbon (mg/L)	2	2	2	NS	NS	5
Hardness (mg/L as $CaCO_3$)	**453**	**500**	**511**	NS	NS	80 – 100
Ryznar Stability Index	6.4	6.2	6.2	NS	NS	NS
Potassium	7.16	7.56	7.39	NS	NS	NS

Notes:
"1' denotes that PHC F4 gravimetric returned to baseline
"<" indicates concentrations are less than laboratory reporting limits
MAC = maximum acceptable concentration; IMAC – Interim MAC; AO / OG = aesthetic objective / operational guideline
Bold / shaded indicates the concentration exceeds the ODWS AO / OG. There are no exceedances of MAC or IMAC (health related).
*The aesthetic objective for sodium in drinking water is 200 mg/L. When the sodium concentration exceeds 20 mg/L, this information should be communicated to those on sodium restricted diets.

The laboratory analyses confirmed that there were no health-related parameter exceedances of the ODWS. VOCs, PAHs and PHCS were reported below detection limits and meet all Ontario Regulation Table 2 Standards for the parameters tested in a potable groundwater condition for all property uses.

In general, the test results indicate the majority of parameters meet the ODWS with the exception of the aesthetic objectives for:

– Hardness;
– Total Dissolved Solids;
– Manganese; and
– Iron.

Elevated hardness is related to the overburden materials containing calcium and to a lesser extent, magnesium. Elevated hardness, iron and manganese are common traits of groundwater supplies in Southern Ontario and can be

treated using commercially available treatment equipment such as a water softener. The iron and manganese are within treatable limits. Although hardness in excess of 500 mg/L is considered very hard, a maximum treatable value is not provided within the D-5-5 Guideline. Treatment for hardness (and other parameters) is provided in the following sub-section.

Total dissolved solids (TDS) were also elevated above its aesthetic objective of 500 mg/L. TDS may be the result of hard water including calcium and/or magnesium as well as other constituents such as sodium and chloride. Treatment consideration is provided in the following sub-section. The Ryznar Stability Index was calculated to be between 6.2 and 6.4 which is within the neutral range and therefore incrustation and corrosion are not considered to be problematic due to the elevated TDS.

Turbidity was reported as less than 5 NTU in the laboratory samples and ranged from 3.25 to 1.2 NTU at the wellhead. These values indicated acceptable turbidity.

The bacteriological results were three (3) colony forming units per 100 mL (CFU) for total coliform which is acceptable for raw water as fecal coliform and E.coli are zero CFU. The residual chlorine residual was measured in the field at the wellhead prior to testing and confirmed to be non-detect.

As a proactive measure, GHD recommends that bacteriological treatment (i.e. ultraviolet (UV) treatment) be used at a minimum. As it is anticipated that this well system will be regulated and will require treatment to meet appropriate standards to ensure potable water is available to employees and visitors.

To supplement the analytical data, field measurements were obtained throughout the pumping test by GHD. At the end of the pump test, the groundwater at the well head had a conductivity of 1.35 mS/cm, a water temperature of 16.0 degrees Celsius, a pH of 7.82, a chlorine residual of 0 mg/L and turbidity of 1.2 NTU. There was no methane detected within the water.

4.3.3.1 Water Treatment

MacLellan Water Treatment (MacLellan) was contacted to provide water treatment based upon the pumped well chemistry. Based upon the chemistry provided from the pumping test, MacLellan provided recommendations for water treatment. Their report is provided in **Appendix G** and summarized below:

a. Installation of a filtration system for iron that utilizes a manganese greensand filter with chlorine regeneration. This filter would also remove a certain amount of manganese.
b. Installation of an activated carbon filter to remove residual chlorine and organically-complexed metals.
c. Install a water softener to soften the water to improve the aesthetics of the water and protect the water disinfection system and water-using appliances (hot water tanks, etc.) in the facility from fouling due to hard water scale. A twin alternating system was recommended to ensure that softening is uninterrupted.
d. Disinfection of the water will be provided with ultraviolet (UV) disinfection. The unit will be sized to allow adequate flow to the facility and will be equipped with turbidity-reducing cartridge-style prefilters to screen out particles that bacteria might shelter behind while passing through the UV light.
e. As the concentration of sodium in the water is already slightly high, the use of a water softener will increase the sodium content of the treated water by about 300 mg/L. Therefore, one or more point of use reverse osmosis (RO) units will be installed to remove sodium at locations (like lunch rooms) where staff will actually consume the water. The RO units will be equipped with small storage tanks so that pre-treated water will be ready on demand.

Based upon the MacLellan report, the water can be treated for use at the proposed commercial facility.

4.3.4 Well Interference

In order to assess the potential for hydraulic connection between the pumped water well A342117 and neighbouring wells were monitored during the pumping test. Data logger water levels were installed at each of the observation wells during the pumping test and the data is provided in **Appendix H**. Manual water levels at TW-5, A305146, A342260

and A018916 were collected prior to and after the pumping test was conducted between August 3 and August 18, 2022. The data illustrates the water level conditions during this time as well as during the pumping test.

The approximate linear distances between the pumped water well and observation wells are provided in **Table 4.4** based upon the locations plotted on **Figure 8**.

Table 4.4 Distance Between Pumping Well and Observation Wells

Location	Distances between Pumped Water Well A342117 and Observation Wells (metres)					
	MW22-1	4885 Hawthorne Rd.	TW-5	A305146	A018916	A342260
Pumped well A342117	45	630	570	140	475	640

Notes:
Distances based upon locations identified on **Well Locations, Figure 8**.
MW = monitoring well

The following table provides the manual water levels collected during the pumping test at the observation wells monitored during the pumping test.

Table 4.5 Maximum Drawdowns in Pumping and Observation Wells

Location	Water Level (start of test) mbgs	Water Level (end of test) mbgs	Drawdown (m)
A342117 (pumped water well)	7.31	8.11	-0.80
MW22-1	2.05	1.95	**+0.10**
4885 Hawthorne Road	0.95	0.93	**+0.02**
TW-5	6.70	6.71	-0.01
A305146	7.42	7.69	-0.27
A018916	11.85	11.81	**+0.04**
A342260	10.62	10.59	**+0.03**

Notes:
Negative drawdown (denoted by minus sign and RED text) indicates water level lowered during the testing
Positive drawdown (denoted by plus sign and BLACK text) indicates water level was rising during the testing

4.3.4.1 Interference Assessment

Prior to the pumping test, data loggers were installed within the adjacent wells including TW-5, A305146, 4885 Hawthorne Road, A342260 and A018916 to collect background water levels. Water levels were also collected from these locations during the pumping test and after the pumping test was completed. The data was collected was used to evaluate groundwater level trends and to aid in assessing hydraulic connection between the overburden and bedrock aquifer, and, within the bedrock aquifer itself.

There was no drawdown attributable to pumping at the pumped well within the monitoring well MW22-1 indicating that there is no vertical hydraulic connection between the overburden groundwater and confined bedrock aquifer that A342117 draws from.

There was no drawdown measured at water wells A018916, A342260 or 4885 Hawthorne Road and minimal drawdown within TW-5 throughout the duration of the pumping test. The drawdown at TW-5 was about one (1) cm based upon the data logger readings and is considered negligible. No impacts are expected at these wells as a result of future usage of the water well on the Site.

The results of the interference monitoring did illustrate a hydraulic connection between the pumping well A342117 and A305146 about 140 m to the south. Both wells are drilled to 42.7 m (140 feet) and are expected to tap into the same aquifer unit. The drawdown at this well was manually measured to be about 27 cm during the pumping test and the

data logger shows a similar water level response in A305146, albeit to a lower magnitude, as the pumped well. The data confirms that these wells are confined within the same aquifer unit and are hydraulically connected. With the drawdown of 27 cm (less than 1% of the available drawdown within this well), about 35 m of available drawdown remains within the well.

The testing showed that the pumping of nearly 30,000 L resulted in the usage of about 2.5% of the available drawdown of the pumped well. As daily usage is expected to be below 10,000 L/day, the pump test results indicate that there is sufficient water quantity below the Site for the planned development with without significant interference to future and existing neighbouring wells. In our professional opinion, the risk of interference is minimal.

4.4 Septic Waste Disposal

The septic waste disposal system is being designed by others. The septic will be about 25 m from the water well, maintaining the minimum 15 m horizontal buffer as per the Ontario Building Code.

5. Water Quality Impact Assessment

Procedure D-5-4 provides a methodology for assessing potential impact to downgradient groundwater resources as a result of the installation of private sewage disposal systems on a development property. The procedure is to consider the following:

- Lot Size Considerations
- System Isolation Considerations
- Contaminant Attenuation Considerations

Using D-5-4 as a guide, the proponent is to determine the background nitrate concentration in the receiving groundwater; demonstrate that the area is not hydrogeologically sensitive; and, demonstrate that the maximum nitrate limit prescribed by the procedure will not be exceeded in the receiving groundwater at the downgradient site boundary.

However, this guideline does not apply to Large Subsurface Sewage Disposal Systems (i.e. septic effluent of greater than 10,000 L/day). The projected design septic effluent for this Site is on the order 12,000 L/day. If the septic effluent from the Site was to be less than 10,000 L/day, then the Procedure would also not be applicable as the development area is greater than one (1) hectare

GHD completed a hydrogeological assessment for a large subsurface septic system (GHD report dated November 2, 2021). Based upon the impact assessment, tertiary treatment will be required. Based upon the impact assessment, the proposed sewage system will have no significant impact on the groundwater aquifer, shallow water or any downgradient receptors that utilize groundwater.

6. Construction Dewatering

A water sample was collected from the monitoring well (MW22-1) for purposes of establishing the water quality should excavations extend into the shallow groundwater and require dewatering. Depending upon the construction activities, dewatering to remove groundwater seepage, surface water runoff and precipitation may be required to ensure safe and dry working conditions.

6.1.1 Groundwater Sampling for Construction Dewatering

On August 9, 2022, a groundwater sample was collected from MW22-1 (referred to "Piezo" in the certificate of analysis). The sample was submitted to SGS for analysis of parameters described in City of Ottawa By Law 2003-514, which addresses discharge to the Municipal sewage system. The analytical results are summarized within the certificates of analysis in **Appendix I**.

Based upon the analytical results, and upon comparison with the City of Ottawa criteria, the following parameters exceeded the criteria:

– Total suspended solids; and,
– Manganese.

The results represent total concentrations including dissolved and sorbed particulate. Based on these observations, the water discharged from an excavation would require treatment (i.e. filtration) to minimize the particulate and reduce the total concentrations to meet the City of Ottawa criteria. The discharge would be expected to be a combination of groundwater, surface water runoff and precipitation into the excavation and would require further assessment to verify its quality. City of Ottawa approval, sewer-use discharge permit and pre-treatment will be required prior to discharge to a drainage ditch or sewer.

7. Summary and Recommendations

Supporting data upon which our conclusions and recommendations are based have been presented in the foregoing sections of this report. The following conclusions and 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 assessment, 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 hydrogeological and impact assessment, the pumped water well has sufficient water of good quality and quantity to provide ample supply of potable groundwater for the proposed commercial development while preserving the long-term water quality of the aquifer complex. In the certification letter WSP has indicated that the new water well, A342117, was properly constructed and adequately sealed in accordance with Ontario Regulation 903. The well will have adequate separation from the proposed building and future septic area. Based upon the pumping test, there was marginal interference between an adjacent well; however, the interference is not considered significant to impact the operation of the wells. Based on the data collected no vertical hydraulic connection between the shallow overburden groundwater and the bedrock aquifer unit was identified. In the long-term, it is our opinion that the bedrock aquifer tested can support the commercial development with minimal to negligible impact to neighbouring wells.

The water quality, as indicated in the MacLellan report, can be treated to meet the needs of the proposed facility. The treatment is to consist of filters, water softening, UV disinfection and RO at selected point(s) of consumption such as lunch room(s).

Based upon the impact assessment, water quality impacts are not expected provided that the waste disposal system is properly constructed. The waste disposal system will be a large subsurface system that, based upon the daily design, will exceed 10,000 L/day of septic effluent. The actual daily septic effluent is expected to be much less than 10,000 L/day. No impact is anticipated on downgradient baseline water quality functions or to the existing water bearing aquifers.

Should construction dewatering of shallow water be required, filtration of the pumped water will be required to remove particulate and ensure that total suspended solids and manganese concentrations meet the City of Ottawa storm sewer use by-law criteria. No significant impacts from construction dewatering are anticipated.

It is our opinion that the results of this hydrogeologic and impact assessment support the development of the proposed commercial development.

All of Which is Respectfully Submitted,

GHD

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
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Sept. 22/22

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Senior Geoscientist

Steve Gagné, H.B.Sc.
Associate, Project Director

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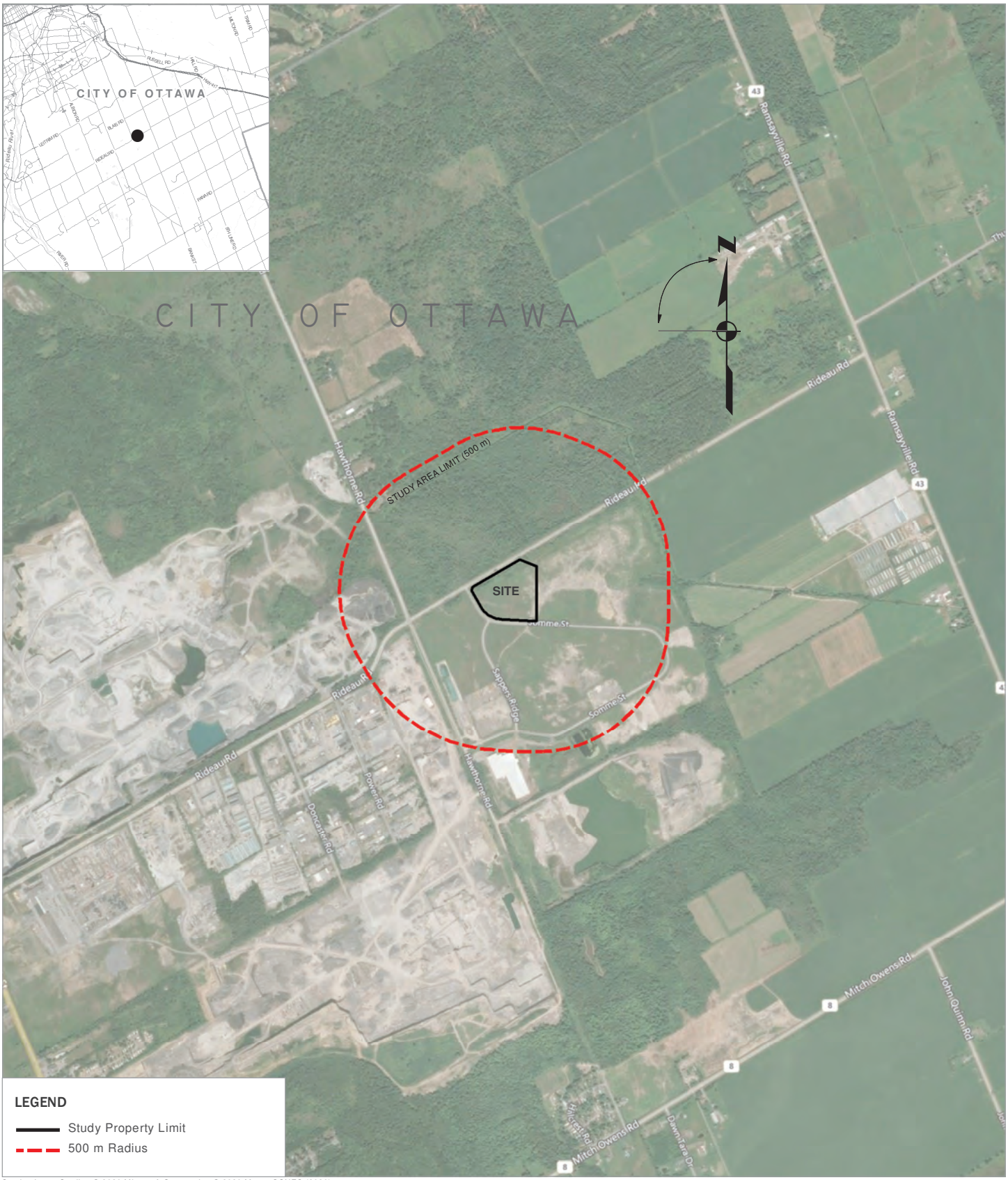
9. Statement of Limitations

This report is intended solely for Consolidated Fastfrate (Ottawa) Holdings Inc. in assessing the hydrogeological aspects of the Site (301 Somme Street, Ottawa, 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 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.

Figures



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NAD83, MTM Zone 9
1 cm : 200 meters

Meters
0 220 440 880

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Consolidated Fastfrate (Ottawa) Holdings Inc.

RIDEAU ROAD & SOMME STREET
CITY OF OTTAWA
ONTARIO

HYDROGEOLOGY ASSESSMENT
SITE LOCATION PLAN

Project No. 12580314-01
Revision No. 1
Date September 2022

FIGURE 1

Created by: Will Pridham

1 cm = 15 meters

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 18N

N

GHD

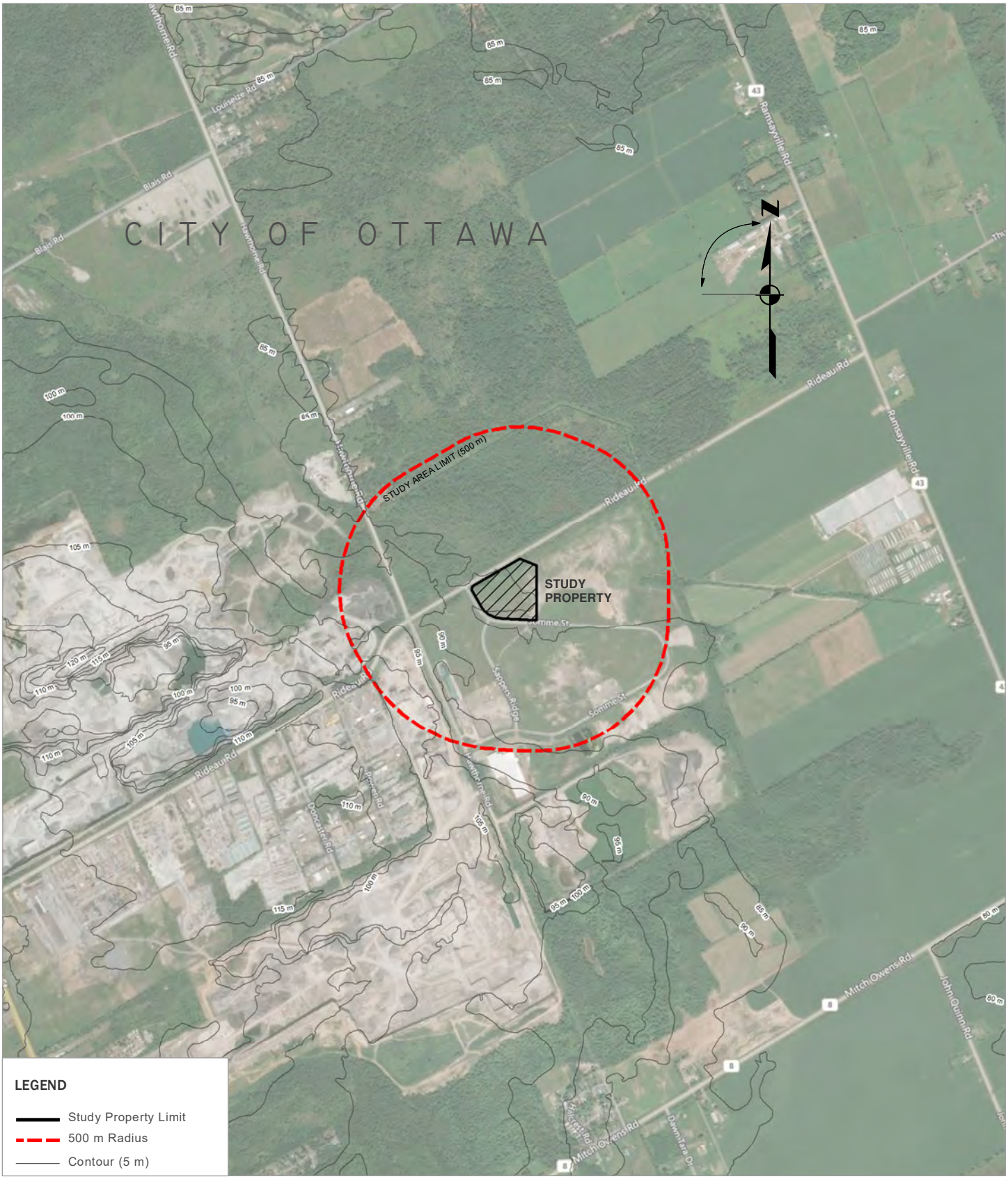
Consolidated Fastrate (Ottawa) Holdings Inc.
301 Somme Street, Ottawa, ON
City of Ottawa

Project No. 12580314
Revision No.
Date Sep 19, 2022

Concept Plan

Figure 2

Data source: © City of Ottawa, 2019; New Warehouse & Cross Dock Facility, Civitas Group, 2022-06-13.



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CITY OF OTTAWA
ONTARIO

HYDROGEOLOGY ASSESSMENT
REGIONAL TOPOGRAPHY

Project No. 12580314-01
Revision No. -
Date September 2022

FIGURE 3

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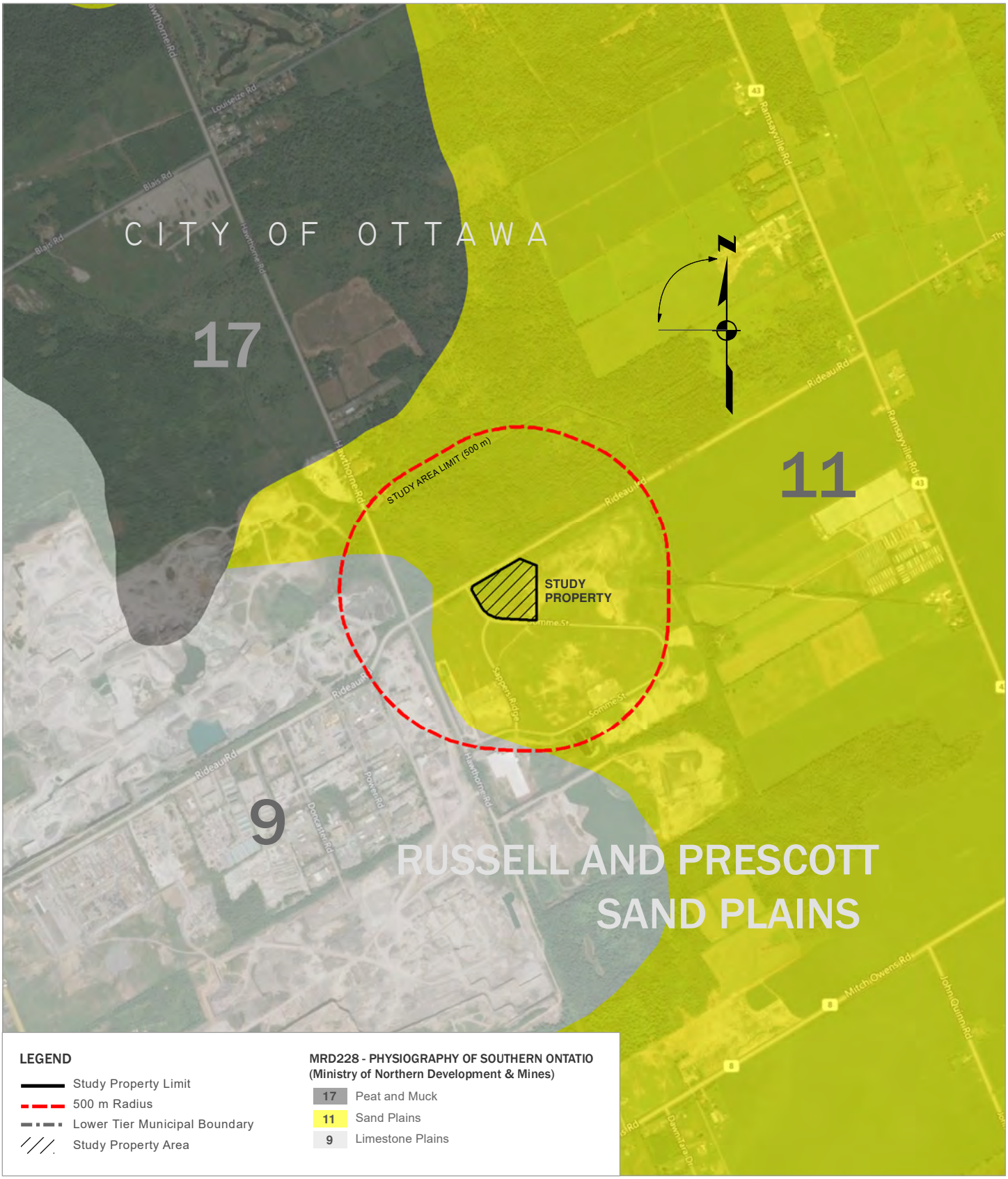

LEGEND

- Study Property Limit
- 500 m Radius
- Lower Tier Municipal Boundary
- Study Property Area

MRD228 - PHYSIOGRAPHY OF SOUTHERN ONTATIO (Ministry of Northern Development & Mines)

17	Peat and Muck
11	Sand Plains
9	Limestone Plains

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1 cm : 200 meters

Meters
0 220 440 880

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RIDEAU ROAD & SOMME STREET
CITY OF OTTAWA
ONTARIO

HYDROGEOLOGY ASSESSMENT
PHYSIOGRAPHY

Project No. 12580314-01
Revision No. -
Date September 2022

FIGURE 4

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LEGEND

- Study Property Limit
- 500 m Radius
- Landslide Scar
- Beach

MRD128 - SURFICIAL GEOLOGY (Ministry of Northern Development & Mines)

- 3 **Paleozoic Bedrock**
- 20 **Organic Deposits:** peat, muck, marl
- 17 **Eolian deposits:** fine to very fine sand and silt
- 11 **Coarse-textured glaciolacustrine deposits:** sand, gravel, minor silt and clay
  - 11b Littoral deposits
  - 11c Foreshore and basinal deposits
- 10 **Fine-textured glaciomarine deposits**
  - 10a Massive to well laminated
- 5b **Till:** Silty sand to sand-textured till on Precambrian terrain
  - 5b Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain

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NAD83, MTM Zone 9
1 cm : 200 meters

Meters
0 220 440 880

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RIDEAU ROAD & SOMME STREET
CITY OF OTTAWA
ONTARIO

HYDROGEOLOGY ASSESSMENT
SURFICIAL GEOLOGY

Project No. 12580314-01
Revision No. -
Date September 2022

FIGURE 5

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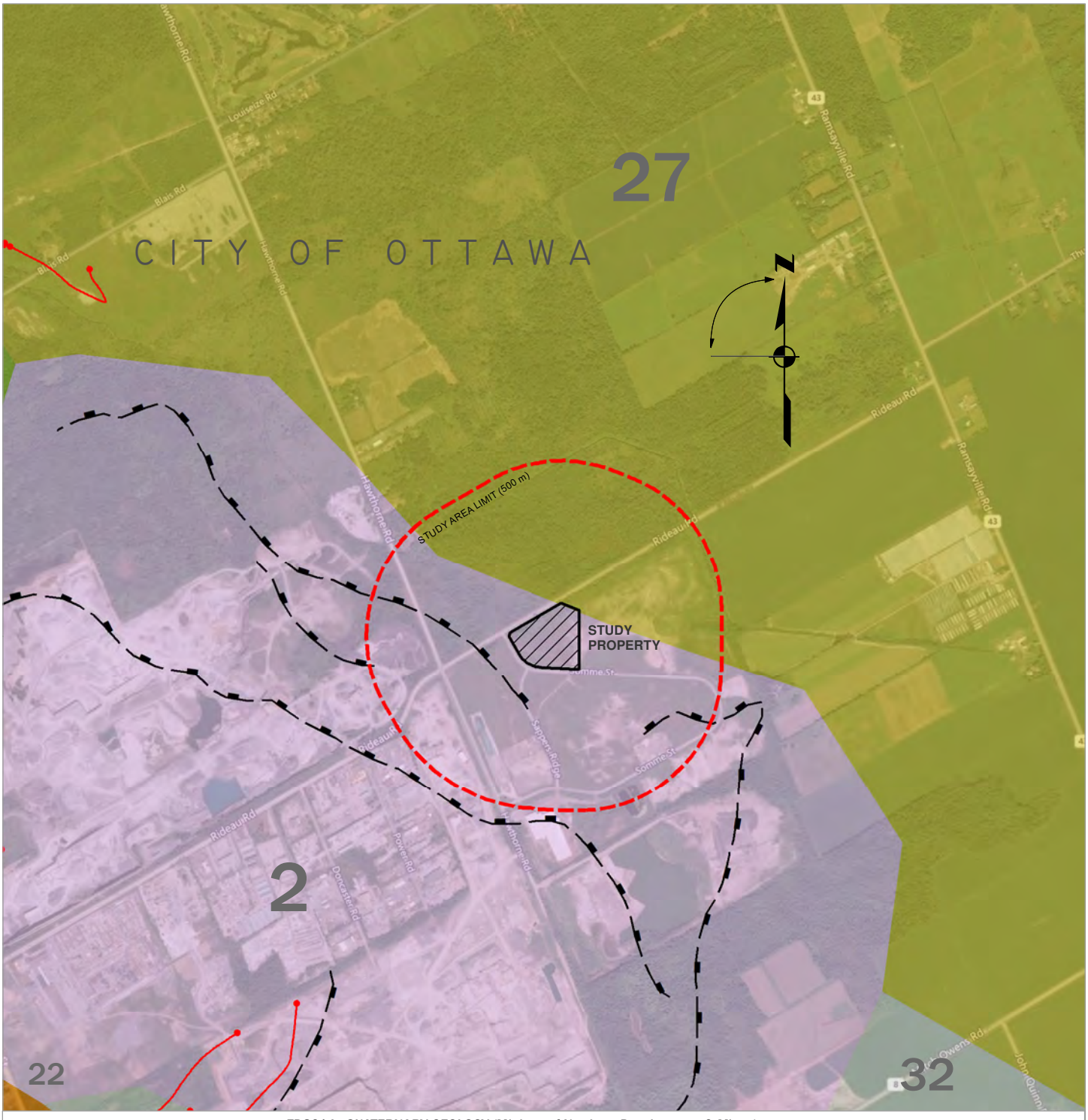

LEGEND

- Study Property Limit
- 500 m Radius
- Landslide Scar
- Beach

EDS014 - QUATERNARY GEOLOGY (Ministry of Northern Development & Mines)

32 Organic deposits:
peat, muck and marl

27 Glaciomarine and marine deposits:
sand, gravelly sand and gravel nearshore and beach deposits

22 Glaciofluvial ice-contact deposits:
gravel and sand minor till includes esker, kame, end moraine, ice-marginal delta and subaqueous fan deposits

2 Bedrock:
undifferentiated carbonate and clastic sedimentary rock, exposed at surface or covered by a discontinuous, thin layer of drift

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1 cm : 200 meters
Meters
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RIDEAU ROAD & SOMME STREET
CITY OF OTTAWA
ONTARIO

HYDROGEOLOGY ASSESSMENT
QUATERNARY GEOLOGY

Project No. 12580314-01
Revision No. -
Date September 2022

FIGURE 6

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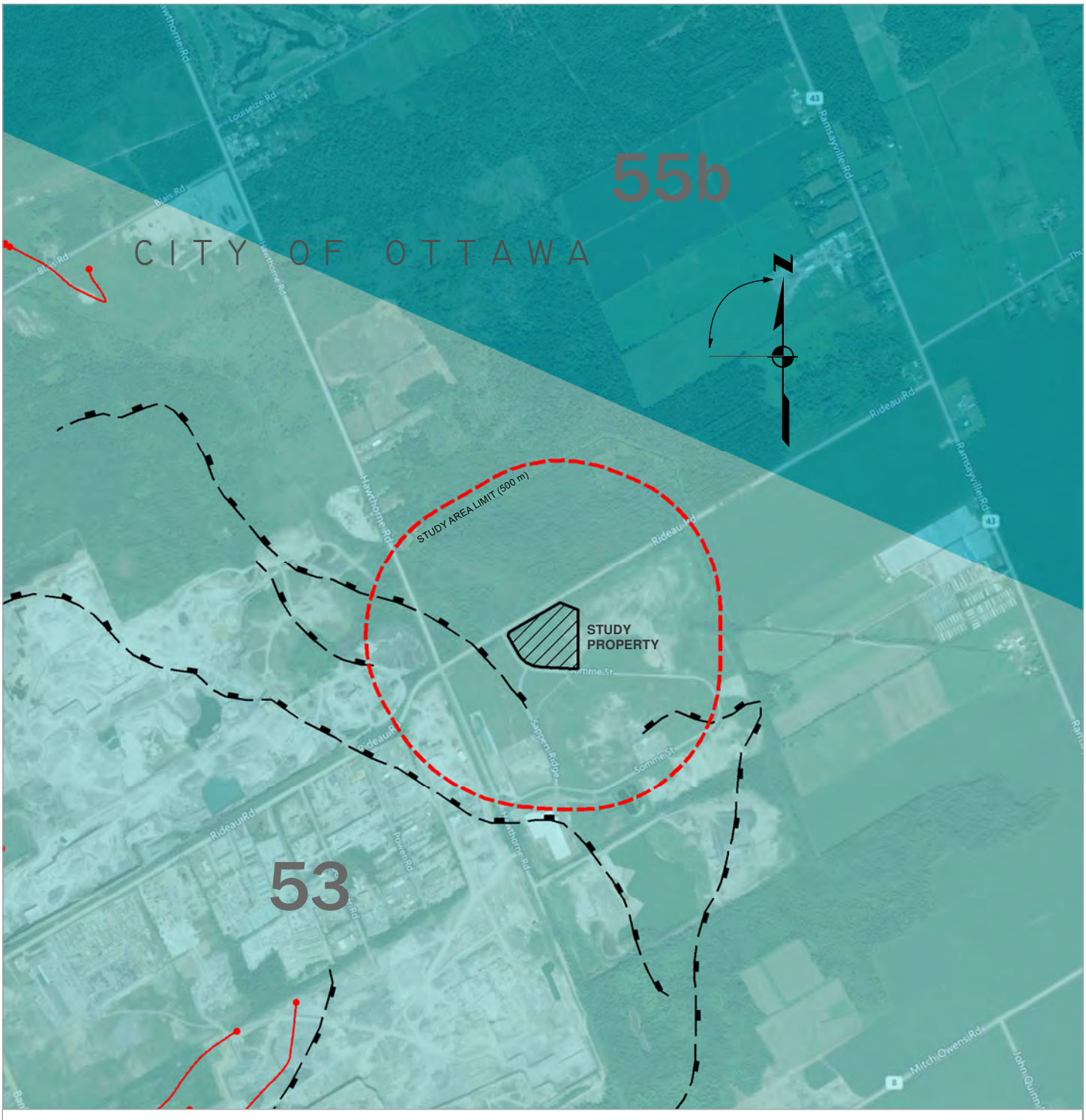

LEGEND

- Study Property Limit
- 500 m Radius
- Landslide Scar
- Beach

MRD126 - BEDROCK GEOLOGY (Ministry of Northern Development & Mines)

ORDOVICIAN (443.7 Ma to 488.3 Ma)

UPPER ORDOVICIAN

55 **Shale, limestone, dolostone, siltstone**
55b Georgian Bay Fm.; Blue Mountain Fm.; Billings Fm.; Collingwood Mb.; Eastview Mb.

53 **Dolostone, sandstone:** Beekmantown Gp.

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1 cm : 200 meters
Meters
0 220 440 880

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Consolidated Fastfrate (Ottawa) Holdings Inc.

RIDEAU ROAD & SOMME STREET
CITY OF OTTAWA
ONTARIO

HYDROGEOLOGY ASSESSMENT
BEDROCK GEOLOGY

Project No. 12580314-01
Revision No. -
Date September 2022

FIGURE 7

Created by: Will Pridham

1 cm = 72 meters

0 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 18N

N

GHD

Consolidated Fastrate (Ottawa) Holdings Inc.
301 Somme Street, Ottawa, ON
City of Ottawa

Project No. 12580314
Revision No.
Date Sep 19, 2022

Well Locations

Figure 8

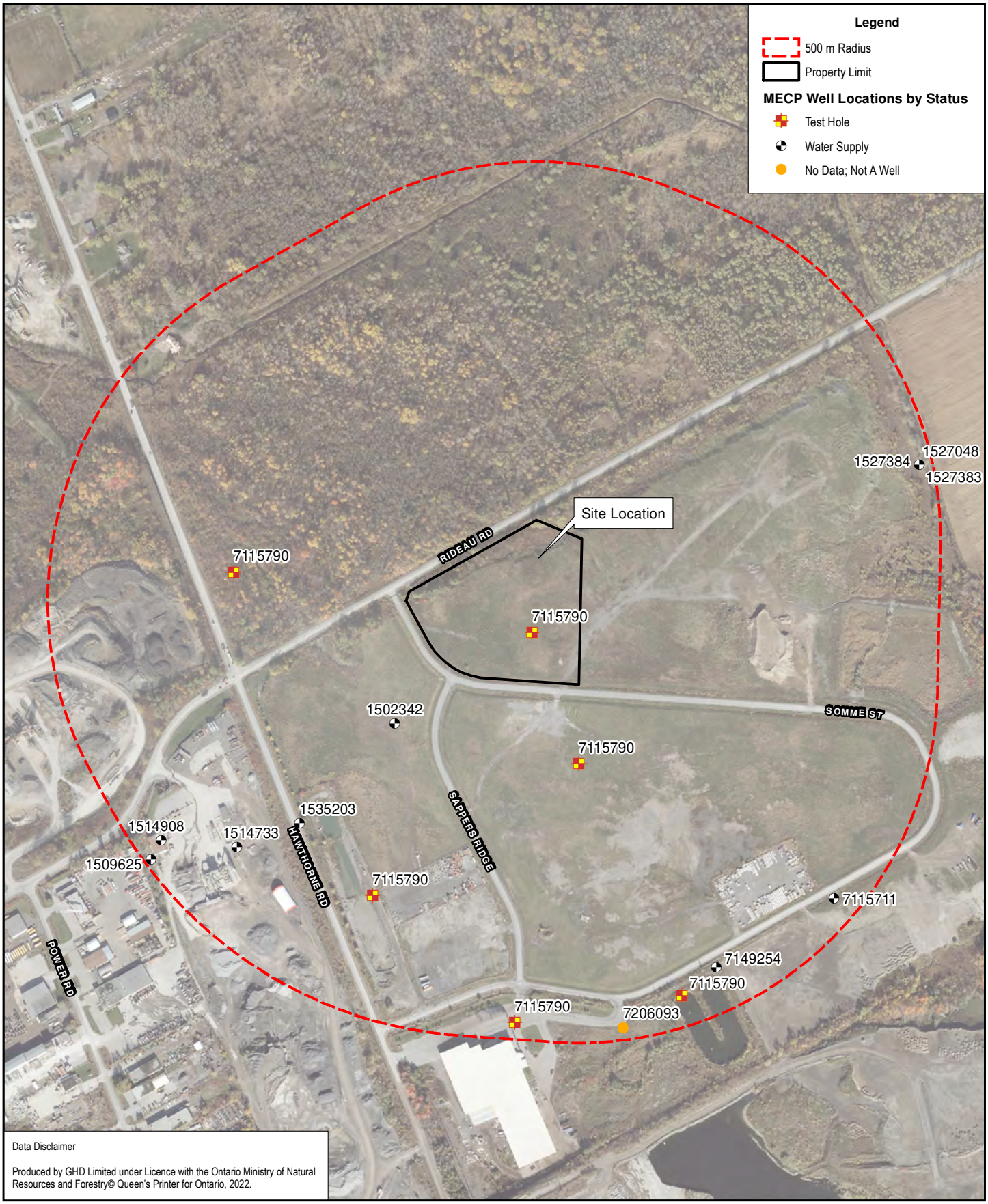
O:\GIS\PROJECTS\12580000s\12580314\Layouts\202209_RPT001\12580314_202209_RPT001_GIS003 - Well Location Plan.mxd
Print date: 19 Sep 2022 - 10:31

Data source: © City of Ottawa, 2019; New Warehouse & Cross Dock Facility, Civitas Group, 2022-06-13.

Appendices

Appendix A

MECP Well Records



Data Disclaimer

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1 cm = 72 meters

0 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 18N

N

GHD

Consolidated Fastrate (Ottawa) Holdings Inc.
301 Somme Street, Ottawa, ON
City of Ottawa

Project No. 12580314
Revision No.
Date Sep 19, 2022

MECP Well Locations

Appendix A

O:\GIS\PROJECTS\12580000s\12580314\Layouts\202209_RPT001\12580314_202209_RPT001_GIS00A - MECP Well Locations.mxd
Print date: 19 Sep 2022 - 13:21

Data source: © City of Ottawa, 2019; New Warehouse & Cross Dock Facility, Civitas Group, 2022-06-13; Water Well Information System (WWIS), MECP, 2022-09-19.

MECP WELL RECORD LISTINGS

Ministry of the Environment, Conservation & Parks (MECP)

© Water Well Information System (WWIS). Ministry of the Environment, Conservation, and Parks. 2021.
Powered by Location Intelligence

DISCLAIMER: All effort has been taken to ensure the accuracy of the data is the same as the source. There are instances where the original PDF document is different and in those cases, the PDF should be used instead.

18

Easting:	456430.80
Northing:	5017092.00
Elev (masl):	87.74

Latitude: 45.30598
Longitude: -75.555767

Well ID: 1502342

LOCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:
City: n/a

Tag:
Audit No:
Contractor License: 3504
Well Completion Date: 11/30/1950
Received Date: 12/06/1951

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: Domestic
Boring Method: Cable Tool

Well Depth (m): 17.3736
Depth to Bedrock (m): 27
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 13
Final Level: 18 ft
Pump Rate: 1 GPM
Recom. Rate: n/a GPM

Pipe ID: 10572955
Pump Test ID 991502342
Flowing: N
Pump Duration (hr): 0
Pump Duration (m): 30

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930041541	5	inch	STEEL	n/a	27 ft
2	930041542	5	inch	OPEN HOLE	n/a	57 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	PREV. DRILLED	n/a	n/a	n/a	0	27 ft
2	SANDSTONE	n/a	n/a	n/a	27	57 ft

End of Record

18

Easting:	456090.80
Northing:	5016902.00
Elev (masl):	103.27

Latitude: 45.304248
Longitude: -75.560087

Well ID: 1509625

LOCATION

Lot: 026
Con: 05
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:
City: n/a

Tag:
Audit No:
Contractor License: 3002
Well Completion Date: 05/04/1968
Received Date: 06/12/1968

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 58.5216
Depth to Bedrock (m): 0
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): n/a
SWL (ft) 36
Final Level: 63 ft
Pump Rate: 180 GPM
Recom. Rate: 180 GPM

Pipe ID: 10580227
Pump Test ID 991509625
Flowing: N
Pump Duration (hr): 24
Pump Duration (m): 0

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CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930055956	10	inch	STEEL	n/a	18 ft
2	930055957	9	inch	OPEN HOLE	n/a	192 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SANDSTONE	n/a	n/a	BROWN	0	52 ft
2	QUARTZITE	n/a	n/a	GREY	52	72 ft
3	SANDSTONE	n/a	n/a	WHITE	72	160 ft
4	SANDSTONE	n/a	n/a	GREY	160	192 ft

End of Record

18

Easting:	456210.80
Northing:	5016920.00
Elev (masl):	99.42

Latitude: 45.304418
Longitude: -75.558558

Well ID: 1514733

LOCATION

Lot: 026
Con: 05
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:
City: n/a

Tag:
Audit No:
Contractor License: 1517
Well Completion Date: 04/15/1975
Received Date: 07/08/1975

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Cable Tool

Well Depth (m): 35.3568
Depth to Bedrock (m): 2
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLOUDY
Pump Set (m): n/a
SWL (ft) 40
Final Level: 65 ft
Pump Rate: 10 GPM
Recom. Rate: 5 GPM

Pipe ID: 10585273
Pump Test ID 991514733
Flowing: N
Pump Duration (hr): 1
Pump Duration (m): 20

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930064874	5	inch	STEEL	n/a	18 ft
2	930064875	5	inch	OPEN HOLE	n/a	116 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	SAND	n/a	BROWN	0	2 ft
2	SHALE	n/a	n/a	BROWN	2	10 ft
3	LIMESTONE	n/a	n/a	GREY	10	116 ft

End of Record

18

Easting:	456104.80
Northing:	5016929.00
Elev (masl):	101.82

Latitude: 45.304492
Longitude: -75.559911

Well ID: 1514908

LOCATION

Lot: 026
Con: 05
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:
City: n/a

Tag:
Audit No:
Contractor License: 1558
Well Completion Date: 08/15/1975
Received Date: 09/11/1975

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: Domestic
Boring Method: Air Percussion

Well Depth (m): 75.5904
Depth to Bedrock (m): 0
Depth to Water: ft
Water Kind: Not stated

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PUMP TEST

Test Method:
Pump Set (m): n/a
SWL (ft) 40
Final Level: 100 ft
Pump Rate: 15 GPM
Recom. Rate: 5 GPM

Pipe ID:
Pump Test ID 991514908
Flowing: N
Pump Duration (hr): 1
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930065185	6	inch	STEEL	n/a	196 ft
2	930065186	6	inch	OPEN HOLE	n/a	248 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FILL	ROCK	FRACTURED	n/a	0	1 ft
2	LIMESTONE	n/a	n/a	GREY	1	40 ft
3	SANDSTONE	HARD	n/a	WHITE	40	196 ft
4	SANDSTONE	n/a	n/a	WHITE	196	248 ft

End of Record

18

Easting:	457162.00
Northing:	5017453.00
Elev (masl):	82.18

Latitude: 45.309274
Longitude: -75.546472

Well ID: 1527048

LOCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:
City: n/a

Tag:
Audit No: 130025
Contractor License: 1558
Well Completion Date: 04/19/1993
Received Date: 05/06/1993

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Air Percussion

Well Depth (m): 41.148
Depth to Bedrock (m): 0
Depth to Water: ft
Water Kind: Not stated

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 31
Final Level: 130 ft
Pump Rate: 15 GPM
Recom. Rate: 5 GPM

Pipe ID: 10597297
Pump Test ID 991527048
Flowing: N
Pump Duration (hr): 1
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930085230	6	inch	STEEL	n/a	31 ft
2	930085231	6	inch	OPEN HOLE	n/a	75 ft
3	930085232	6	inch	OPEN HOLE	n/a	135 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	CLAY	ROCK	FILL	BROWN	0	9 ft
2	HARDPAN	BOULDERS	n/a	GREY	9	15 ft
3	LIMESTONE	SOFT	n/a	GREY	15	33 ft
4	SANDSTONE	HARD	n/a	WHITE	33	135 ft

End of Record

18

Easting:	457162.00
Northing:	5017453.00
Elev (masl):	82.18

Latitude: 45.309274
Longitude: -75.546472

Well ID: 1527383

OCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:

Tag:
Audit No: 135946
Contractor License: 1558
Well Completion Date: 08/16/1993
Received Date:

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LOCATION

City: n/a

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Air Percussion

PUMP TEST

Test Method: CLOUDY
Pump Set (m): n/a
SWL (ft) 7
Final Level: 15 ft
Pump Rate: 20 GPM
Recom. Rate: 5 GPM

09/21/1993

Well Depth (m): 30.48
Depth to Bedrock (m): 28
Depth to Water: ft
Water Kind: Not stated

Pipe ID: 10597603
Pump Test ID 991527383
Flowing: N
Pump Duration (hr): 1
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930085613	6	inch	STEEL	n/a	39 ft
2	930085614	6	inch	OPEN HOLE	n/a	100 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SAND	STONES	n/a	BROWN	0	5 ft
2	HARDPAN	BOULDERS	n/a	GREY	5	28 ft
3	SANDSTONE	HARD	n/a	GREY	28	100 ft

End of Record

18

Easting:	457162.00
Northing:	5017453.00
Elev (masl):	82.18

Latitude: 45.309274
Longitude: -75.546472

Well ID: **1527384**

LOCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street:
City: n/a

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Air Percussion

PUMP TEST

Test Method: CLOUDY
Pump Set (m): n/a
SWL (ft) 22
Final Level: 24 ft
Pump Rate: 15 GPM
Recom. Rate: 5 GPM

Tag:
Audit No: 135944
Contractor License: 1558
Well Completion Date: 08/16/1993
Received Date: 09/21/1993

Well Depth (m): 30.48
Depth to Bedrock (m): 0
Depth to Water: ft
Water Kind: Not stated

Pipe ID: 10597604
Pump Test ID 991527384
Flowing: N
Pump Duration (hr): 1
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930085615	6	inch	STEEL	n/a	22 ft
2	930085616	6	inch	OPEN HOLE	n/a	100 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	SANDSTONE	HARD	n/a	GREY	0	100 ft

End of Record

18

Easting:	456298.00
Northing:	5016953.00
Elev (masl):	90.37

Latitude: 45.30472
Longitude: -75.557449

Well ID: **1535203**

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LOCATION

Lot:
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street: 3500 RIDEAU ROAD
City: GLOUCESTER

Tag: A018916
Audit No: Z19099
Contractor License: 1119
Well Completion Date: 10/27/2004
Received Date: 11/26/2004

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Air Percussion

Well Depth (m): 42.67
Depth to Bedrock (m): 4
Depth to Water: m
Water Kind:

PUMP TEST

Test Method: CLEAR
Pump Set (m): 41.16
SWL (ft) 14.18
Final Level: 15.8m
Pump Rate: 75.7LPM
Recom. Rate: 75.7LPM

Pipe ID: 11181474
Pump Test ID 11189805
Flowing: n/a
Pump Duration (hr): 1
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	930843335	15.88	cm	STEEL	0	6.7 m
2	930843336	n/a	cm	OPEN HOLE	6.09	42.67 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	GRAVEL	TOPSOIL	n/a	n/a	0	1.21 m
2	SANDSTONE	n/a	n/a	GREY	1.21	35.05 m
3	LIMESTONE	SANDSTONE	n/a	GREY	35.05	42.67 m

End of Record

17

Easting:	436883.00
Northing:	4794755.00
Elev (masl):	87.38

Latitude: 45.303821
Longitude: -75.547937

Well ID: **7115711**

LOCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street: TW #5
City: GLOUCESTER

Tag: A068335
Audit No: Z84410
Contractor License: 1558
Well Completion Date: 09/26/2008
Received Date: 12/02/2008

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: Industrial
Boring Method: Rotary (Air)

Well Depth (m): 29.86
Depth to Bedrock (m): n/a
Depth to Water: m
Water Kind: Untested

PUMP TEST

Test Method: CLEAR
Pump Set (m): 22.85
SWL (ft) 6.85
Final Level: 9.99m
Pump Rate: 54.6LPM
Recom. Rate: 45.5LPM

Pipe ID: 1002442328
Pump Test ID 1002442329
Flowing: n/a
Pump Duration (hr): 6
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1002442337	15.86	cm	STEEL	-0.45	12.8 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	STONES	FILL	BROWN	0	1.21 m
2	TOPSOIL	STONES	SANDY	GREY	1.21	3.96 m
3	SANDSTONE	n/a	HARD	GREY	3.96	29.86 m

End of Record

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17

Easting:	555808.00
Northing:	4809940.00
Elev (masl):	85.10

Latitude: 45.303818
Longitude: -75.556139

Well ID: 7115790

LOCATION

Lot:	026
Con:	06
Municipality:	OTTAWA-CARLETON
Township:	GLOUCESTER TOWNSHIP
Street:	HAWTHORNE ROAD AT RIDEAU ROAD
City:	Ottawa

Tag:	A074584
Audit No:	M02897
Contractor License:	1844
Well Completion Date:	07/15/2008
Received Date:	11/26/2008

WELL

Well Status:	Test Hole
Prim. Use:	n/a
Sec. Use:	n/a
Boring Method:	n/a

Well Depth (m):	7.6
Depth to Bedrock (m):	n/a
Depth to Water:	
Water Kind:	

PUMP TEST

Test Method:	n/a
Pump Set (m):	n/a
SWL (ft)	1.7
Final Level:	n/a m
Pump Rate:	n/a
Recom. Rate:	n/a

Pipe ID:	1002782586
Pump Test ID	1002782562
Flowing:	n/a
Pump Duration (hr):	n/a
Pump Duration (m):	n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
0	1002782579	n/a	n/a	PLASTIC	n/a	3 m
0	1002782525	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782570	n/a	n/a	PLASTIC	n/a	3 m
0	1002782597	n/a	n/a	PLASTIC	n/a	1.37 m
0	1002782561	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782588	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782552	n/a	n/a	PLASTIC	n/a	1.22 m
0	1002782534	n/a	n/a	PLASTIC	n/a	0.6 m
0	1002782543	n/a	n/a	PLASTIC	n/a	2.13 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FINE SAND	SILT	DENSE	GREY	0	0.9 m
2	FILL	SAND	SILT	BROWN	0.9	4.7 m
3	SAND	SILT	n/a	GREY	4.7	6 m
4	TILL	SAND	GRAVEL	BROWN	6	7.6 m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	94.41

Latitude: 45.302584
Longitude: -75.55063

Well ID: 7115790

LOCATION

Lot:	026
Con:	06
Municipality:	OTTAWA-CARLETON
Township:	GLOUCESTER TOWNSHIP
Street:	HAWTHORNE ROAD AT RIDEAU ROAD
City:	Ottawa

Tag:	A074584
Audit No:	M02897
Contractor License:	1844
Well Completion Date:	07/15/2008
Received Date:	11/26/2008

WELL

Well Status:	Test Hole
Prim. Use:	n/a
Sec. Use:	n/a
Boring Method:	n/a

Well Depth (m):	0
Depth to Bedrock (m):	n/a
Depth to Water:	
Water Kind:	

PUMP TEST

Test Method:	n/a
Pump Set (m):	n/a
SWL (ft)	1.3
Final Level:	n/a m
Pump Rate:	n/a
Recom. Rate:	n/a

Pipe ID:	1002782595
Pump Test ID	1002782535
Flowing:	n/a
Pump Duration (hr):	n/a
Pump Duration (m):	n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

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Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
0	1002782588	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782570	n/a	n/a	PLASTIC	n/a	3 m
0	1002782543	n/a	n/a	PLASTIC	n/a	2.13 m
0	1002782561	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782525	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782534	n/a	n/a	PLASTIC	n/a	0.6 m
0	1002782597	n/a	n/a	PLASTIC	n/a	1.37 m
0	1002782552	n/a	n/a	PLASTIC	n/a	1.22 m
0	1002782579	n/a	n/a	PLASTIC	n/a	3 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FINE SAND	SILT	DENSE	GREY	0	0.9 m
2	FILL	SAND	SILT	BROWN	0.9	4.7 m
3	SAND	SILT	n/a	GREY	4.7	6 m
4	TILL	SAND	GRAVEL	BROWN	6	7.6 m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	103.53

Latitude: 45.302237
Longitude: -75.553598

Well ID: 7115790

LOCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street: HAWTHORNE ROAD AT RIDEAU ROAD
City: Ottawa

Tag: A074584
Audit No: M02897
Contractor License: 1844
Well Completion Date: 07/08/2008
Received Date: 11/26/2008

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 3.6
Final Level: n/a m
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1002782586
Pump Test ID 1002782535
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
0	1002782552	n/a	n/a	PLASTIC	n/a	1.22 m
0	1002782597	n/a	n/a	PLASTIC	n/a	1.37 m
0	1002782543	n/a	n/a	PLASTIC	n/a	2.13 m
0	1002782525	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782579	n/a	n/a	PLASTIC	n/a	3 m
0	1002782561	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782534	n/a	n/a	PLASTIC	n/a	0.6 m
0	1002782570	n/a	n/a	PLASTIC	n/a	3 m
0	1002782588	n/a	n/a	PLASTIC	n/a	1.5 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FINE SAND	SILT	DENSE	GREY	0	0.9 m
2	FILL	SAND	SILT	BROWN	0.9	4.7 m
3	SAND	SILT	n/a	GREY	4.7	6 m
4	TILL	SAND	GRAVEL	BROWN	6	7.6 m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	

Latitude: 45.307135
Longitude: -75.55334

Well ID: 7115790

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103.53

LOCATION

Lot:	026
Con:	06
Municipality:	OTTAWA-CARLETON
Township:	GLOUCESTER TOWNSHIP
Street:	HAWTHORNE ROAD AT RIDEAU ROAD
City:	Ottawa

Tag:	A074584
Audit No:	M02897
Contractor License:	1844
Well Completion Date:	07/15/2008
Received Date:	11/26/2008

WELL

Well Status:	Test Hole
Prim. Use:	n/a
Sec. Use:	n/a
Boring Method:	n/a

Well Depth (m):	0
Depth to Bedrock (m):	n/a
Depth to Water:	
Water Kind:	

PUMP TEST

Test Method:	n/a
Pump Set (m):	n/a
SWL (ft)	1.7
Final Level:	n/a m
Pump Rate:	n/a
Recom. Rate:	n/a

Pipe ID:	1002782532
Pump Test ID	1002782571
Flowing:	n/a
Pump Duration (hr):	n/a
Pump Duration (m):	n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
0	1002782588	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782597	n/a	n/a	PLASTIC	n/a	1.37 m
0	1002782561	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782579	n/a	n/a	PLASTIC	n/a	3 m
0	1002782525	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782534	n/a	n/a	PLASTIC	n/a	0.6 m
0	1002782543	n/a	n/a	PLASTIC	n/a	2.13 m
0	1002782552	n/a	n/a	PLASTIC	n/a	1.22 m
0	1002782570	n/a	n/a	PLASTIC	n/a	3 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FINE SAND	SILT	DENSE	GREY	0	0.9 m
2	FILL	SAND	SILT	BROWN	0.9	4.7 m
3	SAND	SILT	n/a	GREY	4.7	6 m
4	TILL	SAND	GRAVEL	BROWN	6	7.6 m

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	94.41

Latitude: 45.305492
Longitude: -75.552495

Well ID: **7115790**

LOCATION

Lot:	026
Con:	06
Municipality:	OTTAWA-CARLETON
Township:	GLOUCESTER TOWNSHIP
Street:	HAWTHORNE ROAD AT RIDEAU ROAD
City:	Ottawa

Tag:	A074584
Audit No:	M02897
Contractor License:	1844
Well Completion Date:	07/14/2008
Received Date:	11/26/2008

WELL

Well Status:	Test Hole
Prim. Use:	n/a
Sec. Use:	n/a
Boring Method:	n/a

Well Depth (m):	0
Depth to Bedrock (m):	n/a
Depth to Water:	
Water Kind:	

PUMP TEST

Test Method:	n/a
Pump Set (m):	n/a
SWL (ft)	1.3
Final Level:	n/a m
Pump Rate:	n/a
Recom. Rate:	n/a

Pipe ID:	1002782595
Pump Test ID	1002782544
Flowing:	n/a
Pump Duration (hr):	n/a
Pump Duration (m):	n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
0	1002782525	n/a	n/a	PLASTIC	n/a	1.5 m
0	1002782597	n/a	n/a	PLASTIC	n/a	1.37 m

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0	1002782534	n/a	n/a	PLASTIC	n/a	0.6	m
0	1002782588	n/a	n/a	PLASTIC	n/a	1.5	m
0	1002782579	n/a	n/a	PLASTIC	n/a	3	m
0	1002782552	n/a	n/a	PLASTIC	n/a	1.22	m
0	1002782570	n/a	n/a	PLASTIC	n/a	3	m
0	1002782543	n/a	n/a	PLASTIC	n/a	2.13	m
0	1002782561	n/a	n/a	PLASTIC	n/a	1.5	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	FINE SAND	SILT	DENSE	GREY	0	0.9	m
2	FILL	SAND	SILT	BROWN	0.9	4.7	m
3	SAND	SILT	n/a	GREY	4.7	6	m
4	TILL	SAND	GRAVEL	BROWN	6	7.6	m

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	84.01

Latitude: 45.307865
Longitude: -75.558653

Well ID: 7115790

LOCATION

Lot: 026
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street: HAWTHORNE ROAD AT RIDEAU ROAD
City: Ottawa

Tag: A074584
Audit No: M02897
Contractor License: 1844
Well Completion Date: 07/14/2008
Received Date: 11/26/2008

WELL

Well Status: Test Hole
Prim. Use: n/a
Sec. Use: n/a
Boring Method: n/a

Well Depth (m): 0
Depth to Bedrock (m): n/a
Depth to Water:
Water Kind:

PUMP TEST

Test Method: n/a
Pump Set (m): n/a
SWL (ft) 1
Final Level: n/a m
Pump Rate: n/a
Recom. Rate: n/a

Pipe ID: 1002782599
Pump Test ID 1002782589
Flowing: n/a
Pump Duration (hr): n/a
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth	
0	1002782588	n/a	n/a	PLASTIC	n/a	1.5	m
0	1002782525	n/a	n/a	PLASTIC	n/a	1.5	m
0	1002782543	n/a	n/a	PLASTIC	n/a	2.13	m
0	1002782534	n/a	n/a	PLASTIC	n/a	0.6	m
0	1002782561	n/a	n/a	PLASTIC	n/a	1.5	m
0	1002782579	n/a	n/a	PLASTIC	n/a	3	m
0	1002782552	n/a	n/a	PLASTIC	n/a	1.22	m
0	1002782597	n/a	n/a	PLASTIC	n/a	1.37	m
0	1002782570	n/a	n/a	PLASTIC	n/a	3	m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth	
1	FINE SAND	SILT	DENSE	GREY	0	0.9	m
2	FILL	SAND	SILT	BROWN	0.9	4.7	m
3	SAND	SILT	n/a	GREY	4.7	6	m
4	TILL	SAND	GRAVEL	BROWN	6	7.6	m

End of Record

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	88.61

Latitude: 45.302947
Longitude: -75.550021

Well ID: 7149254

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LOCATION

Lot:
Con:
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street: TW#7 HOAWTHORNE RD.
City: GLOUCESTER

Tag: A082844
Audit No: Z101832
Contractor License: 1558
Well Completion Date: 05/25/2010
Received Date: 08/04/2010

WELL

Well Status: Water Supply
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Rotary (Reverse)

Well Depth (m): 29.86
Depth to Bedrock (m): n/a
Depth to Water: m
Water Kind: Untested

PUMP TEST

Test Method: CLEAR
Pump Set (m): 23.38
SWL (ft) 4.41
Final Level: 7.01m
Pump Rate: 27.3LPM
Recom. Rate: 27.3LPM

Pipe ID: 1003263559
Pump Test ID 1003263560
Flowing: n/a
Pump Duration (hr): 6
Pump Duration (m): 0

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1003263568	15.86	cm	STEEL	-0.45	6.4 m

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	TOPSOIL	STONES	PACKED	BROWN	0	4.26 m
2	SANDSTONE	n/a	HARD	GREY	4.26	29.86 m

End of Record

---

n/a

Easting:	<null>
Northing:	<null>
Elev (masl):	89.57

Latitude: 45.302183
Longitude: -75.551672

Well ID: **7206093**

LOCATION

Lot: 027
Con: 06
Municipality: OTTAWA-CARLETON
Township: GLOUCESTER TOWNSHIP
Street: 35 SAPPERS RIDGE
City: Ottawa

Tag: A089801
Audit No: Z103282
Contractor License: 3749
Well Completion Date: 07/18/2013
Received Date: 08/12/2013

WELL

Well Status: <null>
Prim. Use: n/a
Sec. Use: n/a
Boring Method: Rotary (Convent.)

Well Depth (m): 47.244
Depth to Bedrock (m): n/a
Depth to Water: ft
Water Kind: FRESH

PUMP TEST

Test Method: CLEAR
Pump Set (m): 130
SWL (ft) 25
Final Level: 34 ft
Pump Rate: 10 GPM
Recom. Rate: n/a GPM

Pipe ID: 1004977760
Pump Test ID 1004977761
Flowing: n/a
Pump Duration (hr): 1
Pump Duration (m): n/a

CASING DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Case ID	Casing Diamter	Diamter Units	Material	Top Depth	Bottom Depth
1	1004977768	5.625	inch	STEEL	40	-2 ft

FORMATION DETAILS

Layer Value of "0" denotes a Null value and cannot be stratified and ordered.

Layer	Material	Material 2	Material 3	Colour	Top Depth	Bottom Depth
1	FILL	n/a	LOOSE	n/a	0	8 ft
2	CLAY	GRAVEL	PACKED	GREY	8	24 ft
3	LIMESTONE	n/a	n/a	n/a	24	155 ft

End of Record

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Appendix B

Photographs

Photo 1 - View of drilled water well on the Site used during pumping test and proposed building area showing ground improvement.

Photo 2 - View of ground improvement area.

Photo 3 - Wellhead at pumped water well A342117.

Photo 4 - Observation well (ID A305146) used during pumping test for monitoring of potential interference effects.

Photo 5 - Observation well (ID A295342) used during pumping test for monitoring of potential interference effects.

Photo 6 - Observation well (ID A342260) used during pumping test for monitoring of potential interference effects.

Photo 7 - Observation well (ID A018916) used during pumping test for monitoring of potential interference effects.

Photo 8 - Observation well at 4885 Hawthorne Road used during pumping test for monitoring of potential interference effects.

Appendix C

Well Record A342117 and WSP Well Certificate

CERTIFICATE OF WELL COMPLIANCE

I (Jeremy Hanna) AIR ROCK DRILLING CO. LTD. - DO HEREBY CERTIFY

that I am licensed to drill water wells in the Province of Ontario, and that I have

supervised the drilling of the water well on the property of :

OWNER: CONSOLIDATED FASTFRATE (OTTAWA) HOLDINGS INC.

Location: #301 SOMME STREET, GLOUCESTER

LOT: Part 26 & 27 CON: 6 R.F. PLAN # 4M-1388 S/L # X

Ottawa-Carleton / Geographical Township of GLOUCESTER

I CERTIFY FURTHER that, I am aware of the well drilling requirements, the guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to this site and City Standards.

AND DO HEREBY CERTIFY THAT the said well has been drilled, cased, grouted (cement or bentonite) as applicable and constructed in strict conformity with the standards required.

Signed this 27TH Day of JULY, 2022

Jeremy Hanna (T3632) Air Rock Drilling Co. Ltd. (C-7681)

The Engineer on behalf of the Landowner set out above, Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg 903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

Signed this 16th day of Aug 2022

LICENSED PROFESSIONAL ENGINEER
R.A. PASSMORE
100008723
2022-09-16
PROVINCE OF ONTARIO

2022511
TAGA342117

(Engineer)

Shaping our future together
Ensemble, formons notre avenir

City of Ottawa
Client Service Centre
8243 Victoria Street

Ville d'Ottawa
Centre de service
8243, rue Victoria

2001
International Year of Volunteers

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag#: A342117 (Below) A342117

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	☐ Well Constructed by Well Owner
	Consolidated Fastfrate (Ottawa) Holdings Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
333 Preston Street, 7th Floor,	Ottawa,	Ont	K1S 5N4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
# 301 SOMME STREET	GLOUCESTER	P/L 26 & 27	6 R.F.

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA-CARLETON	GLOUCESTER	Ontario	

UTM Coordinates Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18456582	5017208	4M-1388	

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
	Gravel, Hard Pan, Boulders			0'	46'
Grey & Black	limestone w/ white		Sandstone Mix	46'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
52'	0'	Neat Cement Slurry	12.48

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
6"/4"	Steel	.188"	+2'	52'
6"	Open Hole		52'	140'

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	Hole Diameter Depth From	To	Diameter (cm/in)
128 ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify	0'	52'	9 3/4"
134 ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify	52'	140'	6"
☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co Ltd	C7681

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6659 Frontown Road	Richmond	Ont	K0A2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	HANNA Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3632		2020/08/31 D

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify ____

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 120'

Pumping rate (l/min/GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 30'7"

If flowing give rate (l/min/GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min/GPM): 20

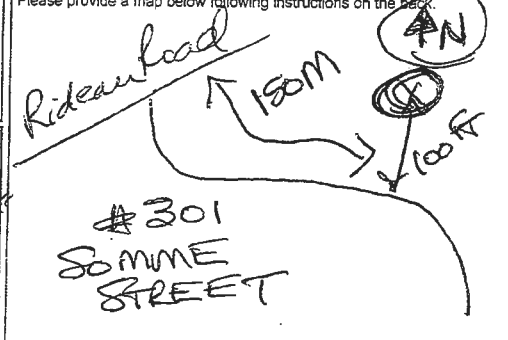
Well production (l/min/GPM): 20

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		28'2"		30'4"
1	29.3		1	29.2
2	29.4		2	29.1
3	29.5		3	29.1
4	29.6		4	29.1
5	29.7		5	29.
10	29.9		10	28.2
15	30.1		15	28'2"
20	30.3		20	
25	30.4		25	
30	30.5		30	
40	30.6		40	
50	30.7		50	
60	30'7"		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1 HP 26GPM Set @ 100 FT

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2020/07/28	2020/07/27

Ministry Use Only

Audit No. Z379047

Received

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Ministry's Copy

Appendix D

Calibration Records

Control number: PET-TE-19
Date (mm/dd/yyyy): 08/09/2022
User (print name): Jason Geraldi

Project number: 12580314
Project name: Consolidated Fastfrate, HydroG Assessment
Location: 301 Somme Street, Ottawa

Additional equipment control numbers and descriptions: Hach Pocket Colorimeter II (S/N 15100E283721)

Field procedure before use:

	Check when completed
• Check batteries are charged. Replace AAA batteries if needed.	☒
• Review applicable MSDS sheets for the DPD foil pillows (21055-69 & 21056-69 – in equipment case).	☒
• Proceed with a Spec √ ™ Secondary Standard repeatability test if required. Please note that this test is done at the shop. Please see pages 1-43 and 1-44 (Pocket Colorimeter) or 1-47 and 1-48 (Pocket Colorimeter II) of instruction manual.	☒
• Proceed with a User-Entered Calibration if the project requires it. This is usually done at the shop. Please see pages 2-15 to 2-27 in instruction manual.	☒

Filing: Field file

Signature:

Control number:	PET-TE-25	Project number:	12580314
Date (mm/dd/yyyy):	08/09/2022	Project name:	Consolidated Fastfrate HydroG Assessment
User (print name):	Jason Geraldi	Location:	301 Somme Street, Ottawa

Calibration solution(s):	AutoCal Standard
Lot #(s):	1GJ470
Supplier(s):	Maxim
Expiration date(s):	OCT/22

Additional information: Horiba U-52 (S/N XPX0PRWK)

Field procedure before use:

	Check when completed
• Wash the sensors in distilled water.	
• Fill the calibration beaker to line on the beaker with auto-cal solution.	
• Immerse the probe into the beaker, and turn the power on.	
• For the U-10: press the MODE key to put the unit into the MAINT mode, and set the lower cursor to AUTO.	☒
• For the U-22: press the CAL key in one of the measurement modes.	
• Press the ENT key to start the AUTO calibration. When calibration is complete, the readout will show END.	
• Switch to MEAS mode, and check the calibration in AUTO-CAL solution.	☒
• The instrument is ready for use.	
Note: Conductivity measured in mS/cm not μS/cm as commonly measured by pocket meters. Multiply value by 1,000 to convert to μS/cm.	

Filing: Field file

Signature:

Control number:	PET-TE-3	Project number:	12580314
Date (mm/dd/yyyy):	08/09/2022	Project name:	Consolidated Fastfrate HydroG Assessment
User (print name):	Jason Geraldi	Location:	301 Somme Street, Ottawa

Additional equipment control numbers and descriptions: Gastech NP-204 natural gas detector used for methane detection at wellhead.

Field procedure before use:

	Check when completed
• Check for damages	☒
• Ensure the instrument has been properly calibrated	☒
Note: The equipment does not require a data entry sheet, so only one page will print out.	

Filing: Field file

Signature:

Control number:	PET-WL-25	Project number:	12580314
Date (mm/dd/yyyy):	08/09/2022	Project name:	Consolidated Fastfrate HydroG Assessment
User (print name):	Jason Geraldi	Location:	301 Somme Street, Ottawa

Additional equipment control numbers and descriptions: Heron Instruments, Dipper-T 100 m, S/N 4009-T

Field procedure before use:

	Check when completed
• Check for broken or missing parts.	
• Check battery	☒
• Check operation of buzzer.	☒
• Check operation of signal light.	☒
• Test probe in water to ensure unit operates, both visually and audibly.	☒
• Check cable.	☒

Filing: Field file

Signature:

Control number:	PET-WL-34	Project number:	12580314
Date (mm/dd/yyyy):	08/09/2022	Project name:	Consolidated Fastfrate HydroG Assessment
User (print name):	Jason Geraldi	Location:	301 Somme Street, Ottawa

Additional equipment control numbers and descriptions: Waterra, WS-2 Closed Reel, S/N WS2-00518

Field procedure before use:

	Check when completed
• Check for broken or missing parts.	
• Check battery	☒
• Check operation of buzzer.	☒
• Check operation of signal light.	☒
• Test probe in water to ensure unit operates, both visually and audibly.	☒
• Check cable.	☒

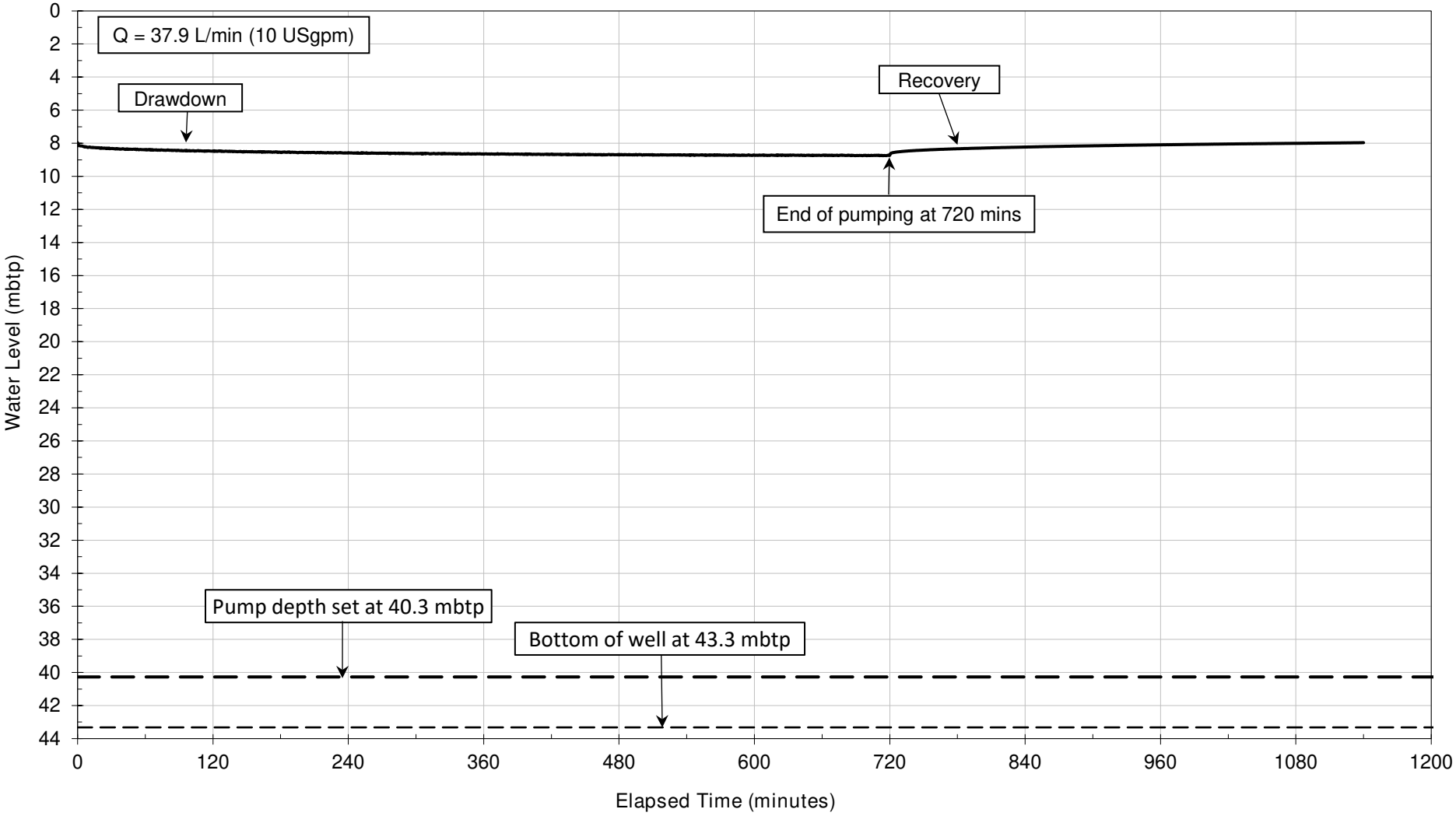
Filing: Field file

Signature:

Appendix E

Aquifer Performance Testing

PUMP HISTORY CURVE
Well A342117: August 9-10, 2022



PUMP HISTORY CURVE

Drilled Water Well
MECP Well ID: A342117
Static Level = 7.96 mbtp (7.31 mbgs)

Note: m = metres; mbtp = metres below top of pipe; mbgs = metres below ground surface

DATE: SEPTEMBER 2022

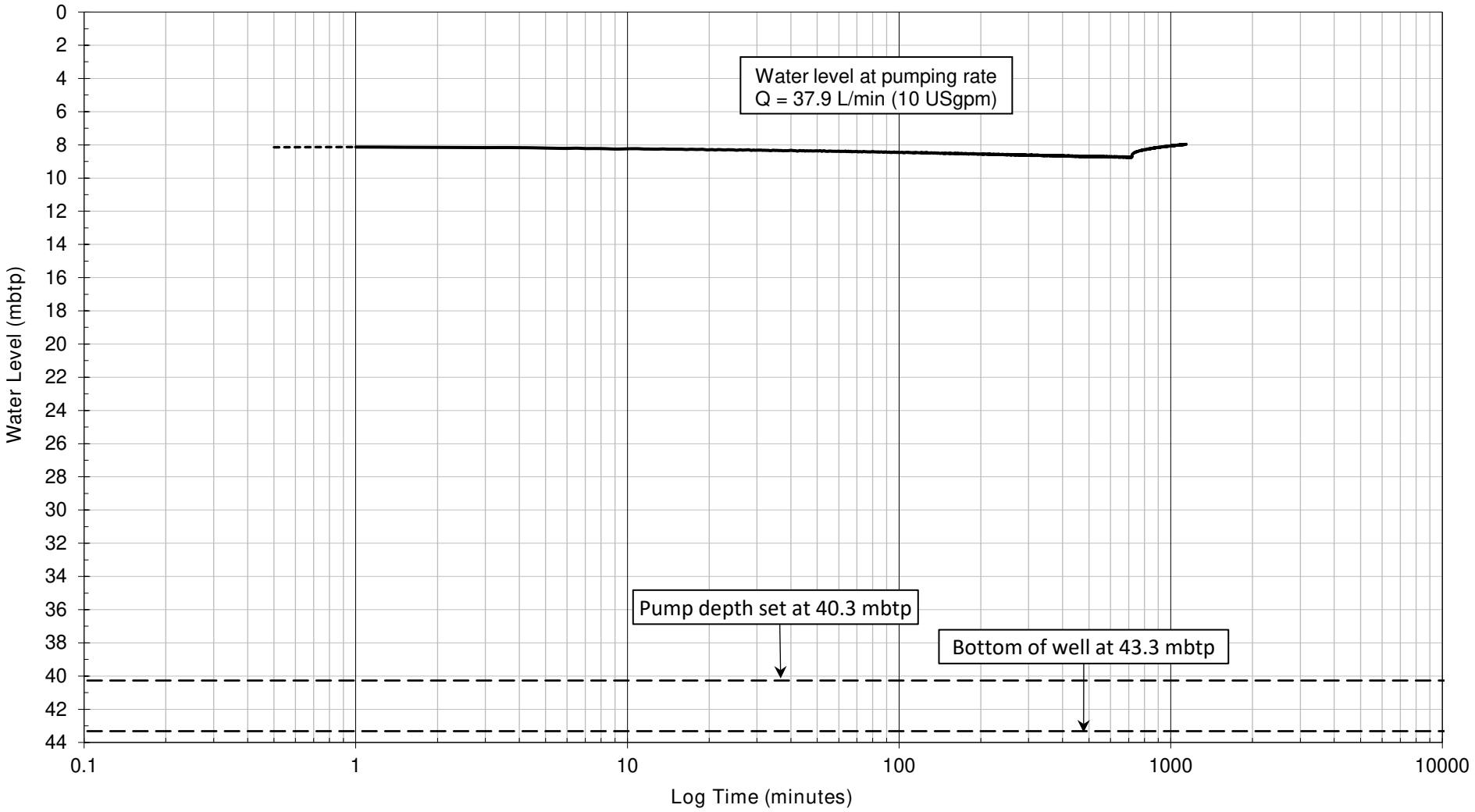
LOCATION: 301 Somme Street, Ottawa, ON

JOB NUMBER: 12580314-01

DRAWING NUMBER: E-1

347 PIDO ROAD, UNIT 29
PETERBOROUGH, ON K9J 6X7
www.ghd.com

CONSTANT RATE TEST: WATER LEVEL vs LOG TIME
Well A342117: August 9-10, 2022



CONSTANT RATE

Drilled Water Well
MECP Well ID: A342117
Static Level = 7.96 mbtp (7.31 mbgs)

Note: m = metres; mbtp = metres below top of pipe; mbgs = metres below ground surface

DATE: SEPTEMBER 2022

LOCATION: 301 Somme Street, Ottawa, ON

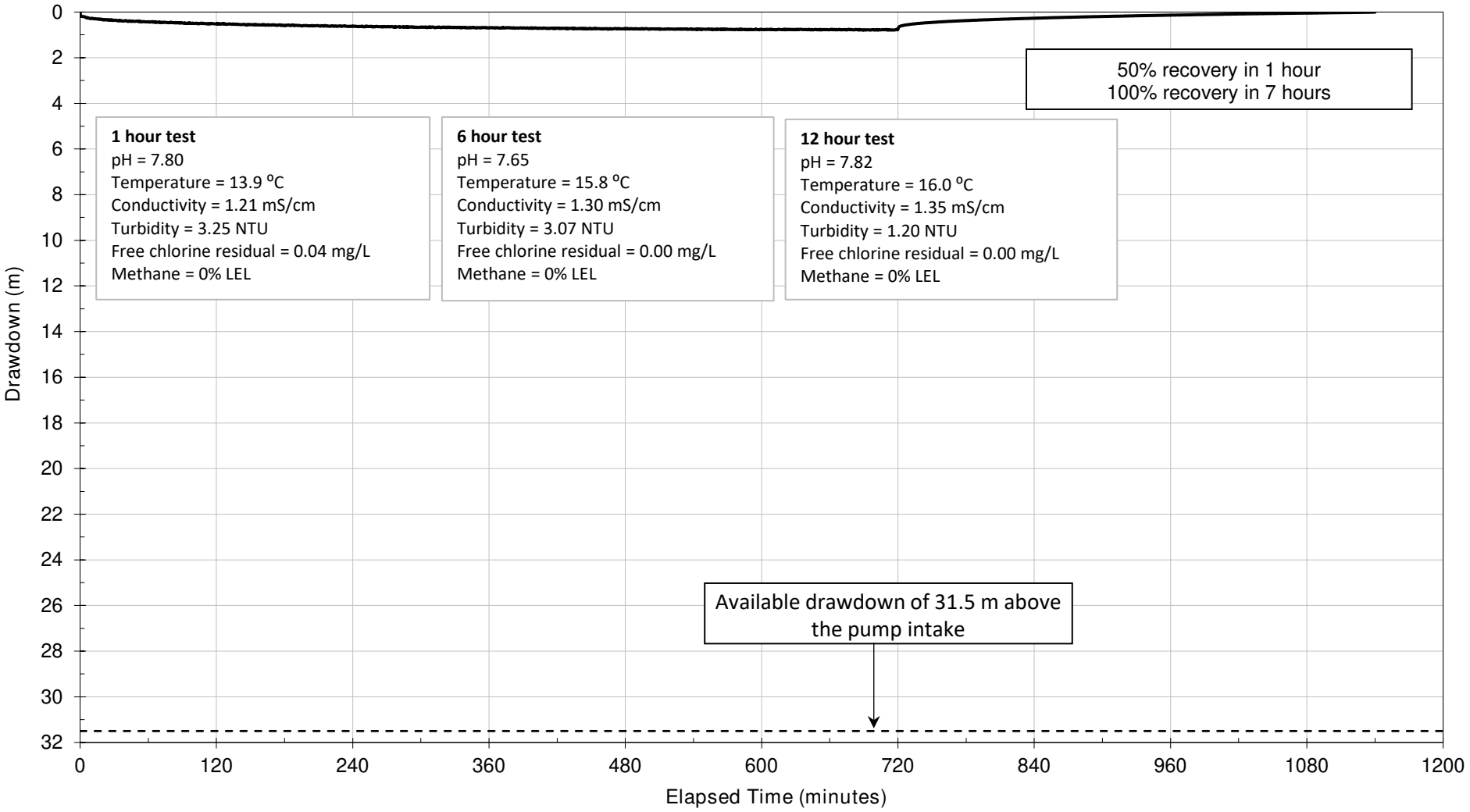
JOB NUMBER: 12580314-01

DRAWING NUMBER: E-2

GHD

347 PIDO ROAD, UNIT 29
PETERBOROUGH, ON K9J 6X7
www.ghd.com

CONSTANT RATE DRAWDOWN, RECOVERY AND TESTING DETAILS
Well A342117: August 9-10, 2022



CONSTANT RATE DRAWDOWN

Drilled Water Well
MECP Well ID: A342117
Static Level = 7.96 mbtp (7.31 mbgs)

Note: m = metres; mbtp = metres below top of pipe; mbgs = metres below ground surface

DATE: SEPTEMBER 2022

LOCATION: 301 Somme Street, Ottawa, ON

JOB NUMBER: 12580314-01

DRAWING NUMBER: E-3

GHD

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PETERBOROUGH, ON K9J 6X7
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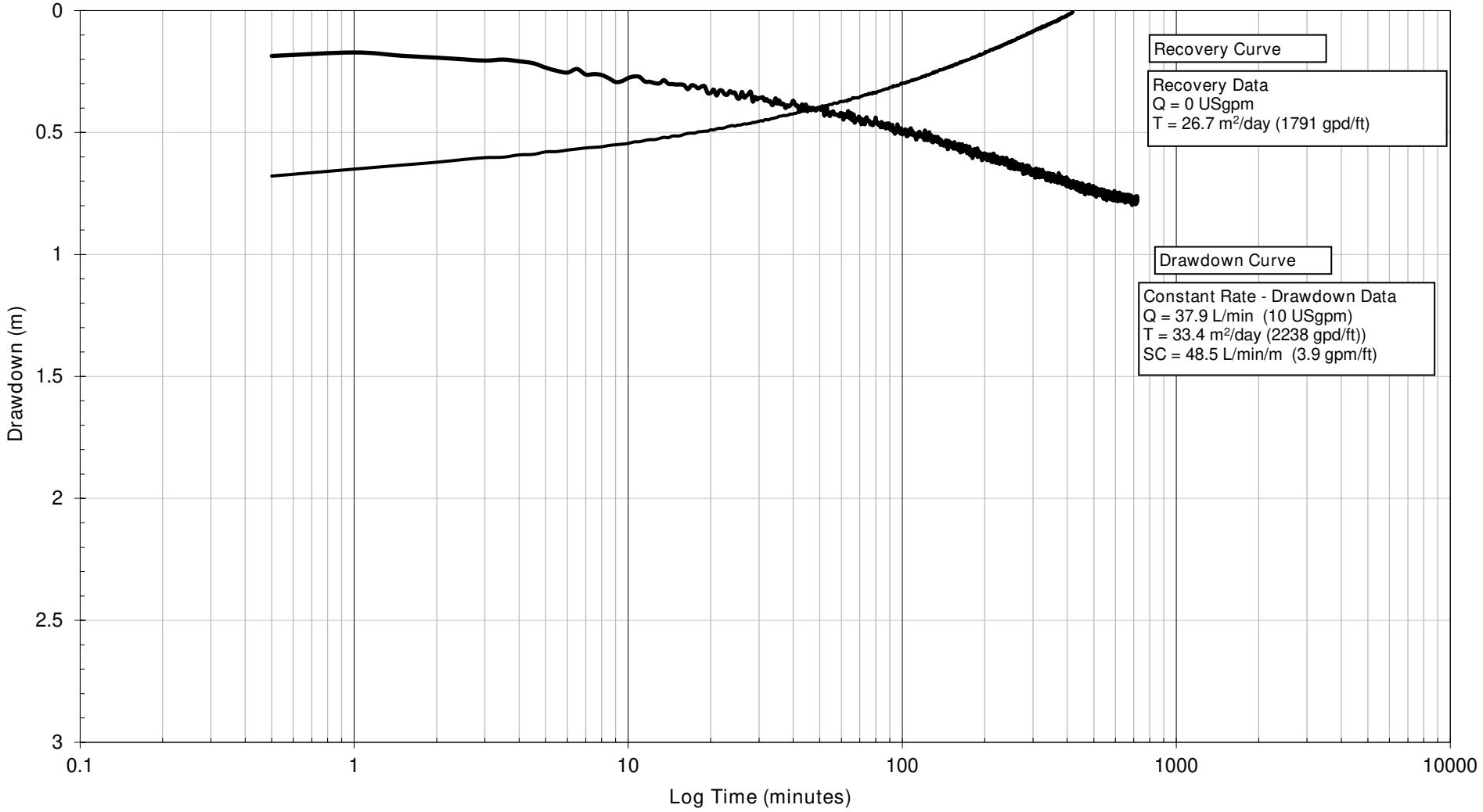
CONSTANT RATE: DRAWDOWN and RECOVERY VS LOG TIME
Well A342117: August 9-10, 2022



TRANSMISSIVITY

Drilled Water Well
MECP Well ID: A342117
Static Level = 7.96 mbtp (7.31 mbgs)

Note: m = metres; mbtp = metres below top of pipe; mbgs = metres below ground surface

DATE: SEPTEMBER 2022

LOCATION: 301 Somme Street, Ottawa, ON

JOB NUMBER: 12580314-01

DRAWING NUMBER: E-4

GHD

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Appendix F

Water Well Certificates of Analyses

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : 12580314-01

17-August-2022

GHD Limited - 735
Attn : Jason Geraldi

347 Pido Rd., Unit #29
Peterborough, ON
K9J 6Z8, Canada

Phone: 705-749-3317
Fax:705-749-9248

Date Rec. : 10 August 2022
LR Report: **CA15144-AUG22**
Reference: PO#:735-003858, 12580314-01, Jason Geraldi

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: A342117 12hr
Sample Date & Time					09-Aug-22 19:07
Temp Upon Receipt [°C]	***	***	***	***	***
Total Coliform [cfu/100mL]	11-Aug-22	14:01	15-Aug-22	15:25	3
E.coli [cfu/100mL]	11-Aug-22	14:01	15-Aug-22	15:25	0
Fecal Coliform [cfu/100mL]	11-Aug-22	14:01	15-Aug-22	15:25	0
Background [cfu/100mL]	11-Aug-22	14:01	15-Aug-22	15:25	33
HPC [cfu/1mL]	11-Aug-22	14:01	15-Aug-22	15:25	55

MAC – Maximum Acceptable Concentration
AO/OG – Aesthetic Objective / Operational Guideline
NR – Not reportable under applicable drinking water regulations as per client.

Temperature of Sample upon Receipt: 13 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 024625

Jill Campbell

Jill Campbell, B.Sc.,GISAS
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003013908

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Phone: 705-652-2000 FAX: 705-652-6365

GHD Limited - 735
Attn : Jason Geraldi

347 Pido Rd., Unit #29
Peterborough, ON
K9J 6Z8, Canada

Phone: 705-749-3317
Fax:705-749-9248

Project : 12580314-01

22-September-2022

Date Rec. : 10 August 2022
LR Report: **CA15142-AUG22**
Reference: PO#:735-003858, 12580314-01, Jason Geraldi

Copy: 2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: AO/OG	7: A342117 1hr	8: A342117 6hr	9: A342117 12hr
Sample Date & Time							09-Aug-22 08:07	09-Aug-22 13:07	09-Aug-22 19:07
Temp Upon Receipt [°C]	***	***	***	***	***	***	***	***	***
Tannin+Lignin [mg phenol/L]	16-Aug-22	13:12	17-Aug-22	13:09			0.32	0.34	0.40
Alkalinity [mg/L as CaCO3]	15-Aug-22	15:41	17-Aug-22	12:21	---	30-500	265	261	261
CO3 [mg/L as CaCO3]	15-Aug-22	15:41	17-Aug-22	12:21	---	---	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	15-Aug-22	15:41	24-Aug-22	10:32			265	261	261
Temperature @ pH [°C]	15-Aug-22	15:41	24-Aug-22	10:32			21.9	21.7	20.5
pH [No unit]	15-Aug-22	15:41	17-Aug-22	12:21	---	6.5-8.5	8.14	8.20	8.23
Conductivity [uS/cm]	15-Aug-22	15:41	17-Aug-22	12:21			1180	1290	1350
TDS [mg/L]	15-Aug-22	08:47	17-Aug-22	12:04			763	914	914
Colour [TCU]	15-Aug-22	11:22	16-Aug-22	12:52			3	< 3	< 3
Turbidity [NTU]	10-Aug-22	17:53	11-Aug-22	09:56	1	5	2.50	2.89	4.21
Organic N [mg/L]	15-Aug-22	16:28	19-Aug-22	14:07			< 0.05	< 0.05	< 0.05
TKN [as N mg/L]	15-Aug-22	16:28	17-Aug-22	09:37	---	---	0.18	0.17	0.16
NH3+NH4 [as N mg/L]	18-Aug-22	19:31	19-Aug-22	14:07			0.19	0.17	0.17
NO2 [as N mg/L]	16-Aug-22	11:08	16-Aug-22	13:46	1	---	<0.003	<0.003	<0.003
NO3 [as N mg/L]	16-Aug-22	11:08	16-Aug-22	13:46	10	---	<0.006	<0.006	<0.006
NO2+NO3 [as N mg/L]	16-Aug-22	11:08	16-Aug-22	13:46			<0.006	<0.006	<0.006
Cl [mg/L]	17-Aug-22	14:11	18-Aug-22	16:18			62	66	68

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SGS Canada Inc.
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Project : 12580314-01
LR Report : CA15142-AUG22

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: AO/OG	7: A342117 1hr	8: A342117 6hr	9: A342117 12hr
SO4 [mg/L]	17-Aug-22	14:37	18-Aug-22	16:18			300	370	400
DOC [mg/L]	15-Aug-22	12:00	16-Aug-22	08:37			2	2	2
Hardness [mg/L as CaCO3]	16-Aug-22	11:55	22-Aug-22	10:47			453	500	511
Al (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			0.016	0.004	0.001
Al (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:47	---	0.1	< 0.001	< 0.001	< 0.001
As (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			0.0006	0.0006	0.0005
As (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:47	0.025	---	0.0006	0.0004	0.0004
B (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			0.188	0.192	0.194
B (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:47	5	---	0.199	0.216	0.216
Ba (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			0.08335	0.08734	0.09029
Ba (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:47	1	---	0.09451	0.09889	0.09880
Be (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			< 0.000007	< 0.000007	< 0.000007
Be (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:47	---	---	< 0.000007	< 0.000007	0.000011
Co (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			0.000100	0.000084	0.000061
Co (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:47	---	---	0.000094	0.000091	0.000082
Ca (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:03			135	156	161
Ca (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	---	---	103	112	117
Cd (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.000016	0.000025	0.000021
Cd (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	0.005	---	0.000016	0.000017	0.000020
Cu (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.0006	0.0003	< 0.0002
Cu (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	---	1	< 0.0002	< 0.0002	< 0.0002
Cr (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.00040	0.00035	0.00010
Cr (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	0.05	---	0.00012	< 0.00008	< 0.00008
Fe (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.653	0.881	0.656
Fe (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48			0.369	0.276	0.481
K (tot) [mg/L]	16-Aug-22	11:55	22-Sep-22	12:28	---	---	8.73	9.15	9.50
K (diss) [mg/L]	16-Aug-22	11:55	22-Sep-22	12:53	---	---	7.16	7.56	7.39
Mg (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			58.5	66.0	69.8
Mg (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48			47.8	53.4	53.5
Mn (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.172	0.187	0.192
Mn (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48			0.175	0.173	0.171
Mo (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.02270	0.03083	0.03435
Mo (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	---	---	0.02195	0.02931	0.03188
Ni (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			0.0007	0.0007	0.0006
Ni (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	---	---	0.0014	0.0013	0.0012
Na (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			60.4	64.3	67.6

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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : 12580314-01
LR Report : CA15142-AUG22

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: AO/OG	7: A342117 1hr	8: A342117 6hr	9: A342117 12hr
Na (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	20*	200	54.5	57.4	57.0
Pb (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			< 0.00009	< 0.00009	< 0.00009
Pb (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:48	0.01	---	< 0.00009	< 0.00009	< 0.00009
Ag (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			< 0.00005	< 0.00005	< 0.00005
Ag (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	---	---	< 0.00005	< 0.00005	< 0.00005
Sr (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			5.66	6.35	6.65
Sr (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	---	---	5.15	5.91	5.92
Tl (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:04			< 0.000005	< 0.000005	< 0.000005
Tl (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	---	---	< 0.000005	< 0.000005	< 0.000005
Sb (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:05			< 0.0009	< 0.0009	< 0.0009
Sb (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	0.006	---	< 0.0009	< 0.0009	< 0.0009
Se (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:05			< 0.00004	< 0.00004	< 0.00004
Se (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	0.01	---	0.00015	0.00020	0.00011
U (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:05			0.000166	0.000201	0.000204
U (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	0.02	---	0.000219	0.000227	0.000219
V (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:05			0.00021	0.00016	0.00014
V (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	---	---	0.00011	0.00008	0.00009
Zn (tot) [mg/L]	16-Aug-22	11:55	17-Aug-22	14:05			< 0.002	< 0.002	< 0.002
Zn (diss) [mg/L]	16-Aug-22	11:55	22-Aug-22	10:49	---	5	< 0.002	< 0.002	< 0.002
Cation Sum [meq/L]					---	---	14.37	16.23	16.93
Anion Sum [meq/L]					---	---	13.29	14.78	15.46
Anion-Cation Balance [% difference]					---	---	3.9	4.67	4.53
Ion Ratio					---	---	1.08	1.1	1.09
TDS (calculated) [mg/L]					---	---	775	879	923
Conductivity (calc) [uS/cm]					---	---	1383	1550	1619
Langelier's Index [@ 4° C]					---	---	0.7	0.81	0.85
Saturation pH [pHs @ 4°C]					---	---	7.44	7.39	7.38
Ryznar Stability Ind [no unit]	09-Sep-22	10:04	09-Sep-22	10:04	---	---	6.4	6.2	6.2

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Total phospuorous includes all Ortho-phosphates as well as Organics and hydrolyzable Phosphorous.

Temperature of Sample upon Receipt: 13 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

OnLine LIMS
0003057687

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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

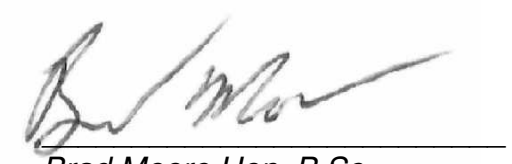
Project : 12580314-01
LR Report : **CA15142-AUG22**

Chain of Custody Number: 015249

Ryzner Stabuility Index calculated as per the following link with an assumed water temperatur of 20 °C.

https://www.lenntech.com/calculators/ryznar/index/ryznar.htm

Revision 1 - total and dissolved potassium data included. Only dissolved hardness reported



Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety

OnLine LIMS

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Project : 12580314-01

18-August-2022

GHD Limited - 735
Attn : Jason Geraldi

347 Pido Rd., Unit #29
Peterborough, ON
K9J 6Z8, Canada

Phone: 705-749-3317
Fax:705-749-9248

Date Rec. : 10 August 2022
LR Report: **CA15143-AUG22**
Reference: PO#:735-003858, 12580314-01, Jason Geraldi

Copy: 1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Date Extracted / Digested	3: Analysis Completed Date	6: RL	7: A342117 12hr
Sample Date & Time				09-Aug-22 19:07
1.1.8 PAHs (sVOC)	***	***	***	***
Acenaphthene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Acenaphthylene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Anthracene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Benzo(a)anthracene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Benzo(a)pyrene [µg/L]	15-Aug-22	17-Aug-22	0.01	< 0.01
Benzo(b+j)fluoranthe [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Benzo(ghi)perylene [µg/L]	15-Aug-22	17-Aug-22	0.2	< 0.2
Benzo(k)fluoranthene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Chrysene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Dibenzo(a,h)anthrace [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Fluoranthene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Fluorene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Indeno(1,2,3-cd)pyre [µg/L]	15-Aug-22	17-Aug-22	0.2	< 0.2
1-Methylnaphthalene [µg/L]	15-Aug-22	17-Aug-22	0.5	< 0.5
2-Methylnaphthalene [µg/L]	15-Aug-22	17-Aug-22	0.5	< 0.5
Methylnaphthalene, 2 [µg/L]	15-Aug-22	17-Aug-22	0.5	< 0.5
Naphthalene [µg/L]	15-Aug-22	17-Aug-22	0.5	< 0.5
Phenanthrene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Pyrene [µg/L]	15-Aug-22	17-Aug-22	0.1	< 0.1
Surrogates - SVOCs	***	***	***	***
Surr 2-Methylnaphtha [Surr Rec %]	15-Aug-22	17-Aug-22		86
Surr Fluoranthene-D1 [Surr Rec %]	15-Aug-22	17-Aug-22		97
Surr 2-Fluorobipheny [Surr Rec %]	15-Aug-22	17-Aug-22		82
Surr 4-Terphenyl-d14 [Surr Rec %]	15-Aug-22	17-Aug-22		92

OnLine LIMS

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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : 12580314-01
LR Report : CA15143-AUG22

Analysis	1: Date Extracted / Digested	3: Analysis Completed Date	6: RL	7: A342117 12hr
1.1.10 VOC	***	***	***	***
Acetone [µg/L]	13-Aug-22	15-Aug-22	30	< 30
Bromomethane [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Carbon tetrachloride [µg/L]	13-Aug-22	15-Aug-22	0.2	< 0.2
Chlorobenzene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Chloroform [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,2-Dichlorobenzene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,3-Dichlorobenzene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,4-Dichlorobenzene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Dichlorodifluorometh [µg/L]	13-Aug-22	15-Aug-22	2	< 2
1,1-Dichloroethane [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,2-Dichloroethane [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,1-Dichloroethylene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
trans-1,2-Dichloroet [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
cis-1,2-Dichloroethe [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,2-Dichloropropane [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
cis-1,3-Dichloroprop [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
trans-1,3-Dichloropr [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,3-dichoropropene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Ethylenedibromide [µg/L]	13-Aug-22	15-Aug-22	0.2	< 0.2
n-Hexane [µg/L]	13-Aug-22	15-Aug-22	1	< 1
MEK [µg/L]	13-Aug-22	15-Aug-22	20	< 20
MIBK [µg/L]	13-Aug-22	15-Aug-22	20	< 20
MtBE [µg/L]	13-Aug-22	15-Aug-22	2	< 2
Methylene Chloride [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Styrene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Tetrachloroethylene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,1,1,2-Tetrachloroe [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,1,2,2-Tetrachloroe [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,1,1-Trichloroethan [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1,1,2-Trichloroethan [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Trichloroethylene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Trichlorofluorometha [µg/L]	13-Aug-22	15-Aug-22	5	< 5
Vinyl Chloride [µg/L]	13-Aug-22	15-Aug-22	0.2	< 0.2
1.1.11 BTEX	***	***	***	***
Benzene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Ethylbenzene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Toluene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Xylene (total) [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
m-p-xylene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
o-xylene [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
1.1.9 THMs (VOC)	***	***	***	***

OnLine LIMS

0003015254

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Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : 12580314-01
LR Report : **CA15143-AUG22**

Analysis	1: Date Extracted / Digested	3: Analysis Completed Date	6: RL	7: A342117 12hr
Bromodichloromethane [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Bromoform [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Dibromochloromethane [µg/L]	13-Aug-22	15-Aug-22	0.5	< 0.5
Surrogates (VOCs)	***	***	***	***
Surr 1,2-Dichloroeth [Surr Rec %]	13-Aug-22	15-Aug-22		101
Surr 2-Bromo-1-Chlor [Surr Rec %]	13-Aug-22	15-Aug-22		85
Surr 4-Bromofluorobe [Surr Rec %]	13-Aug-22	15-Aug-22		90
1.1.6 PHCs	***	***	***	***
F1 (C6-C10) [µg/L]	12-Aug-22	15-Aug-22	25	< 25
F1-BTEX (C6-C10) [µg/L]	12-Aug-22	15-Aug-22		< 25
F2 (C10-C16) [µg/L]	15-Aug-22	18-Aug-22	100	< 100
F3 (C16-C34) [µg/L]	15-Aug-22	18-Aug-22	200	< 200
F4 (C34-C50) [µg/L]	15-Aug-22	18-Aug-22	200	< 200
Baseline at nC50 [Yes / No]	15-Aug-22	18-Aug-22		YES

CCME Method Compliance: Analyses were conducted using analytical procedures that comply with the Reference Method for the CWS for Petroleum Hydrocarbons in Soil and have been validated for use at the SGS laboratory, Lakefield, ON site.

Quality Compliance: Instrument performance / calibration quality criteria were met and extraction and analysis limits for holding times were met.
nC6 and nC10 response factors within 30% of response factor for toluene: YES
nC10, nC16 and nC34 response factors within 10% of the average response for the three compounds: YES
C50 response factors within 70% of nC10 + nC16 + nC34 average: YES
Linearity is within 15%: YES

Benzo(b)fluoranthene results for comparison to the standard are reported as benzo(b+j)fluoranthene. Benzo(b)fluoranthene and benzo(j)fluoranthene co-elute and cannot be reported individually by the analytical method used.

Temperature of Sample upon Receipt: 13 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 024624

Methylene Chloride LCS; Recovery is outside control limits; the overall quality control for this analysis has been assessed and was determined to be acceptable.
Acetone matrix spike; recovery for this parameter is outside control limits; the overall quality control for this analysis has been assessed and was determined to be acceptable.

F3(C16-C34) Dup RPD is outside control limits. The average of the two duplicates is less than five times the RL, therefore greater uncertainty is expected.

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SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : 12580314-01

LR Report : **CA15143-AUG22**

Jill Campbell, B.Sc.,GISAS
Project Specialist,
Environment, Health & Safety

OnLine LIMS

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FINAL REPORT

CA14875-SEP22 R1

12580314-01

Prepared for

GHD Limited - 735

FINAL REPORT

First Page

CLIENT DETAILS

Client	GHD Limited - 735
Address	347 Pido Rd., Unit #29 Peterborough, ON K9J 6Z8. Canada
Contact	Jason Geraldi
Telephone	705-749-3317
Facsimile	705-749-9248
Email	Jason.Geraldi@ghd.com
Project	12580314-01
Order Number	
Samples	Ground Water (3)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA14875-SEP22
Received	09/21/2022
Approved	09/27/2022
Report Number	CA14875-SEP22 R1
Date Reported	09/27/2022

COMMENTS

MAC - Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
NR - Not reportable under applicable Provincial drinking water regulations as per client.

Temperature of Sample upon Receipt: 13 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 015249

SIGNATORIES

Brad Moore Hon. B.Sc

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Annexes..... 8

Client: GHD Limited - 735
Project: 12580314-01
Project Manager: Jason Geraldi
Samplers: Jason Geraldi

MATRIX: WATER

L1 = ODWS_AO_OG / WATER / - - Table 4 - Drinking Water - Reg O.169_03

L2 = ODWS_MAC / WATER / - - Table 1,2 and 3 - Drinking Water - Reg O.169_03

				Sample Number	7	8	9
				Sample Name	A342117 1HR	A342117 6HR	A342117 12HR
				Sample Matrix	Ground Water	Ground Water	Ground Water
				Sample Date	09/08/2022	09/08/2022	09/08/2022
Parameter	**Units**	**RL**	**L1**	**L2**	**Result**	**Result**	**Result**
General Chemistry							
Hydrogen Sulphide	mg/L	0.02	0.05		< 0.02	< 0.02	< 0.02
Metals and Inorganics							
Sulphide	mg/L	0.02			< 0.02	< 0.02	< 0.02
Other (ORP)							
Mercury (dissolved)	mg/L	0.00001		0.001	< 0.00001	< 0.00001	< 0.00001

EXCEEDANCE SUMMARY

No exceedances are present above the regulatory limit(s) indicated

QC SUMMARY

Mercury by CVAAS

Method: EPA 7471A/SM 3112B | Internal ref.: ME-CA-[ENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (dissolved)	EHG0048-SEP22	mg/L	0.00001	< 0.00001	ND	20	101	80	120	121	70	130

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENVISFA-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphide	SKA0224-SEP22	mg/L	0.02	<0.02	ND	20	100	80	120	NA	75	125

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
↑ Reporting limit raised.
↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Results relate only to the sample tested.
Data reported represent the sample as submitted to SGS. Solid samples expressed on a dry weight basis.
"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.
Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated.

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This report supersedes all previous versions.

-- End of Analytical Report --

Appendix G

MacLellan Water Treatment Recommendations

MACLELLAN
WATER TREATMENT AND PUMPS

Telephone: (613) 386-0550
Toll-Free: 1-800-200-0865
Fax: 613-386-9889
Website: www.mwater.ca
Email: info@mwater.ca

Address: 388 Millhaven Road
P.O. Box 392
Odessa, ON K0H 2H0

Report for GHD – Ottawa Warehouse Project

September 21, 2022

Introduction

This report has been prepared based on water quality information that was provided to MacLellan Water. The principal purpose of this report is to make recommendations for a water treatment system for the warehouse facility. Maximum was use is estimated at 10 000 L per day although 5000 L per day is expected to be a more typical use.

Water Quality

Several sets of water quality information were provided, corresponding to samples collected at different times during pumping of the well. Although there was some variation among the samples, the results were broadly similar. We have used the last set of samples when discussing specific numbers in this report. The following parameters returned noteworthy values:

Turbidity

Turbidity is a measure of the “cloudiness” of the water. Turbidity is a concern because the materials that cause turbidity can interfere with disinfection efforts. The operational limit for turbidity is 1 NTU. The turbidity of this water was measured at 4.21 NTU.

Hardness

Water is considered hard when the hardness exceeds 100 mg/L. This water was measured with a hardness of 689 mg/L.

Iron

The aesthetic limit for iron is 0.3 mg/L. Above this limit, it can cause problems with colour, staining, and taste in the water. The concentration of iron in this water was measured at 0.481 mg/L. A further 0.175 mg/L of iron was present in a form where it is bound up with organic matter.

Manganese

The aesthetic limit for manganese is 0.05 mg/L. Above this limit, it can cause problems with colour, staining, and taste similar to those caused by iron. The concentration of manganese in this water was measured at 0.171 mg/L.

Sodium

People consuming water with a sodium content above 20 mg/L are encouraged to inform their physician. This is so that the physician can take the sodium content of the drinking water into consideration should it ever become necessary to prescribe a low sodium diet for medical reasons.

Above 200 mg/L sodium has a negative aesthetic effect in that it imparts a disagreeable, salty tang to the water.

The concentration of sodium in this water was measured at 67.6 mg/L.

Langelier's Index

The Langelier's Index (LI) is a calculation that assesses the "character" of the water. Water with an LI below -0.5 is aggressive and will tend to corrode metal pipes, fixtures, and appliances. Water with an LI from -0.5 to +0.5 is neutral. Water with an LI of more than +0.5 will tend to form hard water scale at an appreciably accelerated rate.

The LI is temperature dependent. The LI of this water was calculated at +0.85 at 4ºC. It will actually be even higher for water that has warmed up to room temperature while sitting inside the building.

Recommendations

The following items are presented for your consideration. It is assumed that they would be carried out at the appropriate time in the construction of the facility. MacLellan Water would be happy to provide price estimates to carry out the recommended work.

1. A submersible pump should be installed in the well and connected to the building with pipe and wire that are run inside protective conduit. An appropriate pressure system will need to be installed inside the building.

2. A filtration system for iron should be installed. There are a number of options for this, but the best would be a manganese greensand filter with chlorine regeneration. The filter will also remove a certain amount of manganese.

3. An activated carbon filter should be installed to both remove residual chlorine and organically-complexed metals.

4. A water softener should be used to soften the water. This will improve the aesthetics of the water. More importantly, it will protect the water disinfection system and water-using appliances (hot water tanks, etc.) in the facility from fouling due to hard water scale.

A twin alternating softener system will be used. With this system, one tank remains in service until its capacity is exhausted. The second tank then takes over softening duties while the first tank regenerates. This ensures an uninterrupted supply of softened water and allows the use of smaller, less expensive softening equipment than a single tank model.

5. Disinfection of the water will be provided with ultra violet (UV) disinfection. Depending on preferences for redundancy, this may involve one or two units. Depending on preferences, these may be fairly straight forward units or units equipped with sensors and automatic fail-safe shutoffs.

Regardless, the unit(s) will be sized to allow adequate flow to the facility and will be equipped with turbidity-reducing cartridge-style prefilters to screen out particles that bacteria might shelter behind while passing through the UV light.

6. The concentration of sodium in the water is already slightly high. The use of a water softener will increase the sodium content of the treated water by about 300 mg/L to a total of about 360 mg/L.

One or more point of use reverse osmosis (RO) units will be installed to remove sodium at locations (like lunch rooms) where people will actually consume the water. This is done in preference to treating all the water in the facility because the output of RO units is slow. The RO units will be equipped with small storage tanks so that pre-treated water will be ready on demand.

7. MacLellan Water will arrange a servicing schedule to ensure that all the equipment remains in proper working order.

Conclusion

We hope that this report contains all the information you require. Please do not hesitate to contact me with any questions. We would be happy to provide price estimates for this work once a few additional details have been established.

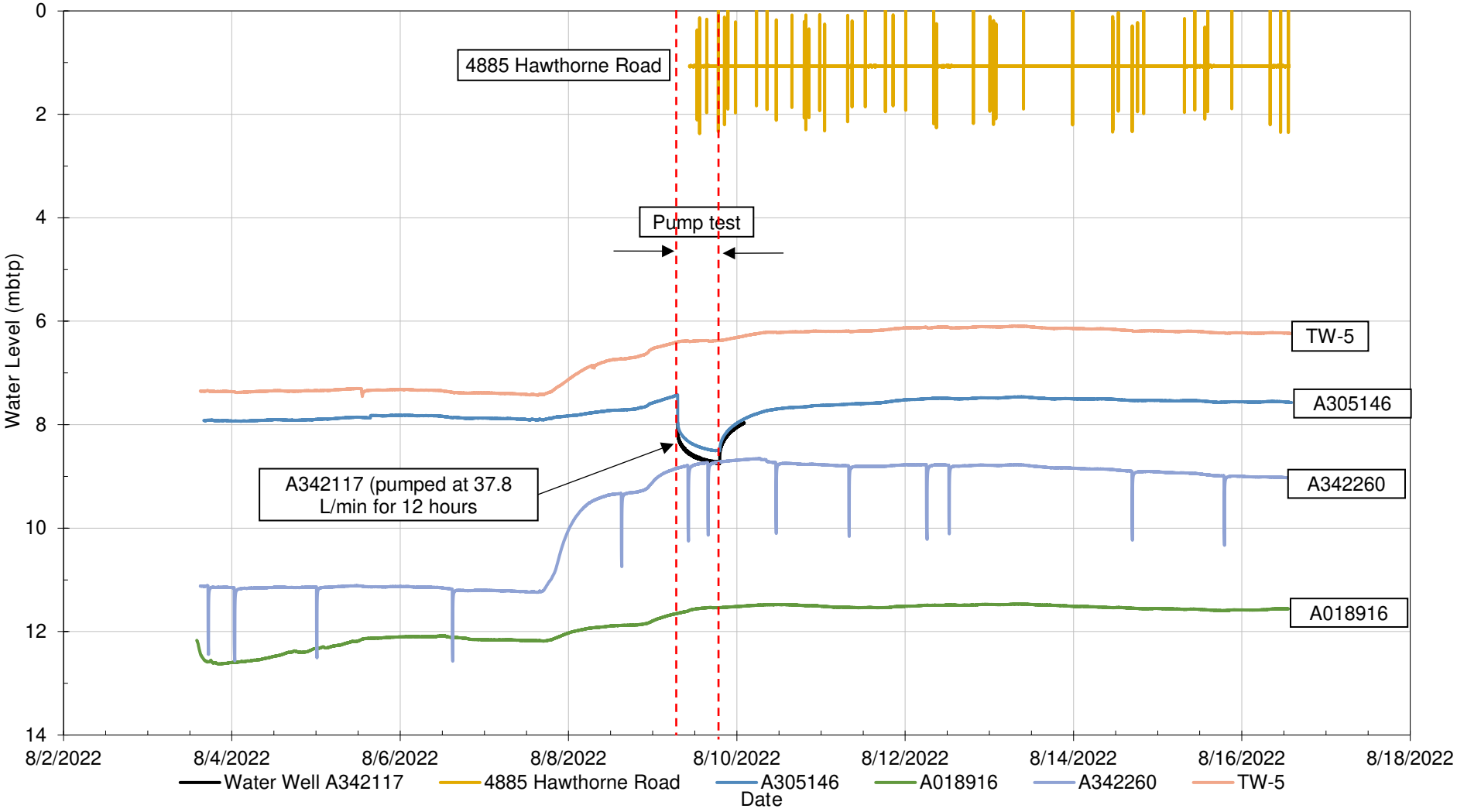
Sincerely,

William Vander Wilp
MacLellan Water Treatment and Pumps
1-800-200-0865 x 24

Appendix H

Observation Well Hydrographs

OBSERVATION WELL HYDROGRAPHS
August 3-18, 2022



Observation Well Water Levels

Drilled Water Well
MECP Well ID: A342117
Static Level = 7.96 mbtp (7.31 mbgs)

Note: m = metres; mbtp = metres below top of pipe; mbgs = metres below ground surface

DATE: SEPTEMBER 2022

LOCATION: 301 Somme Street, Ottawa, ON

JOB NUMBER: 12580314-01

DRAWING NUMBER: H-1

GHD

347 PIDO ROAD, UNIT 29
PETERBOROUGH, ON K9J 6X7
www.ghd.com

Appendix I

Storm Sewer Use Certificate of Analysis

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Monitoring Well MW22-1

Ottawa Storm Bylaw 2003-514

Project : 12580314-01

18-August-2022

GHD Limited - 735
Attn : Jason Geraldi

347 Pido Rd., Unit #29
Peterborough, ON
K9J 6Z8, Canada

Phone: 705-749-3317
Fax:705-749-9248

Date Rec. : 10 August 2022
LR Report: **CA15141-AUG22**
Reference: PO#:735-003858, 12580314-01, Jason Geraldi

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	3: Analysis Completed Date	5: Ottawa Storm By-law Limit	6: RL	7: Piezo
Sample Date & Time					09-Aug-22 18:00
Ecoli [cfu/100mL]	11-Aug-22	15-Aug-22	200	2	< 2
pH [No unit]	11-Aug-22	16-Aug-22	9	0.05	6.86
BOD5 [mg/L]	11-Aug-22	16-Aug-22	25	2	< 4
TSS [mg/L]	13-Aug-22	15-Aug-22	15	2	92
4AAP-Phenolics [mg/L]	12-Aug-22	15-Aug-22	0.008	0.002	0.003
CN(T) [mg/L]	11-Aug-22	12-Aug-22	0.02	0.01	< 0.01
Hg (tot) [mg/L]	15-Aug-22	16-Aug-22	0.0004	0.00001	0.00002
As (tot) [mg/L]	17-Aug-22	18-Aug-22	0.02	0.0002	0.0033
Cd (tot) [mg/L]	17-Aug-22	18-Aug-22	0.008	0.000003	0.000055
Cr (tot) [mg/L]	17-Aug-22	18-Aug-22	0.08	0.00008	0.00206
Cu (tot) [mg/L]	17-Aug-22	18-Aug-22	0.04	0.0002	0.0071
Pb (tot) [mg/L]	17-Aug-22	18-Aug-22	0.12	0.00001	0.00192
Mn (tot) [mg/L]	17-Aug-22	18-Aug-22	0.05	0.00001	1.37
Ni (tot) [mg/L]	17-Aug-22	18-Aug-22	0.08	0.0001	0.0046
P (tot) [mg/L]	17-Aug-22	18-Aug-22	0.4	0.003	0.156
Se (tot) [mg/L]	17-Aug-22	18-Aug-22	0.02	0.00004	0.00025
Ag (tot) [mg/L]	17-Aug-22	18-Aug-22	0.12	0.00005	< 0.00005
Zn (tot) [mg/L]	17-Aug-22	18-Aug-22	0.04	0.002	0.011
PCB (tot) [mg/L]	12-Aug-22	15-Aug-22	0.0004	0.0001	< 0.0001
PAHs (total) [mg/L]	16-Aug-22	17-Aug-22	0.006	---	0.001
7Hdibenzo(c,g)carbaz [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Anthracene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Benzo(a)anthracene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0002
Benzo(a)pyrene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0001

OnLine LIMS

0003016134

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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Ottawa Storm Bylaw 2003-514

Project : 12580314-01

LR Report : **CA15141-AUG22**

Analysis	1: Analysis Start Date	3: Analysis Completed Date	5: Ottawa Storm By-law Limit	6: RL	7: Piezo
Benzo(b+j)fluoranthe [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0002
Benzo[e]pyrene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0001
Benzo(ghi)perylene [mg/L]	16-Aug-22	17-Aug-22	---	0.0002	0.0003
Benzo(k)fluoranthene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Chrysene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Dibenzo(a,h)anthrace [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Dibenzo(a,i)pyrene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Dibenzo(a,j)acridine [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	< 0.0001
Fluoranthene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0002
Perylene [mg/L]	16-Aug-22	17-Aug-22	---	0.0005	< 0.0005
Phenanthrene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0001
Pyrene [mg/L]	16-Aug-22	17-Aug-22	---	0.0001	0.0002
Naphthalene [mg/L]	16-Aug-22	17-Aug-22	0.0064	0.0005	< 0.0005
Hexachlorobenzene [mg/L]	16-Aug-22	17-Aug-22	0.00004	0.0001	< 0.0001
Benzene [mg/L]	16-Aug-22	17-Aug-22	0.002	0.0005	< 0.0005
Chloroform [mg/L]	16-Aug-22	17-Aug-22	0.002	0.0005	< 0.0005
1,2-Dichlorobenzene [mg/L]	16-Aug-22	17-Aug-22	0.0056	0.0005	< 0.0005
1,4-Dichlorobenzene [mg/L]	16-Aug-22	17-Aug-22	0.0068	0.0005	< 0.0005
cis-1,2-Dichloroethe [mg/L]	16-Aug-22	17-Aug-22	0.0056	0.0005	< 0.0005
trans-1,3-Dichloropr [mg/L]	16-Aug-22	17-Aug-22	0.0056	0.0005	< 0.0005
Ethylbenzene [mg/L]	16-Aug-22	17-Aug-22	0.002	0.0005	< 0.0005
Methylene Chloride [mg/L]	16-Aug-22	17-Aug-22	0.0052	0.0005	< 0.0005
1,1,2,2-Tetrachloroe [mg/L]	16-Aug-22	17-Aug-22	0.017	0.0005	< 0.0005
Tetrachloroethylene [mg/L]	16-Aug-22	17-Aug-22	0.0044	0.0005	< 0.0005
Toluene [mg/L]	16-Aug-22	17-Aug-22	0.002	0.0005	< 0.0005
Trichloroethylene [mg/L]	16-Aug-22	17-Aug-22	0.0076	0.0005	< 0.0005
Xylene (total) [mg/L]	16-Aug-22	17-Aug-22	0.0044	0.0005	< 0.0005
m-p-xylene [mg/L]	16-Aug-22	17-Aug-22	---	0.0005	< 0.0005
o-xylene [mg/L]	16-Aug-22	17-Aug-22	---	0.0005	< 0.0005
Nonylphenol [mg/L]	15-Aug-22	17-Aug-22	0.001	0.001	< 0.001
Nonylphenol Ethoxyla [mg/L]	15-Aug-22	17-Aug-22	0.01	0.01	< 0.01
Nonylphenol diethoxy [mg/L]	15-Aug-22	17-Aug-22	---	0.01	< 0.01
Nonylphenol monoetho [mg/L]	15-Aug-22	17-Aug-22	---	0.01	< 0.01

RL - SGS Reporting Limit

Nonylphenol Ethoxylates is the sum of nonylphenol monoethoxylate and nonylphenol diethoxylate.

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Temperature of Sample upon Receipt: 10 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: 015194

OnLine LIMS

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Jill Campbell, B.Sc.,GISAS
Project Specialist,
Environment, Health & Safety

OnLine LIMS

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