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June 2, 2021
File: PH4146-LET.01 Revision 1

M.B. Ford Construction
10-203 Colonnade Road South
Ottawa, Ontario
K2E 7K3

Attention: **Chris Vaughan**

Subject: **Hydrogeological Report and Terrain Analysis**
2167 McGee Side Road
Carp, Ontario

Introduction

Further to your request, Paterson Group (Paterson) has conducted a Hydrogeological Report and Terrain Analysis in support of the proposed construction of a slab-on-grade commercial building which consists of office space and 2 warehouse units to be located within the southwest portion of the subject site at 2167 McGee Side Road in Carp, Ontario. The purpose of these works has been to determine the suitability of the water supply aquifer underlying the site to service the proposed development and the suitability of the soils to adequately attenuate sewage effluent through a Class 4 Sewage System.

Description of Proposed Property

The majority of the subject site is occupied by a gravel-surfaced parking area. The ground surface is relatively flat within the central portion of the site and slopes down at the eastern and southern boundaries of the subject site, where a culvert system is present. The subject site is bordered to the north by undeveloped, densely tree land, to the east by John Cavanaugh Drive, to the south by McGee Side Road and a commercial building to the west. The site is currently zoned as General Heavy Industrial (RG). The surrounding properties to the north and west are also zoned RG, while the properties to the east and south is zoned as a Rural Commercial (RC).

Field Program

As a means to demonstrate the adequacy of the aquifer underlying the subject lands, with respect to water quality and quantity, a new drilled well was constructed and tested. The new drilled well, with a Water Well Record (WWR) ID of A313110, is referred to as TW1 for the purpose of this assessment. TW1 has a 150 mm diameter steel casing extending to a depth of 17.7 m below ground surface (bgs). The total depth of the well was indicated to be 152.4 m bgs. According to the well record, grey to brown limestone bedrock was encountered at a depth of approximately 3.0 m bgs. Based upon available geological mapping, the drift thickness varies from 3 to 5 m bgs.

The new drilled well is located in the southwest corner of the property, adjacent to the proposed access lane off of McGee Side Road. Refer to attached Paterson Drawing PH4162 -2 - Site Plan for the well location. The new drilled well is fully accessible with the 150 mm diameter steel casing extending 0.42 m above the existing ground surface. The well stick-up meets the minimum height requirement as per Ontario Regulation 903.

As a means to evaluate the water supply aquifer intercepted by the well, the well was subjected to a 8 hour constant rate pumping test. Due to observed elevated turbidity of the water during the test, the 8 hour pumping test was subsequently extended by a duration of 1.5 hours, totalling 9.5 hours. The extended 9.5 hour pump test successfully demonstrated a reduction in the turbidity of the water. The pumping test was conducted on March 4, 2021 under the full-time supervision of Paterson personnel.

A submersible pump was provided by Air Rock Drilling Co. (Air Rock) for the 9.5 hour pumping test. A licensed water well technician (Air Rock) was retained to complete the necessary plumbing related activities. A discharge hose assembly with a gate valve was connected to the rented pump. The discharge line was placed at a sufficient distance to ensure that the discharge water was being directed away from the well. Upon completion of the test, the pump was removed and the well was disinfected by Air Rock.

The pumping test was carried out at a pumping rate of 12 L/min for a duration of 9.5 hours. During the pumping test, the pumping rate was periodically measured using the timed volume correlation method. The pump rate was maintained within 5% of the selected pump rate. The static water level was recorded manually and an electronic datalogger (VanEssen TD-Diver) was installed in the test well prior to the start of the pumping test. The data logger recorded water levels at 30 second intervals. In addition, manual water level readings were taken at periodic intervals during the test.

Recovery data was collected from the well following the completion of the pumping. The well was noted to have achieved 95% recovery approximately 2 hours and 35 minutes after the completion of the pumping.

Groundwater samples were collected at 4 hours and 9.5 hours after the start of pumping. Prior to collection of the groundwater samples, the free chlorine residual was verified to be 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.

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 the Eurofins laboratory in Ottawa. All samples were received by the laboratory within 24 hours of collection.

A series of field tests of the pumped water were carried out at the well head during the 9.5 hour pumping test. The parameters tested at the well head included: pH, total dissolved solids, conductivity, turbidity and temperature.

Aquifer Analysis

Water Quantity

Pumping test data was analyzed using AquiferTest Pro (v. 2016.1) aquifer analysis software package by Schlumberger Water Services. Drawdown data was measured using an electronic water level tape and an electronic datalogger unit.

TABLE 1:SUMMARY OF WATER SUPPLY AQUIFER CHARACTERISTICS OF TW1

AQUIFER PARAMETER	RESULT OF ANALYSIS
Transmissivity (m^2/day)	0.09
Pumping Rate (L/min)	12
Pre-test Static Water Level (m)	4.01
Post-test Water level (m)	41.30
Available Drawdown (m)	148.39
% Drawdown During Pumping Test	25.13
Specific Capacity (L/min/m drawdown)	0.32

The drawdown data was analyzed using the Theis (Theis, 1935) and the Theis Recovery methods of analysis. Aquifer transmissivity is estimated to be approximately 0.09 m^2/day.

The pumping test results show that TW1 has a high yield to support the water demands for the proposed building. Overall maximum drawdown at a constant pumping rate for a period of 9.5 hrs was approximately 37.29 m (25.13 % of the available drawdown). 95% recovery was achieved approximately 2.58 hours after the end of pumping. The total volume of water pumped during the 9.5 hour pumping test was approximately 6,840 L. This is approximately 1.3 times the maximum total daily design volume of water required to support the proposed commercial development (maximum 5,150 L/day). The total daily design sewage flow (TDDSF) volume was provided by D.B. Gray Engineering and is discussed in the Terrain Analysis portion of this report.

The suitability of the aquifer to supply the proposed commercial development was assessed using the methodology provided in MECP Procedure D-5-5 (MOEE, 1996).

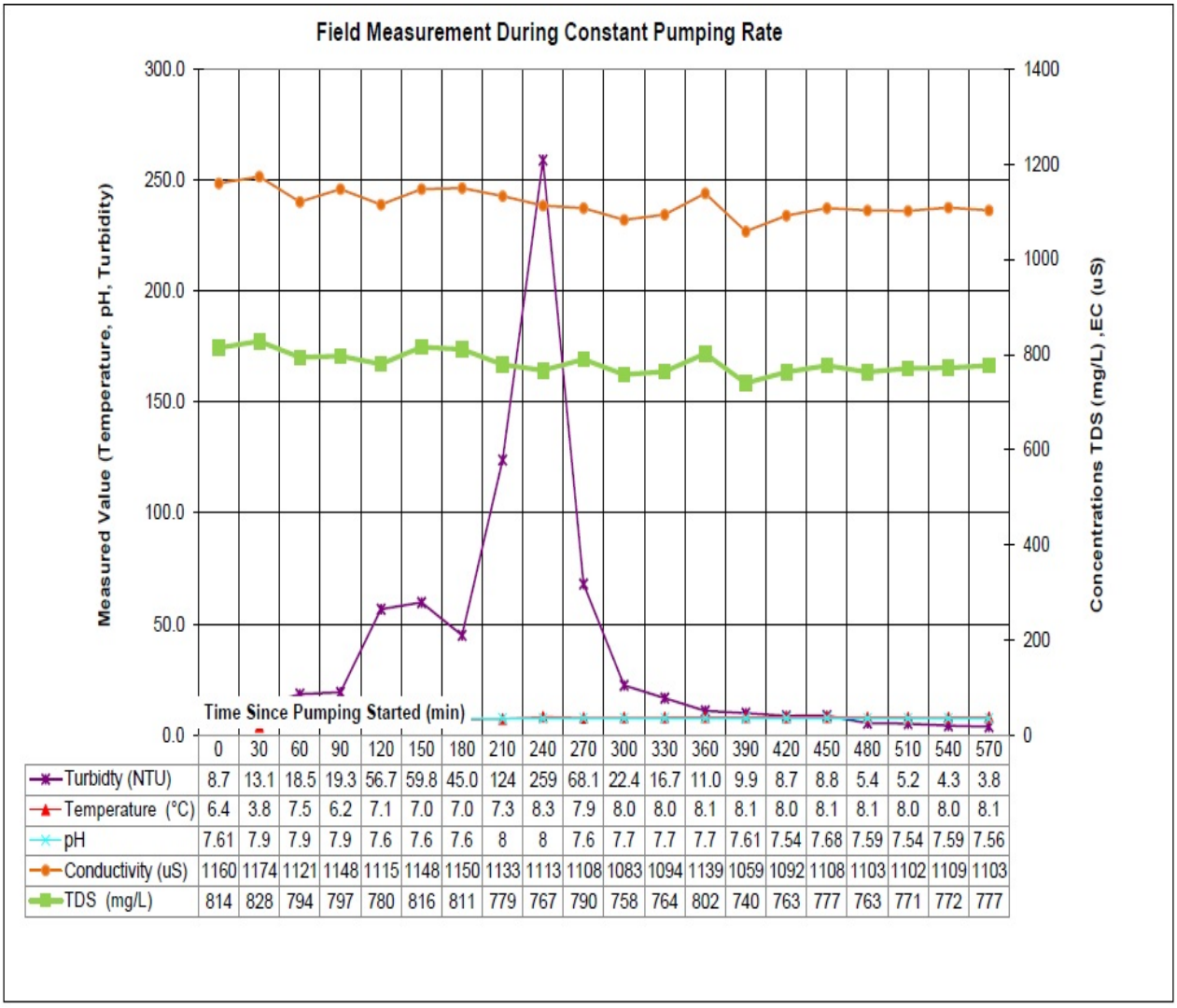
Based on the information summarized in Table 1, it is readily apparent that the new water supply well has intercepted an adequately strong water supply aquifer. It is considered to have sufficient quantity to service the proposed commercial development under typical usage, in addition to the neighboring buildings whose wells may intercept the same water supply aquifer.

The majority of the available water well records for the neighbouring properties on the MECP Well Record mapping website consist of agricultural use, commercial use, or public use well records. All surrounding WWR are attached to this report.

Water Quality

Field Data

Turbidity, electrical conductivity, total dissolved solids (TDS), pH and temperature were measured at the wellhead during the pumping test. The measurements and time intervals for each of these parameters are summarized on the graphical representation below. In addition, 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 samples.



Time Since Pumping Started (min)	0	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570
Turbidty (NTU)	8.7	13.1	18.5	19.3	56.7	59.8	45.0	124	259	68.1	22.4	16.7	11.0	9.9	8.7	8.8	5.4	5.2	4.3	3.8
Temperature (°C)	6.4	3.8	7.5	6.2	7.1	7.0	7.0	7.3	8.3	7.9	8.0	8.0	8.1	8.1	8.0	8.1	8.1	8.0	8.0	8.1
pH	7.61	7.9	7.9	7.9	7.6	7.6	7.6	8	8	7.6	7.7	7.7	7.7	7.61	7.54	7.68	7.59	7.54	7.59	7.56
Conductivity (uS)	1160	1174	1121	1148	1115	1148	1150	1133	1113	1108	1083	1094	1139	1059	1092	1108	1103	1102	1109	1103
TDS (mg/L)	814	828	794	797	780	816	811	779	767	790	758	764	802	740	763	777	763	771	772	777

Laboratory Data

The laboratory water quality obtained from the pumping test of TW1 is provided in Table 2 below and the laboratory analyses reports can be found attached.

TABLE 2: GROUNDWATER GEOCHEMISTRY (TW1)

PARAMETER	UNITS	ODWS		TW1	
		LIMIT	TYPE	GW1 (4 hr) 2021-03-05	GW2 (9.5 hr) 2021-03-05
MICROBIOLOGICAL					
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0	0
Total Coliforms	ct/100mL	0	MAC	0	0
GENERAL CHEMICAL - HEALTH RELATED					
Fluoride	mg/L	1.5(2.4)	MAC	0.15	0.14
N-NO2 (Nitrite)	mg/L	1	MAC	<0.10	<0.10
N-NO3 (Nitrate)	mg/L	10	MAC	<0.10	<0.10
Turbidity (Laboratory)	NTU	1.0 (5.0)	MAC/AO	>100	2.00
Turbidity (Field)	NTU	1.0 (5.0)	MAC/AO	>100	3.83
N-NH3 (Ammonia)	mg/L	-	-	0.02	0.02
Total Kjeldahl Nitrogen	mg/L	-	-	0.20	0.10
GENERAL CHEMICAL - AESTHETIC RELATED					
Hardness (as CaCO3)	mg/L	100	OG	382	391
Ion Balance	unitless	-	-	1.02	1.04
Total Dissolved Solids	mg/L	500	AO	640	640
Alkalinity (as CaCO3)	mg/L	500	OG	346	344
Chloride	mg/L	250	AO	120	119
Colour	TCU	5	AO	<2	<2
Conductivity	uS/cm	-	-	1,100	1,100
pH	unitless	6.5-8.5	AO	7.98	8.02
Sulphide	mg/L	0.05	AO	<0.1	0.03
Sulphate	mg/L	500	AO	83	79
Calcium	mg/L	-	-	115	117
Iron	mg/L	0.3	AO	3.69	0.09
Potassium	mg/L	-	-	5	4
Magnesium	mg/L	-	-	23	24
Manganese	mg/L	0.05	AO	0.06	<0.01
Sodium	mg/L	200	AO	105	103
Phenols	mg/L	-	-	<0.001	<0.001
Tannin & Lignin	mg/L	-	-	<0.1	<0.1
Dissolved Organic Carbon	mg/L	5	AO	1.50	1.50

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

The bacteriological test results (Certificate of Analysis - Report No. 1948880) indicated that E.coli and Total Coliforms were non detect in the well water (0 ct/100mL). Paterson personnel confirmed that the free chlorine residual was 0 mg/L prior to the collection of the bacteriological sample.

The water quality of the subject water supply well meets all the Ontario Drinking Water Standards (ODWS) maximum acceptable concentrations (MAC). Furthermore, the water meets all of the aesthetic objectives (AO) and operational guidelines (OG) with the exception of the following:

- ❏ Hardness (As $CaCO_3$)
- ❏ TDS
- ❏ Turbidity

Each of these groundwater parameters are discussed in detail below. It should be noted that the results of the 4 hour field tests were likely effected by sediments from seams within the bedrock aquifer which were disturbed by the pump test. This is further supported by the substantial reduction in turbidity, iron and manganese observed in the 9.5 hour test results.

Hardness as $CaCO_3$

Hardness, expressed as calcium carbonate, an operational guideline, 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 of 100 mg/L. At the measured concentration of 391 mg/L, the water is considered to be hard. The Technical Support Document for ODWS publication states that water with hardness in excess of 500 mg/L may be unacceptable for most domestic purposes, however, there is no maximum treatable value available. It is expected the hardness concentration can be treated using commercial grade water softener technologies, if desired by the owner.

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. Water with a TDS concentration above 500 mg/L of TDS may not palatable. Procedure D-5-5 does not provide a 'treatability limit' for TDS, but it does require written rationale that corrosion, encrustation, or taste problems will not occur.

If desired, the owner has the ability to install an off-the-shelf reverse osmosis system that can adequately treat the TDS levels noted in the results. It should be noted this is not considered a recommendation and should only be installed if taste is considered an issue

by the end user. The owner has the ability to retain a water treatment specialist to ensure the taste of the water meets their needs.

The Langelier Saturation Index (Langelier, 1936) is used to predict the calcium carbonate stability of water. It indicates whether the water will precipitate, dissolve, or be in equilibrium with calcium carbonate. The results of the Langelier calculation (LSI = 0.8) indicate the water is super saturated and tends to precipitate a scale layer of calcium carbonate (scale forming but non-corrosive). See Langelier Saturation Index Calculation attached for calculation details.

Turbidity

Turbidity, which is generally an aesthetic parameter, was detected in the laboratory test samples at values of >100 and 2.0 NTU in the 4 and 9.5 hour tests, respectively. Field testing detected the samples at values of >100 and 3.83 NTU in the 4 and 9.5 hour tests, respectively. The pump test was extended from 8 to 9.5 hours to demonstrate that continued pumping would result in a decrease in turbidity. It is expected that further development of the well would further reduce turbidity values. The elevated turbidity in the laboratory sample from the 4 hour test result (>100 NTU) is attributed to the clearing out of seams within the bedrock.

The ODWS maximum acceptable concentration for turbidity in drinking water entering the distribution system is 1 NTU. The Aesthetic Objective for turbidity in drinking water reaching the consumer is 5 NTU. The field test parameters at 9.5 hours are below the 5 NTU objective.

Sodium

Sodium is an aesthetic parameter, and was detected in the test samples at a concentration of 105 and 103 mg/L, which is less than the ODWS aesthetic objective of 200 mg/L. Sodium is a unique water quality parameter in that it has a cautionary limit of 20 mg/L for health related purposes, but can be present in raw water up to 200 mg/L and still be within the aesthetic objective. It is a requirement of the ODWS that the Medical Officer of Health be notified of the water quality results where sodium is present in concentrations exceeding 20 mg/L and it is intended for consumption. The purpose of this is such that the information can be disseminated to local physicians for their use in the treatment of individuals requiring reduced sodium dietary needs.

Terrain Analysis

Surficial Geology

Field investigations were carried out on November 20, 2020. The investigation consisted of advancing 7 boreholes to maximum depths ranging from 1.6 and 4.8 m below ground surface (bgs), respectively. The test holes were distributed in a manner to provide general coverage of the proposed development taking into consideration site features. The location of the test holes on the property are delineated on the Test Hole Location Plan, Drawing No. PG5602-1, attached.

The test hole 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.

The subsurface profile consisted of fill material extending to depths of 0.3 to 0.6 m bgs and consists of various amounts of silty sand with crushed stone, gravel and organics. The fill material is underlain by a glacial till deposit consisting of brown silty sand with gravel, cobbles and boulders. Practical refusal to augering was encountered at depths ranging from 1.6 and 4.8 m bgs. Groundwater levels were measured in the boreholes at depths ranging from 0.9 to 4.0 m bgs.

Reference should be made to the borehole 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 be interpreted as descriptive of conditions at locations other than those described by the boreholes themselves.

A sieve was submitted from BH 7-20 - SS2 at a depth of 0.8 to 1.4 m within the proposed area of the septic bed. In accordance with Unified Soil Classification System (USCS) the soil type is defined as a silty sand. Analytical results from the sieve testing can be found attached.

Hydrogeological Sensitivity of the Site

The subject site is bordered to the north by undeveloped, densely tree land, to the east by John Cavanaugh Drive, to the south by McGee Side Road and a commercial building to the west. The subject development will be serviced by a private well and septic system.

Based upon the field investigations, the overburden thickness ranges from approximately 1.6 to 4.8 m depth at the borehole locations. The overburden soils are recorded to consist of fill material overlying a glacial till.

As the proposed site is expected to have bedrock within 2 m of the ground surface in areas, the site is considered hydrogeologically sensitive. Horizontal separation distances have been doubled between the septic components and the onsite well to a minimum of 30 m. The minimum well casing depth for the constructed TW1 has been extended to greater than double the minium length (>12 m), at 17.7 m below ground surface.

The topography of the site is relatively flat within the central portion of the site and slopes down at the eastern and southern boundaries of the subject site, where a culvert system is present. The regional groundwater flow is considered to be in a northeasterly direction, towards the Carp River.

The water quality of the bedrock aquifer targeted as the preferred water supply aquifer for the development, shows no indications of surface water or surface impacts from sewage system effluent.

Conceptual Lot Development Plan

It is proposed that a slab-on-grade commercial building which consists of office space and 2 warehouse units will be constructed within the southwest portion of the subject site. The location of the proposed structure can be found on the attached Paterson Drawing PH4146 - 1 - Site Plan. It illustrates that the proposed design layout is adequate to accommodate the associated private services and meet all the regulated separation criteria.

Sewage System Design

In order to minimize the risk of long-term contamination of services, a minimum horizontal separation distance of 30 metres is recommended between the onsite drilled well and the closest distribution pipe of the onsite sewage system. This separation distance shall be increased according to the OBC requirements for beds constructed above the original ground surface. In consideration of the proposed location of the septic area, the existing wells, the proximity of the neighbouring sewage systems and wells with respect to the proposed sewage system, the minimum regulatory separation distances can be easily attained on the subject property. In addition, a minimum of 100 mm of imported soil seal may be required to provide system isolation due to the shallow overburden (<2 m).

Total Daily Design Sewage Flow

A total daily design sewage flow (TDDSF) of 5,150 L/day was provided by D.B. Gray Engineering for the office space and the 2 warehouse units. It is understood that the above noted TDDSF is based on available design details provided by M.B. Ford Construction at the time of report preparation. Typical commercial developments will have lower actual loading compared to the conservative design loads as per the OBC.

Proposed Sewage System

Detailed designs regarding the sewage system have not been completed at the time of report preparation. However, based on the available space, it is expected that a conventional Class 4 Sewage System will easily fit on the subject site. The reader should be aware that there are numerous other types of class 4 sewage systems that could potentially be used at the subject site. The system is expected to have a daily design load capacity of 5,150 L/day and will govern the allowable flows under the current Ontario Building Code (OBC). Also, a minimum of 100 mm of imported soil seal may be required to provide system isolation due to the shallow overburden (<2 m).

PREDICTIVE NITRATE IMPACT ASSESSMENT

In order to demonstrate that private services would adequately support the proposed commercial development, a predictive nitrate impact assessment for the subject site was completed. The values shown in the Predictive Nitrate Impact Assessment attached to this report are summarized below.

- ❑ Site area — 0.8 Ha
- ❑ Impervious area % — 50.80 %
- ❑ Daily sewage flow — Maximum 5.15 m^3
  (Average daily flow - Peak. It is expected that actual volumes will be much lower)
- ❑ Concentration of nitrate in effluent — 40 mg/L
  (Value based on typical effluent concentration)
- ❑ Concentration of nitrate in effluent with treatment — 4 mg/L
  (Value based on tertiary treatment system with 90% nitrate reduction)
- ❑ Surplus Water — 402 mm/year
  (The surplus water value was estimated based on Environment Canada Climate Office values with a soil type comprised of fine sand (Urban Lawn/Shallow Rooted Crops) and anthropogenic sources.

- ❑ Combined infiltration factor based on: 0.65
  - Topography infiltration factor 0.25
  - Soil texture infiltration factor 0.30
  - Cover infiltration factor 0.10

The topography infiltration factor of 0.25 is based upon a combination of flat land with average slope < 0.6 m/km and rolling land, average slope 2.8 to 3.8 m/km for the proposed development.

The soil texture infiltration factor was based upon an “open sandy loam” with a value of 0.3 which is a reasonable generalization based upon the site investigation and available geological mapping.

The “vegetative cover infiltration factor” was calculated as 0.1 based upon the minimum value for cultivated land.

The calculation for a standard septic system results in a predicted nitrate concentration of 26.3 mg/L nitrate concentration for the subject site, using a value of 40 mg/L nitrate concentration within the effluent. This value was based upon using a conservative value of up to 5,150 L/day for the daily sewage flow. It is expected that the actual usage should be much lower and could be verified after construction based upon water usage.

An existing approved tertiary treatment system capable of reducing the nitrate loading in the effluent is the Waterloo Biofilter brand. The system has an available nitrate reduction of 25 to 35% based upon the standard single pass system and 50 to 65% based upon a double pass re-circulation system. With the addition of the WaterNOx system, 90 to 95% total nitrogen removal can be achieved. This would reduce the nitrate concentration in the effluent from 40 mg/L down to as low as 4 mg/L. Provided the value of 26.3 mg/L of nitrates for the fully sized system, a 50 to 65% reduction would result in a value of 9.2 to 13.2 mg/L and a 90% reduction would provide a value of 2.6 mg/L.

Based on the predicted nitrate concentration, nitrate reduction will be required for the sewage system in order for the development to reach the required value at the property boundaries. As the building is not expected to be filled with tenants immediately, nitrate concentrations and flows can be monitored to determine the actual nitrate concentration as the building is receiving tenants with the potential to add in the WaterNOx system to ensure compliance. Additionally, there are other approved and readily available technologies that can provide similar treatment levels. These can be explored during the design process to ensure the appropriate treatment level is provided based on the design flows.

Based on the results of the predicted nitrate impact assessment, it is our opinion that the proposed property can adequately support the proposed commercial development without having an adverse impact on the underlying bedrock aquifer.

Conclusions

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

1. The results of the water supply assessment have provided satisfactory evidence that the water supply aquifer underlying the subject site can support the proposed commercial development from both a quality and quantity perspective.

2. The preferred water supply aquifer intercepted by TW1 contains a water supply that is potable, and contains only elevated concentrations of hardness, TDS, and turbidity. The above noted parameters can be treated with current readily available water conditioning equipment.

3. It is anticipated that further development of the onsite well will reduce turbidity levels to below 1 NTU.

4. The sodium concentrations were 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.

5. The onsite well and septic system components must have a minium of 30 m horizontal separation as the site is considered hydrogeologically sensitive. Any onsite wells must be designed to have double the minimum casing length required by O.Reg 903 for a total of 12 m.

6. The predicted nitrate concentrations at the property boundaries are predicted to be near the required 10 mg/L threshold with a standard double pass Waterloo Biofilter treatment system based on a maximum volume of 5,150 L/day. As the tenants are not determined at this stage, the total volume is expected to be below the maximum calculated value. If additional denitrification is deemed necessary, a standard system such as the Waterloo Biofilter WaterNOx system would easily provide the required treatment necessary. This is a sample system to indicate treatment is possible and equivalent systems can be used to meet the required criteria.

7. The subject site is sufficient in size to accommodate a new sewage system and meet all the regulatory separation criteria.

8. A Sewage System Permit and Building Permit need to be issued prior to the commencement of construction on the proposed commercial development or the proposed septic system.

9. The results of the Hydrogeological Report and Terrain Analysis have provided satisfactory evidence that the subject site can support the proposed commercial development with respect to water quality, quantity and sewage system placement.

10. The construction of an onsite sewage system will not affect the performance or water quality associated with a drilled well, contingent upon the on site sewage system is designed in accordance with the Ontario Building Code (i.e. properly sized sewage system and conforming to all separation distances) and a minimum 100 mm soil seal provided beneath the leaching bed/mantle area to ensure system isolation.

We trust that this satisfies your present requirements. Should you have any questions regarding this submission, please do not hesitate to contact the undersigned.

Yours truly,

PATERSON GROUP INC.

Kevin A. Pickard, EIT

Michael S. Killam, P.Eng.

Attachments:
- ❑ MECP Water Well Record's
- ❑ Eurofins Certificate of Analysis
- ❑ AquiferTest Pro - Pumping Test Analysis Reports
- ❑ Langelier Saturation Index Calculation
- ❑ PG5602: Soil Profile and Test Data Logs
- ❑ Paterson Drawing PG5602-1 - Test Hole Location Plan
- ❑ Paterson Drawing PH4146-2 - Site Plan
- ❑ Paterson Sieve Analysis
- ❑ Predictive Nitrate Impact Assessment Calculations
- ❑ Waterloo Biofilter WaterNOx System Information
- ❑ Water Well Disinfection Instructions.

CERTIFICATE OF WELL COMPLIANCE

Ottawa

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: 11840398 CANADA INC.

Location: # 2167 MCGEE SIDE ROAD, CARP

LOT: 11 CON: 2 PLAN # 5R-12610 S/L # X

Ottawa-Carleton / Geographical Township of HUNTLEY

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 23RD Day of FEBRUARY, 2021

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 _____ day of _____, _____

(Engineer)

2021112
A313110

2001 International Year of Volunteers

Ontario — Ministry of the Environment, Conservation and Parks

Well Tag#: A313110 (Below) — A313110

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
11840398	Canada Inc.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Unit #4 - 11 Triston Court	Nepean	Ont	K2M 1B4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#2167 McGEE SIDE ROAD	Huntley	11	2

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

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	421737	5018421	PLAN 5R-126	10

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
(Hard packed)	Sand & Gravel			0'	10'
Grey	Limestone			10'	130'
Grey & Brown	Limestone			130'	200'
Grey	Limestone			200'	500'

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
58'	48'	Neat Cement Slurry	10.92
48'	0'	Bentonite Slurry	16.80

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'	58'
6"	Open Hole		58'	500'

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	Kind of Water	Hole Diameter Depth From	Hole Diameter Depth To	Hole Diameter (cm/in)
297 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify	0'	58'	9 3/4"
489 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, specify	58'	500'	6"
(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: X

Pump intake set at (m/ft): 290'

Pumping rate (l/min/GPM): 345

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 65' 8"

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

Recommended pump depth (m/ft): 450'

Recommended pump rate (l/min/GPM): 2

Well production (l/min/GPM): 2

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	12.2"		65.8"
1	18.9	1	62.7
2	20.7	2	61.7
3	22.3	3	60.6
4	23.7	4	59.4
5	25.	5	58.3
10	31.	10	52.7
15	36.1	15	47.6
20	40.8	20	42.9
25	45.	25	38.8
30	48.9	30	35.1
40	52.9	40	29.1
50	62.	50	24.7
60	65.8"	60	19.2

Map of Well Location

Please provide a map below following instructions on the back. 4N

Comments: 1 HP 5GPM Set @ 450 FT

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 Fronktown 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 (yyyy/mm/dd)
6138382170	HANNA Jeremy	T3632		2021/04/30

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

Date Package Delivered: 2021/04/30

Date Work Completed: 2021/02/23

Ministry Use Only

Audit No. Z355007

Received

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Ministry's Copy

GR

UTM 18 Z 421860 E

5R 5018000 N

Elev. 5R 0380

Basin 25

GROUND WATER BRANCH
15 JUN 1 1962 No. 3065
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carleton Township, ~~Village, Town or City~~ Huntley

Con. 2 Lot 10 Date completed 30 (day) April (month) 62 (year)

[redacted] Address RR 3 Carp

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 25'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 4"

Pumping Test

Static level 16'

Test-pumping rate 6 G.P.M.

Pumping level 18'

Duration of test pumping 1 hr.

Water clear or cloudy at end of test clear

Recommended pumping rate 5 G.P.M.

with pump setting of 35 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Clay	0	2		
Limestone	2	120	120	FRESH

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

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

Drilling or Boring Firm Ben E Edgworth

Address

Licence Number 700

Name of Driller or Borer Ben E Edgworth

Address 413 Edgeworth

Date May 28/62

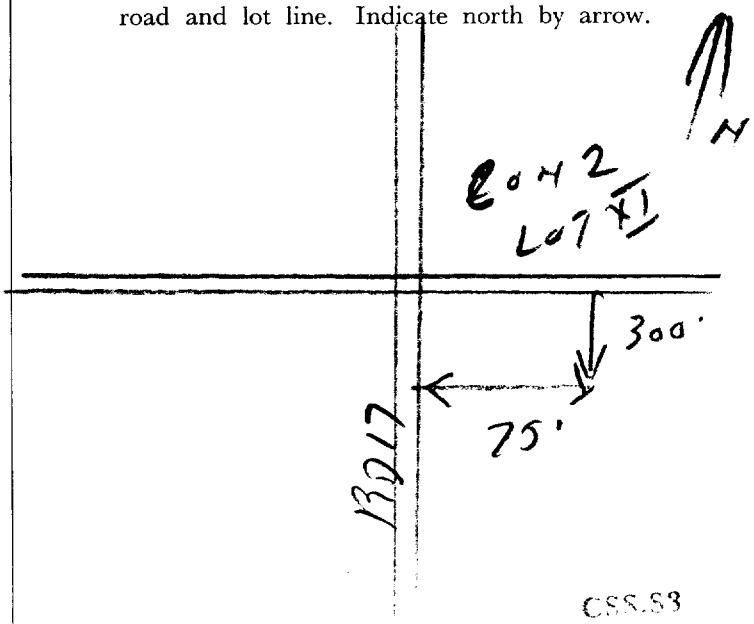
(Signature of ~~Licensed Driller or Borer~~ Contractor) Ben E Edgworth

Form 7 15M Sets 60-5930

OWRC COPY

Location of Well

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



CSS.53

5 237

UTM 18 Z 421690 E

5 R 5018200 N

Elev. 4 R 0380

Basin 25

CON 11

Lot 11

15 No 3068

GROUND WATER BRANCH
MAY 25 1961
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County or District Carleton

Township, ~~Village, Town or City~~ Huntley

Con. 2 Lot 11

Date completed 3 (day) May (month) 1961 (year)

[redacted]

Address Carp Ont

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 14'

Type of screen none

Length of screen ——

Depth to top of screen ——

Diameter of finished hole 4"

Pumping Test

Static level 10'

Test-pumping rate 5 G.P.M.

Pumping level 20'

Duration of test pumping ½ hr

Water clear or cloudy at end of test Clear

Recommended pumping rate 5 G.P.M.

with pumping ~~level~~ SET of 90'

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Clay & loam	0	14'	98'-100'	90'	fresh
grey limestone	14'	100'			

Water Record

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

house

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

upland

Drilling Firm W M E Sparks

Address 413 Edgeworth

Ottawa

Licence Number 485

Name of Driller W M E Sparks

Address

Date May 3/61

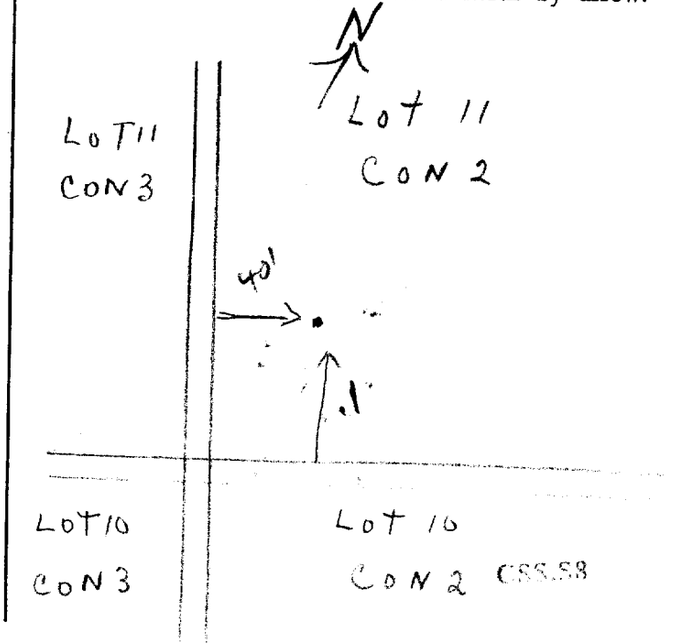
W M E Sparks

(Signature of Licensed Drilling Contractor)

Per Anna J Sparks wife

Location of Well

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



Form 5
15M-58-4149

GROUND WATER BRANCH
JUN 15 1962
No. 3069
ONTARIO WATER RESOURCES COMMISSION

UTM 18 Z 421735 E
5 R 5018140 N
Elev. 4 R 03810
Basin 25

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carleton Township, ~~Village, Town or City~~ Huntley
Con. 2 Lot 11 Date completed 23 May 62
(day) (month) (year)
[redacted] Address RR3 Carp

Casing and Screen Record

Inside diameter of casing 4½"
Total length of casing 12
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 4"

Pumping Test

Static level 20'
Test-pumping rate 6 G.P.M.
Pumping level 55'
Duration of test pumping 1½
Water clear or cloudy at end of test clear
Recommended pumping rate 5 G.P.M.
with pump setting of 100 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
previously drilled		70		
limestone	70	130	175'	fresh

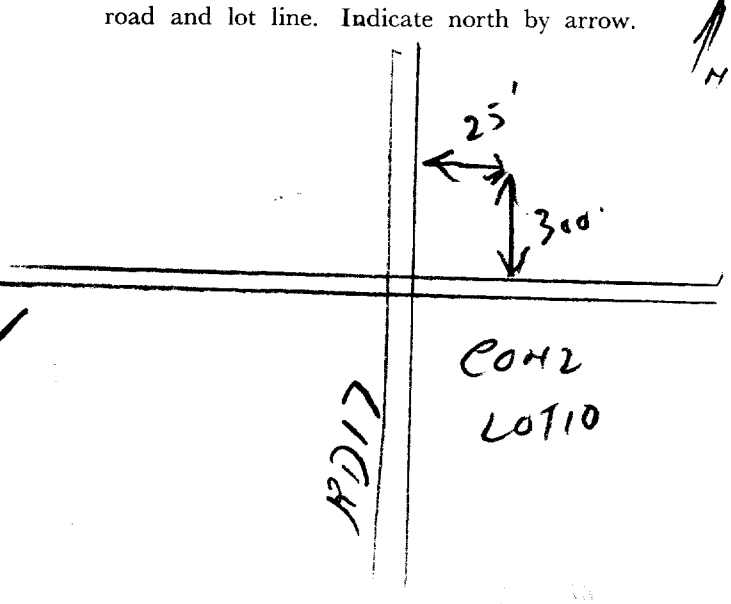
For what purpose(s) is the water to be used? Home
Is well on upland, in valley, or on hillside? upland
Drilling or Boring Firm B. & E. Sparks
Address
Licence Number 700
Name of Driller or Borer B. & E. Sparks
Address 413 Edgeworth
Date May 28/62
(Signature of Licensed Drilling or Boring Contractor) B. & E. Sparks

Form 7 15M Sets 60-3930

OWRC COPY

Location of Well

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



UTM 18 Z 421750 E
5 R 5018265 N
Elev. 4 R 0380

Basin 25
County or District Carleton

Con. 2 Lot 11

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES COMMISSION
RECEIVED
JUN 10 1964
ONTARIO WATER RESOURCES COMMISSION

15 No 3070

Township, Village, Town or City Huntley

Date completed 5 (day) June (month) 1964 (year)

[redacted] dress Carp

Casing and Screen Record

Inside diameter of casing 6 1/4"
Total length of casing 22'
Type of screen —
Length of screen —
Depth to top of screen —
Diameter of finished hole 6"

Pumping Test

Static level 20'
Test-pumping rate 8 G.P.M.
Pumping level 90'
Duration of test pumping 1 hr.
Water clear or cloudy at end of test clear
Recommended pumping rate 5 G.P.M.
with pump setting of 100 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
loam	0	4	71	fresh
gray limestone	4	105	105	

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

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

Drilling or Boring Firm A. Stanton

Address Pakenham

Licence Number 1475

Name of Driller or Borer A. Stanton

Address Pakenham

Date June 5/64

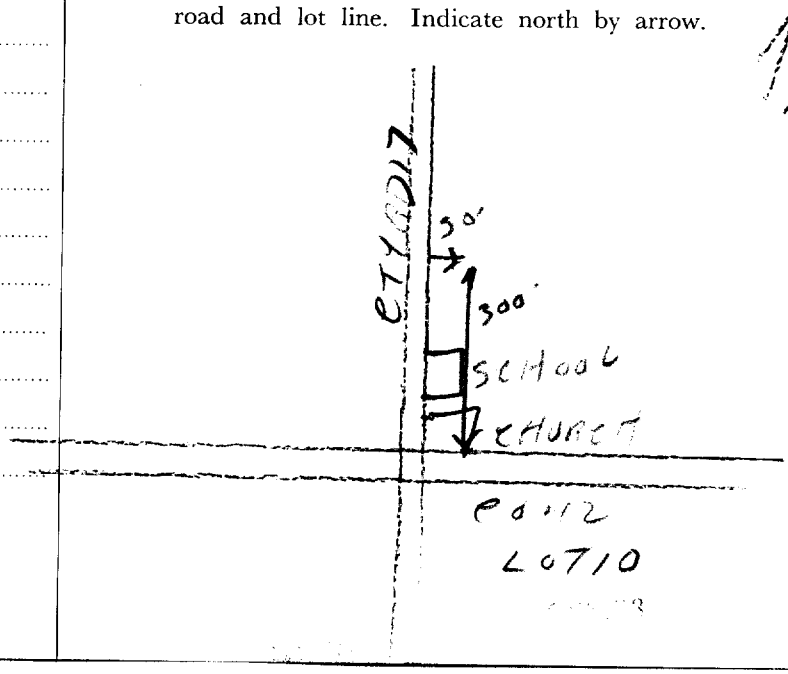
Austin Stanton
(Signature of Licensed Drilling or Boring Contractor)

Form 7 10M-62-1152

OWRC COPY

Location of Well

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



13

UTM 18 [redacted] 721710 E

15 501805 0 N

Elev. 4 R 03755

Basin 25

GROUND WATER BRANCH
FEB 15 1962 No 3 24
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Addington — Township, ~~Village, Town or City~~ Huntley

Con. 3 — Lot 11 — Date completed 28 (day) Sept (month) 61 (year)

[redacted] Address Carp Ont

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 7'

Type of screen none

Length of screen

Depth to top of screen

Diameter of finished hole 4"

Pumping Test

Static level 20'

Test-pumping rate 5 G.P.M.

Pumping level 25'

Duration of test pumping ½ hr

Water clear or cloudy at end of test clear

Recommended pumping rate 5 G.P.M.

with pump setting of 90' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
clay loam	0	7'		
grey limestone	7'	101'	100-101	fresh

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

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

Drilling or Boring Firm W M E Sparks

413 Edgeworth Ave

Address Ottawa 3

Licence Number 485

Name of Driller or Borer W M E Sparks

Address

Date Sept 28 / 61

W M E Sparks

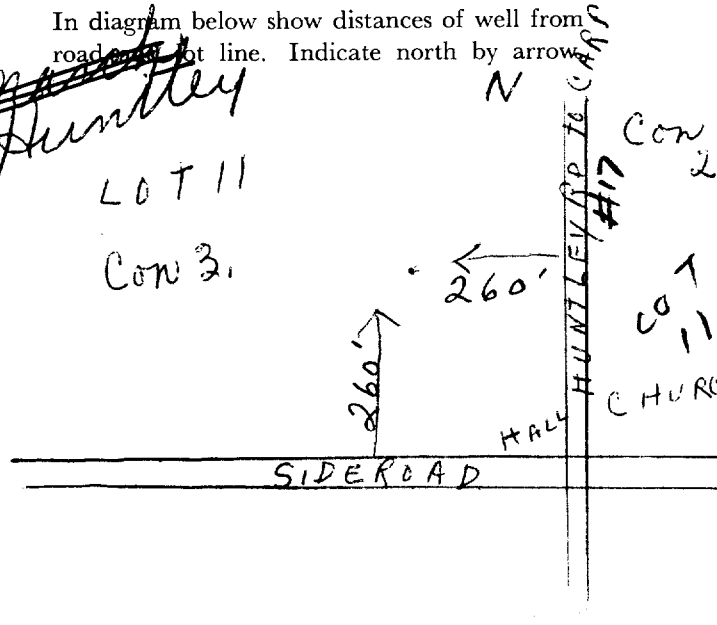
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M Sets 60-5930

OWRC COPY

Location of Well

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



CSS.58

UTM Con III 18 Z 421600 E
5R T 5618220 N

Elev. 4 R * 03910

Basin 25

County or District Carleton

Township, Village, Town or City Huntley

Con. 3 Lot 11

Date completed 3 (day) Sept (month) 1964 (year)

[redacted] dress Carp.

15 No. 3126

The Ontario Water Resources Commission Act

WATER WELL RECORD

Casing and Screen Record

Inside diameter of casing 6 4/4"

Total length of casing 14'

Type of screen ✓

Length of screen ✓

Depth to top of screen ✓

Diameter of finished hole 6"

Pumping Test

Static level 23

Test-pumping rate 6, G.P.M.

Pumping level 90

Duration of test pumping 1 hr.

Water clear or cloudy at end of test clear

Recommended pumping rate 5 G.P.M.

with pump setting of 100 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
shale	0	12	71	fresh
grey limestone	12	108	108	

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

house

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

Drilling or Boring Firm A. Stanton

Address Pakenham

Licence Number 1475

Name of Driller or Borer A. Stanton

Address Pakenham

Date Sept 3/64

A. Stanton

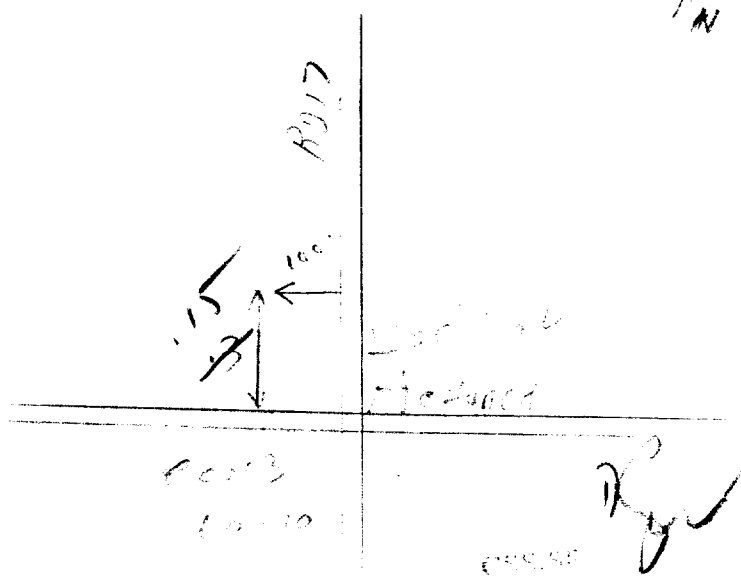
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

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



The Ontario Water Resources Commission Act

WATER WELL RECORD

316/5d

Water management in Ontario

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

11 | 1510511 | MUNICIP. 1500S | CON. CON | 92

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntley 1510511 | CON., BLOCK, TRACT, SURVEY, ETC.: 2 | LOT: 011

OWNER (SURNAME, FIRST NAME): [redacted] Capp | DATE COMPLETED: DAY 24 MO 07 YR 68

HOLE DEPTH/OVERBURDEN: 0180 RC: 4 | ELEVATION: 0380 RC: 5 | BASIN CODE: 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FROM	DEPTH TO
Grey	shale			0	9
"	limestone			9	121

31 | 0009217 | 0121215

32

41 WATER RECORD

WATER FOUND AT — FEET	KIND OF WATER
0073	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0121	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FROM	DEPTH TO
06 6 4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0027 27
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0121
	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.)

PUMPING TEST

71

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE: 0010 GPM. | DURATION OF PUMPING: 01 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
021 FEET	080 FEET		038 FEET	050 FEET	068 FEET	080 FEET

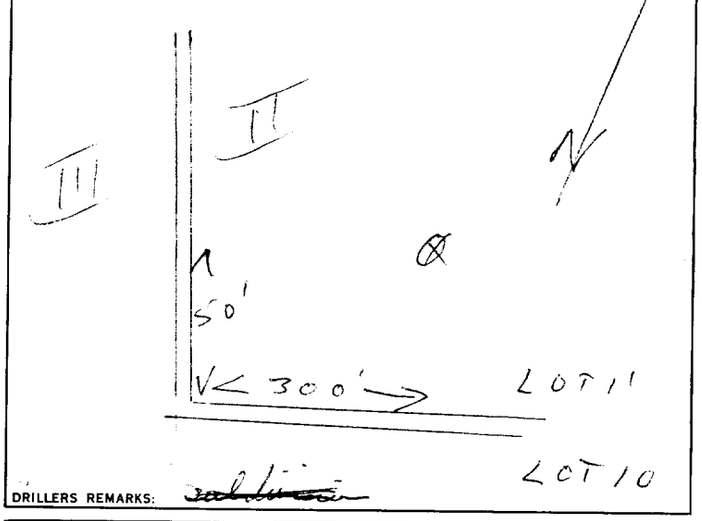
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 100 FEET | RECOMMENDED PUMPING RATE: 0010 GPM.

50-53 000.2 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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

WATER USE (55-56) 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ 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 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Austin Stanton | LICENCE NUMBER: 3389

ADDRESS: Pakenham

NAME OF DRILLER OR BORER: Stan P | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Austin Stanton | SUBMISSION DATE: DAY 24 MO 7 YR 69

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 4806 | DATE RECEIVED (63-68): 170270

DATE OF INSPECTION | INSPECTOR

REMARKS: CSS.38

OWRC COPY

The Ontario Water Resources Commission Act

WATER WELL RECORD

31F8a

Water management in Ontario

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

11 | 1511759 | MUNICIP. 151005T | CON. CON | 92

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntley
CON., BLOCK, TRACT, SURVEY, ETC.: Con 2
LOT: 11
OWNER (SURNAME FIRST): [redacted]
ADDRESS: RR#2, Carp
DATE COMPLETED: DAY 03 MO May YR 72
UTM ZONE: 18 320 | RC: 4 | ELEVATION: 0385 | RC: 5 | BASIN CODE: 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
grey	clay	gravel		0	11
grey	limestone			11	139

31 | 0011205T11 | 0139215

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0139	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0020 ~~20~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0139
	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	DEPTH SET AT – FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

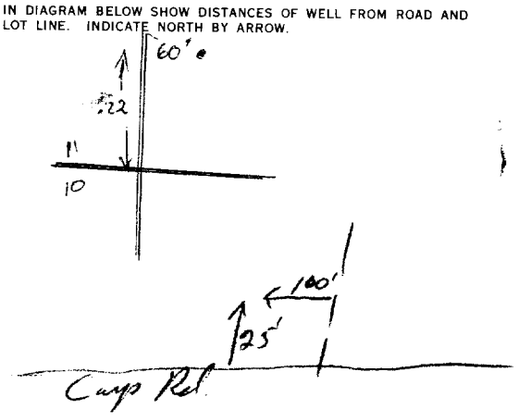
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 0005 GPM
DURATION OF PUMPING: 01 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
022 FEET	070 FEET	045 FEET	060 FEET	070 FEET	070 FEET

IF FLOWING, GIVE RATE: GPM.
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 070 FEET
RECOMMENDED PUMPING RATE: 0005 GPM.
000.1 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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

WATER USE 01: 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; ☐ OTHER; 9 ☐ NOT USED

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Henry Mavis Well Drilling | LICENCE NUMBER: 3644
ADDRESS: RR#3, Richmond Ont.
NAME OF DRILLER OR BORER: Brent Robillard | LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Henry Mavis | SUBMISSION DATE DAY 3 MO May YR 72

ARC COPY

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 3644 | DATE RECEIVED: 180572
DATE OF INSPECTION | INSPECTOR
REMARKS: CSS.58
P K
WI

The Ontario Water Resources Commission Act

WATER WELL RECORD

31 G/5 d

Water management in Ontario

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

11 | 1511921 | MUNICIP. 15005 | CON. C.O.N. | 02

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntley | CON., BLOCK, TRACT, SURVEY, ETC.: 2 | LOT: 011

OWNER (SURNAME FIRST): [redacted] | ADDRESS: Brian Main Rd. R.R.#2 | DATE COMPLETED: DAY 06 MO. 05 YR. 72

018326 | RC. 4 | ELEVATION 394 | RC. 4 | BASIN CODE 26 | JAN 12, 1975 | 44

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		fill	0	3
brown	"	stones	packed	3	9
grey	limestone			9	141

31: 0003628011 | 0009628012 | 0141215

32:

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
090	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
138	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
~~6~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	022
~~5~~ 6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		~~22~~	~~141~~
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		22	0141
	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: 0007 GPM. | DURATION OF PUMPING: 01 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	075 FEET	075 FEET	075 FEET	075 FEET	075 FEET

1 ☑ PUMPING 2 ☐ RECOVERY

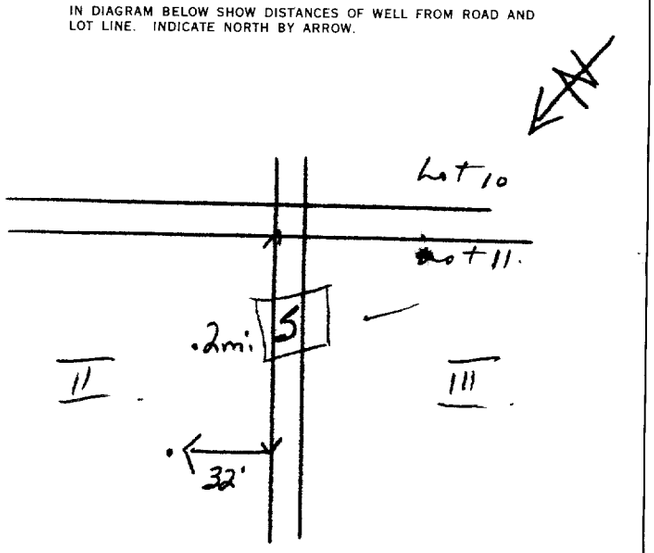
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☑ CLEAR 2 ☐ CLOUDY

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

0001 GPM/FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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

WATER USE (55-56): 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 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply | LICENCE NUMBER: 1558

ADDRESS: Box 490 Stittsville Ont.

NAME OF DRILLER OR BORER: Walter Kavanagh | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh | SUBMISSION DATE: DAY 5 MO. 5 YR. 72

OWRC COPY

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 1558 | DATE RECEIVED (63-68): 041072

DATE OF INSPECTION | INSPECTOR

REMARKS: CBS.58

P R

WI

The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

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

11 (1 2) — 1512118 (3-9) — MUNICIP. 15005 (10-14) — CON. CON (15) — 03 (22 23 24)

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
Carleton	Huntley	3	010

OWNER (SURNAME FIRST) 28-47	ADDRESS	DATE COMPLETED 48-53
Meadowdale Homes Ltd.	42 Bren Mair Rd, Box 1316, Ottawa,	DAY 06 MO. 10 YR 72

21 (1 2) 1512118 18 — ZONE — EASTING 421776 — NORTHING 5017994 — RC. 4 — ELEVATION 393 — RC. 4 — BASIN CODE 26 — JAN 12, 1975 — 44

[redacted]

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
grey	gravel	sand& flatrock	packed	0	15
grey	limestone		hard	15	125

31 0016 21 1 28 — 01 25 21 5

32 (1-3) (10) (14 15) (21) (32) (43) (54) (65) (75) (80)

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0124 (10-13)	1 ☒ FRESH 3 ☐ SULPHUR (14) / 2 ☐ SALTY 4 ☐ MINERAL
(15-18)	1 ☐ FRESH 3 ☐ SULPHUR (19) / 2 ☐ SALTY 4 ☐ MINERAL
(20-23)	1 ☐ FRESH 3 ☐ SULPHUR (24) / 2 ☐ SALTY 4 ☐ MINERAL
(25-28)	1 ☐ FRESH 3 ☐ SULPHUR (29) / 2 ☐ SALTY 4 ☐ MINERAL
(30-33)	1 ☐ FRESH 3 ☐ SULPHUR (34) (80) / 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
~~6~~ 06 (10-11)	1 ☒ STEEL (12) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~	188	0	0021 (13-16)
5 ~~176~~			~~21~~	~~125~~
(17-18) 06	1 ☐ STEEL (19) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		21	0125 (20-23)
(24-25)	1 ☐ STEEL (26) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			(27-30)

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN 41-44 FEET	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	DEPTH SET AT – FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33)	(80)

PUMPING TEST

71

PUMPING TEST METHOD (10)	PUMPING RATE (11-14)	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0010 GPM.	01 (15-16) HOURS 00 (17-18) MINS.

STATIC LEVEL (19-21)	WATER LEVEL END OF PUMPING (22-24)
025 FEET	075 FEET

25 WATER LEVELS DURING 1 ☒ PUMPING 2 ☐ RECOVERY

15 MINUTES (26-28)	30 MINUTES (29-31)	45 MINUTES (32-34)	60 MINUTES (35-37)
075 FEET	075 FEET	075 FEET	075 FEET

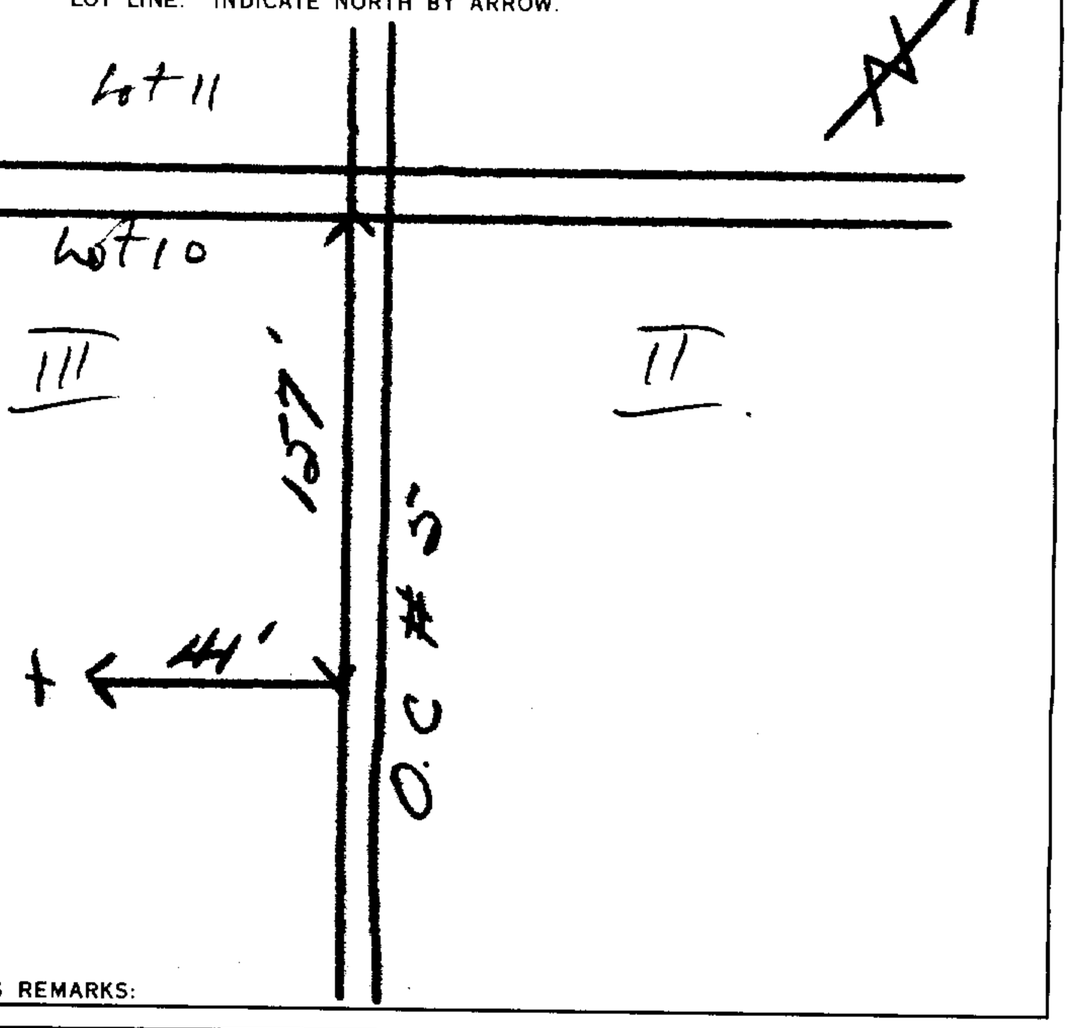
IF FLOWING, GIVE RATE (38-41)	PUMP INTAKE SET AT	WATER AT END OF TEST (42)
GPM.	FEET	1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (43-45)	RECOMMENDED PUMPING RATE (46-49)
☐ SHALLOW ☒ DEEP	075 FEET	005 GPM.

(50-53) 000.2 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL (54)

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

WATER USE (55-56) 01

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

METHOD OF DRILLING (57)

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. — LICENCE NUMBER: 1558

ADDRESS: Box 490, Stittsville, Ontario.

NAME OF DRILLER OR BORER: Walter Kavanagh — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh — SUBMISSION DATE: DAY 6 MO. 10 YR. 72

OWRC COPY

OFFICE USE ONLY

DATA SOURCE (58)	CONTRACTOR (59-62)	DATE RECEIVED (63-68) (80)
1	1558	101172

DATE OF INSPECTION — INSPECTOR: K

REMARKS: P R — WI

1512382 3502376 316/59 P

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Renfrew Township, Village, Town or City Huntley

Con. 2 Lot 11 Date completed 18 (day) Sept. (month) 1968 (year)

[redacted] Address Carp.

Casing and Screen Record

Inside diameter of casing 6¼"

Total length of casing 22'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 6"

Pumping Test

Static level 10

Test-pumping rate 6 G.P.M.

Pumping level 90

Duration of test pumping 1 hr.

Water clear or cloudy at end of test clear

Recommended pumping rate G.P.M.

with pump setting of 100 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Shale	0	10	63	fresh
grey limestone	10	129	129	

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

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

Drilling or Boring Firm A. Stanton

Address Pakenham

Licence Number 3060

Name of Driller or Borer same

Address

Date Sept 18/68

Austin Stanton

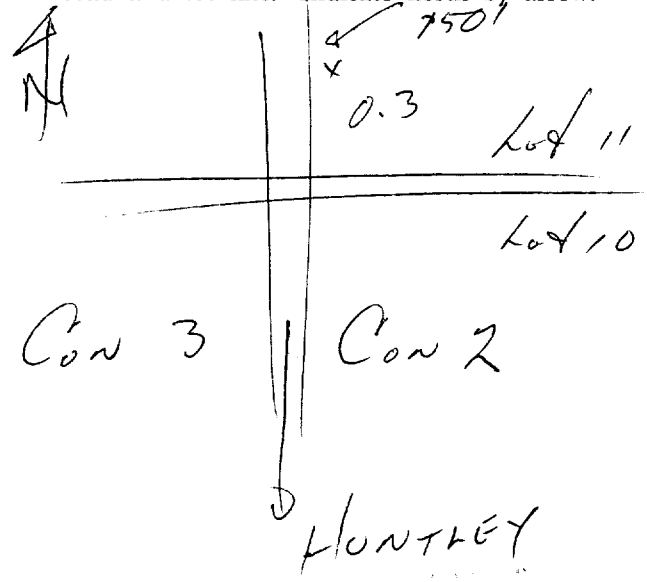
(Signature of Licensed Drilling or Boring Contractor)

Form 7 5M 60-20912

OWRC COPY

Location of Well

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



MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

31 G 5d

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

11 | 1514247 | MUNICIP. 15005 | CON. C ON | 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Huntley	2	011

[redacted]
x 73 Smith Falls, Ontario

DATE COMPLETED: DAY 08 MO. 07 YR. 74

RC.	ELEVATION	RC.	BASIN CODE	II	III	IV
4	364	4	26	JUL 08, 1977	301	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	clay	sand	packed	0	6
grey	hardpan	boulders & gravel	packed	6	30
grey	limestone		broken	30	33
grey	limestone		medium	33	62

31 | 0 0 6 6 0 5 2 8 7 9 | 0 0 3 0 2 1/4 1 3 1/4 | 0 0 3 3 2 1 5 7 1 | 6 0 6 2 2 1 5

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0044	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
0060	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	188	0	0033
~~5 7/8~~	4 ☒ ~~OPEN HOLE~~		33	62
06	4 ☒ OPEN HOLE			0062

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	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0030 GPM.	01 HOURS 00 MINS

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

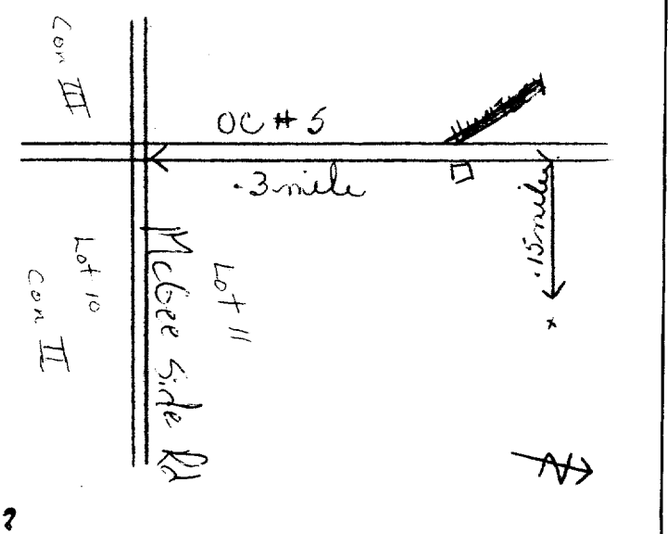
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	050 FEET	0005 GPM.

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 2118

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 1	1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL	5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER	5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED
METHOD OF DRILLING 5	1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☒ AIR PERCUSSION	6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. — LICENCE NUMBER: 1558

ADDRESS: Box 490 Stittsville, Ontario

NAME OF DRILLER OR BORER: W. Kavanagh — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh — SUBMISSION DATE: DAY 9 MO. 7 YR. 74

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1558 | DATE ~~2 0 8 7 4~~ 2 0 8 7 4

DATE OF INSPECTION: May 20, 1976 — INSPECTOR: LLC Kentner

REMARKS: capped but not used at time of insp CSS.58

P ✓ WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

3165d

8 PM

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11 | 1516282 | MUNICIP 15005 | CON. CON | 02

COUNTY OR DISTRICT: CARLETON
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: HUNTLEY
CON., BLOCK, TRACT, SURVEY, ETC.: CON. #1 II
LOT: 21 #12
[redacted] Carp Rd - R.R.#1 KANATA
DATE COMPLETED: DAY 16 MO. 08 YR. 77
018099 | RC 4 | ELEVATION 0380 | 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	SAND	Small Boulders	Coarse	~~0~~	~~37~~
				~~37~~	~~50~~
				0	21
White	Sandstone	—	Coarse	21	50

31 | 0021 | 6 | 10 | 13 | 0050 | 1 | 8 | 6 | 3

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0041	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 ~~05~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	23
06 11	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		23	50
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	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	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0020 GPM	02 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
007 FEET	030 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	030 FEET	030 FEET	030 FEET	030 FEET

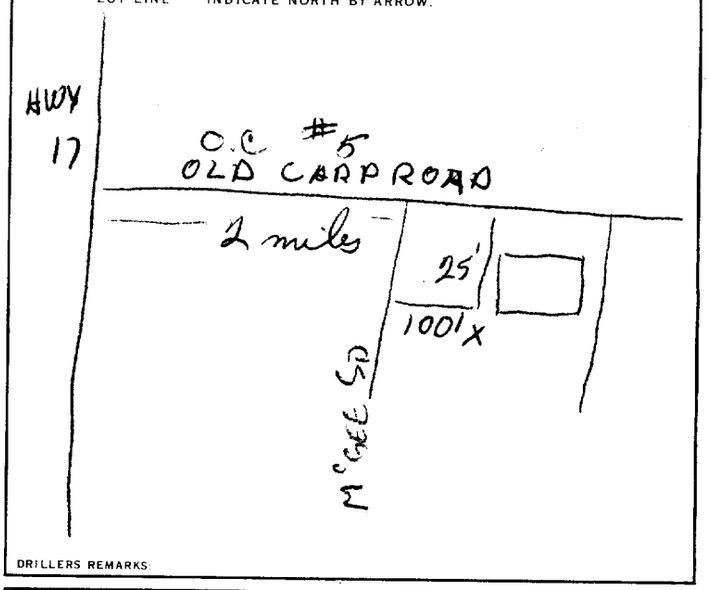
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	040 FEET	0010 GPM

50-53

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1

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

WATER USE 55-56: 01

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

METHOD OF DRILLING 57: 5

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

CONTRACTOR

NAME OF WELL CONTRACTOR: MAPLE LEAF DRILLING CO. | LICENCE NUMBER: 1365
ADDRESS: 877 RIDLEY BLVD.
NAME OF DRILLER OR BORER: SIMON SKUSE | LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Robert Bisson | SUBMISSION DATE: DAY 27 MO. 10 YR. 77

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1365 | DATE RECEIVED 63-68: 181177 | 80
DATE OF INSPECTION: FA 25/73 | INSPECTOR: TMM DN
REMARKS:

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31F8E

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

11 1516579 MUNICIP 15005 CON. CON 02

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntley | CON., BLOCK, TRACT, SURVEY, ETC.: Con 2 | LOT: P011

OWNER (SURNAME FIRST): ANGL. CHRIST CHURCH | Anglican Christ Church | Carp Ont

DATE COMPLETED: DAY 27 MO 06 YR 78

21 Parish of 18 | ZONE | EASTING 424709 | NORTHING 5018300 | RC 5 | ELEVATION 0385 | RC 5 | 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
grey	hardpan	gravel		0	10
grey	shale	gravel		10	42
grey	limestone			42	64

31 00102141 | 00422171 | 00642415

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
060	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	045
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER | PUMPING RATE: 0006 GPM | DURATION OF PUMPING: 01 HOURS 00 MINS

WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

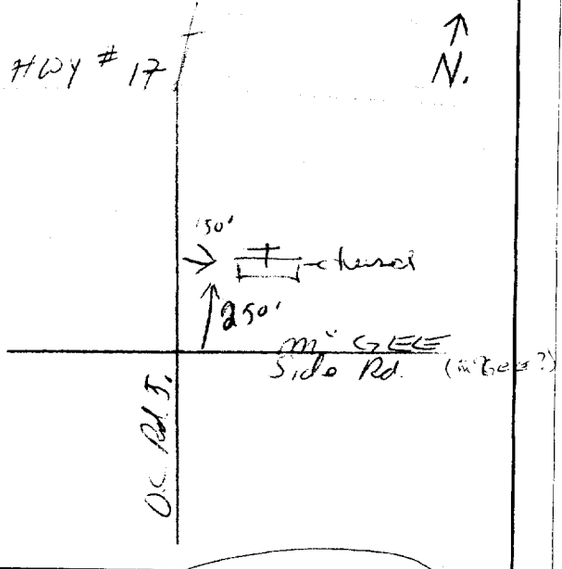
STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	050 FEET	050 FEET	050 FEET	050 FEET	050 FEET

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

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 050 FEET | RECOMMENDED PUMPING RATE: 0005 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

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

WATER USE 55-56: 1 ☐ DOMESTIC | 2 ☐ STOCK | 3 ☐ IRRIGATION | 4 ☐ INDUSTRIAL | ☐ OTHER | 5 ☐ COMMERCIAL | 6 ☐ MUNICIPAL | 7 ☐ PUBLIC SUPPLY | 8 ☐ COOLING OR AIR CONDITIONING | 9 ☐ NOT USED

METHOD OF DRILLING 57 — 5: 1 ☐ CABLE TOOL | 2 ☐ ROTARY (CONVENTIONAL) | 3 ☐ ROTARY (REVERSE) | 4 ☐ ROTARY (AIR) | 5 ☒ AIR PERCUSSION | 6 ☐ BORING | 7 ☐ DIAMOND | 8 ☐ JETTING | 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Henry Mains Well Drilling | LICENCE NUMBER: 3644

ADDRESS: Box 32 Richmond Ont

NAME OF DRILLER OR BORER: Henry Mains | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Henry Mains | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 3644 | DATE RECEIVED 63-68: 27 08 78

DATE OF INSPECTION: 17/05/79 | INSPECTOR: [illegible]

REMARKS:

C5.5.33

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

(11) 1517377 MUNICIP 15005 CON. CON 02

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: West Carleton (Huntley)
CON. BLOCK, TRACT, SURVEY, ETC.: Con 2.
LOT: 010
[redacted] Majestic Dr. Apt 10, Nepean
DATE COMPLETED: DAY 30 MO 10 YR 80
[illegible] 18 199 RC 4 ELEVATION 0280 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
grey	clay	stones		0	12
grey	shaly limestone			12	84

(31) 001 FR 05 12 | 008 12 1582
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
080	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 / 04	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	020
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS / MINS
1 ☑ PUMP 2 ☐ BAILER	004	01 / 00

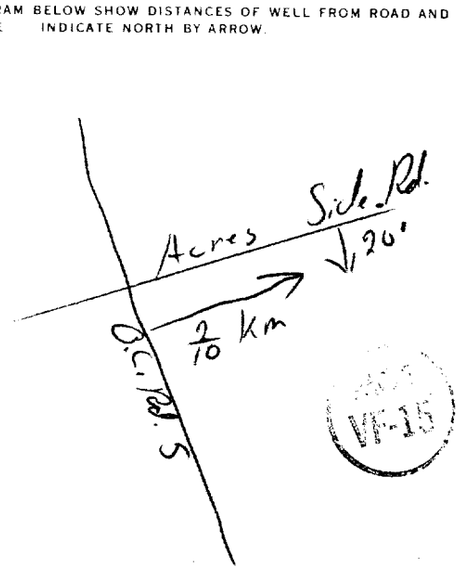
STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING: 1 ☑ PUMPING 2 ☐ RECOVERY	15 MINUTES FEET	30 MINUTES FEET	45 MINUTES FEET	60 MINUTES FEET
025	080		080	080	080	080

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
☐ SHALLOW ☑ DEEP	080	004

LOCATION OF WELL

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



DRILLERS REMARKS

54 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
55-56 WATER USE 01	1 ☑ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
57 METHOD OF DRILLING 5	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☑ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Henry Mains Well Drilling — LICENCE NUMBER: 3644
ADDRESS: Box 326, Richmond Ont.
NAME OF DRILLER OR BORER: Henry Mains — LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Henry Mains
SUBMISSION DATE: DAY 1 MO 11 YR 80

OFFICE USE ONLY

DATA SOURCE 58: 1
CONTRACTOR 59-62: 3644
DATE RECEIVED 63-68: 011280
DATE OF INSPECTION:
INSPECTOR: km
REMARKS:
CSS.EJ

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

3165d

The Ontario Water Resources Act

WATER WELL RECORD

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

11 1517526 MUNICIP 15005 CON CON 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
Carleton XXXXXXXXXXXX	Huntley	3 II	11

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Pri-Tec Ltd.	R. R. # 5, Box 933, Ottawa, Ontario	DAY 22 MO 10 YR 80

21 UTM ZONE 18 EASTING 421599 NORTHING 5018299 DC ELEVATION 0365 SC 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	Sand	Stones	Fill	0	4
Brown	Sandy Clay	Boulders		4	13
Grey	Limestone		soft	13	150

31 0004628 1201 0013605 1361 0150 2158 5

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0048	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
0145	1 ☐ FRESH 3 ☐ SULPHUR Slight 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.188	0	0021
06				
5 7/8	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		21 ~~XXX~~	~~XXX~~ 150
06				0150
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ 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	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0010 GPM	01 HOURS 00 MINS

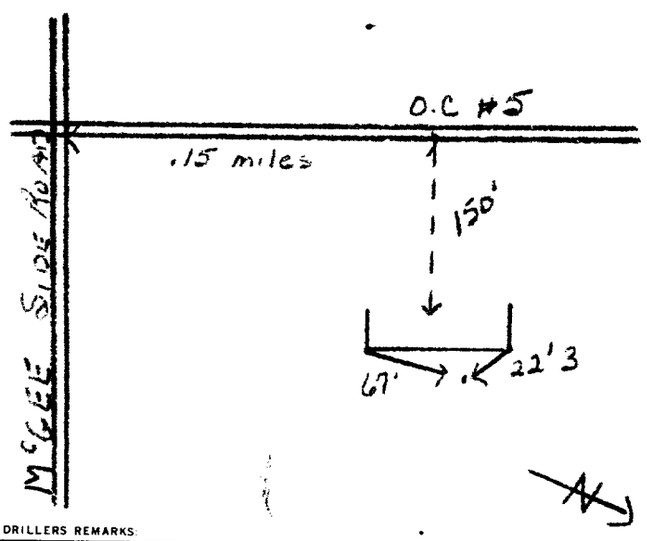
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	040 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	040 FEET	040 FEET	040 FEET	040 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	40 FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	060 FEET	0005 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☐ DOMESTIC 2 ☒ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 5	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Capital Water Supply Ltd.	1558
ADDRESS	
Box 490, Stittsville, Ontario.	
NAME OF DRILLER OR BORER	LICENCE NUMBER
S. Miller	
SIGNATURE OF CONTRACTOR	SUBMISSION DATE
[signature]	DAY 25 MO. 10 YR. 80

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	1558	200381
DATE OF INSPECTION	INSPECTOR	
REMARKS:		

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

31651

Ontario

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

11 — 1517781 — MUNICIP. 15005 — CON. CON 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Ottawa-Carleton	West Carleton - Huntley	Conc. 2 II	011

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
[redacted] Pritec Ltd.	Carp Rd., Carp, Ontario	DAY 30 MO 09 YR 81

21 — UTM: ZONE 18 — EASTING 421899 — NORTHING 5018299 — RC 4 — ELEVATION 0370 — 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	Sand	Boulders		0	15
Gray	Limestone			15	250
Black	Limestone			250	298

31 — 00 15 28 13 | 02 50 2 15 | 02 98 8 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
00 30 ft	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0290 ft	1 ☐ FRESH 2 ☐ SALTY 3 ☒ SULPHUR (slight) 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	00 22
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		22	0298
	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	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0005 GPM	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	125 FEET		125 FEET	125 FEET	125 FEET	125 FEET

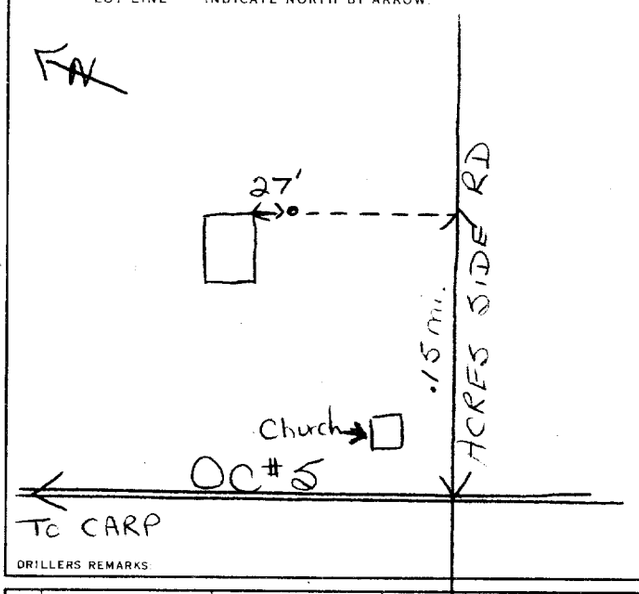
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	225 FEET	0005 GPM

50-53 ____ GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL 54 — 1

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

WATER USE 55-56 — 01

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

METHOD OF DRILLING 57 — 5

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

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Capital Water Supply Ltd.	1558

ADDRESS
Box 490, Stittsville, Ont. K0A 3G0

NAME OF DRILLER OR BORER	LICENCE NUMBER
S. Miller	

SIGNATURE OF CONTRACTOR — SUBMISSION DATE DAY 03 MO 10 YR 82

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1558 — DATE RECEIVED 63-68: 03 03 82

DATE OF INSPECTION — INSPECTOR

REMARKS: — P — WI

CSS. 05

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act 3165d

WATER WELL RECORD

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

11 1519074 MUNICIP 15005 CON. GW 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
Ottawa-Carleton	West Carleton-Huntley	Conc. 2 II	011

[redacted] 13090; Kanata, Ontario. K2K 1X3

DATE COMPLETED: DAY 05 MO 06 YR 84

UTM 18299 RC 4 ELEVATION 0365 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	Sand		Packed	0	4
Gray	Sand	Gravel	Packed	4	8
Gray	Limestone		Soft	8	12
Gray	Limestone		Medium	12	260

MOE VF-18

31 0004628 79 | 0008238 1179 | 0012215 85 | 0260 2 15 78

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0155'	1 ☐ FRESH 3 ☒ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
0250'	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
6¼ 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	022
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		22	0260
	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	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 0015 GPM

DURATION OF PUMPING: 01 HOURS 00 MINS

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

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: FEET

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

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

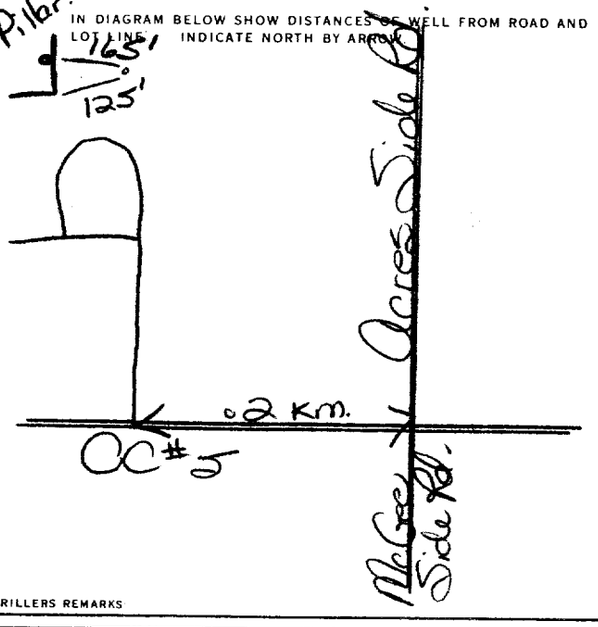
RECOMMENDED PUMP SETTING: 080 FEET

RECOMMENDED PUMPING RATE: 0005 GPM

LOCATION OF WELL

3111 Pillar

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



DRILLERS REMARKS

FINAL STATUS OF WELL 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 02	1 ☐ DOMESTIC 2 ☒ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 1	1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. LICENCE NUMBER: 1558

ADDRESS: Box 490; Stittsville, Ontario. K0A 3G0

NAME OF DRILLER OR BORER: W. Kavanagh / J. Moore LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: W. Kavanagh SUBMISSION DATE: DAY 06 MO 06 YR 84

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE 1 CONTRACTOR 1558 DATE RECEIVED 07 08 84

DATE OF INSPECTION: INSPECTOR:

REMARKS: CSC. E)

FORM NO. 0506—4—77 FORM 7

Ontario Ministry of the Environment

Well Tag A 049703 (Put Below)

A049703

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name	E-mail Address	☐ Well Constructed by Well Owner
Camcor	Industries		

Mailing Address (Street Number/Name, RR)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
#2171 McGee Side Road	Carp	Ont	K0A 1L0	

Part A Construction and/or Major Alteration of a Well

Address of Well Location (Street Number/Name, RR)	Township	Lot	Concession
#2171 McGee Side Road	Huntley	11	2

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

UTM Coordinates NAD 8 3	Zone	Easting	Northing	GPS Unit Make	Model	Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify
	18	421921	5018437	Magellan	200	

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
	Sand	Gravel		0	4.27
Grey	Limestone			4.27	152.39

*Plan RP5R12610 *

Annular Space/Abandonment Sealing Record

Depth Set at (Metres) From	Depth Set at (Metres) To	Type of Sealant Used (Material and Type)	Volume Placed (Cubic Metres)
6.10	0	Neat Cement Slurry	.2724

Method of Construction

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

Water Use

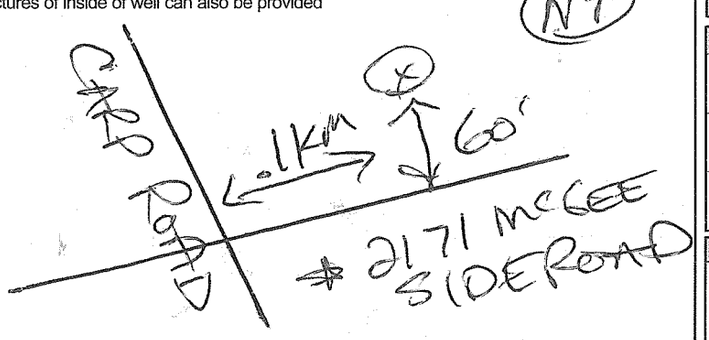
☐ Public ☒ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Status of Well

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

Location of Well

Please provide a map below showing:
- all property boundaries, and measurements sufficient to locate the well in relation to fixed points,
- an arrow indicating the North direction
- detailed drawings can be provided as attachments no larger than legal size (8.5" by 14")
- vidigital pictures of inside of well can also be provided



Date Well Completed (yyyy/mm/dd)	Was the well owner's information package delivered?	Date the Well Record and Package Delivered to Well Owner (yyyy/mm/dd)
2007-08-31	☒ Yes ☐ No	2007-08-31

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co Ltd	1119

Business Address (Street No./Name, number, RR)	Municipality
RR#1	Richmond

Province	Postal Code	Business E-mail Address
Ont	K0A 2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613 838 9170	Desaulniers Ken

Well Technician's Licence No.	Signature of Technician	Date Submitted (yyyy/mm/dd)
1114		2007-10-10

Results of Well Yield Testing

Check box if after test of well yield, water was:
☐ Clear and sand free ☒ NOT TESTED
☐ Cannot develop to sand-free state

If pumping discontinued, give reason: /

Pumping test method: SubPump

Pump intake set at (Metres): 91.44

Pumping rate (Litres/min): 26.5

Duration of pumping: ___ hrs + 0 min

Final water level end of pumping (Metres): 34.90

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 91.44 Metres

Recommended pump rate (Litres/min): 26.5

If flowing give rate (Litres/min): X

Draw Down Time (Min)	Draw Down Water Level (Metres)	Recovery Time (Min)	Recovery Water Level (Metres)
Static Level	5.75	Static Level	34.90
1	7.08	1	32.36
2	8.20	2	31.30
3	9.30	3	30.20
4	10.30	4	29.18
5	11.20	5	28.20
10	15.26	10	23.70
15	18.60	15	20.
20	21.40	20	16.60
25	23.87	25	13.90
30	26.	30	11.58
40	29.66	40	9.90
50	32.60	50	7.80
60	34.90	60	6.30

Water Details

Water found at Depth		Kind of Water	
106.68 Metres	☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur	☐ Minerals
Water found at Depth		Kind of Water	
147.82 Metres	☐ Gas	NOT TESTED ☐ Salty ☐ Sulphur	☐ Minerals
Water found at Depth		Kind of Water	
Metres	☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur	☐ Minerals

Casing Used

☐ Galvanized
☒ Steel
☐ Fibreglass
☐ Plastic
☐ Concrete

Screen Used

☒ Galvanized
☐ Steel
☐ Fibreglass
☐ Plastic
☐ Concrete

No Casing and Screen Used

☒ Open Hole 6.10 - 152.39

Disinfected? ☒ Yes ☐ No

Casing and Well Details

Diameter of the Hole (Centimetres): 14.28

Depth of the Hole (Metres): 152.39

Wall Thickness (Metres): .1488cm

Inside Diameter of the Casing (Metres): .1588

Depth of the Casing (Metres): 6.71

Ministry Use Only

Audit No.	Well Contractor No.
Z60149	
Date Received (yyyy/mm/dd)	Date of Inspection (yyyy/mm/dd)
OCT 15 2007	
Remarks	

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag#: A204317 (below)

A204317

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
	Lorissa Const. Inc	gilles@lorissa.ca	

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
3140 Carp Rd.	West Carleton	Ont	K0A1L0	613 839 3754

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
159 John Cavanaugh	West Carleton	11	Concession 2

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Carp	Ontario	K0A1L0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	421743	5018692		

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	Hardpan	Sand, gravel, stone		0	8
Grey	Hardpan	sand, gravel, stone		8	20
Grey	Rock			20	75

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	20	cement grout	4 Bags

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
6¼	Steel	188	0	22

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	75	6 inch

Results of Well Yield Testing

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

If pumping discontinued, give reason: ✓

Pump intake set at (m/ft): 50

Pumping rate (l/min / GPM): 10

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 11.28

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 65

Recommended pump rate (l/min / GPM): 10

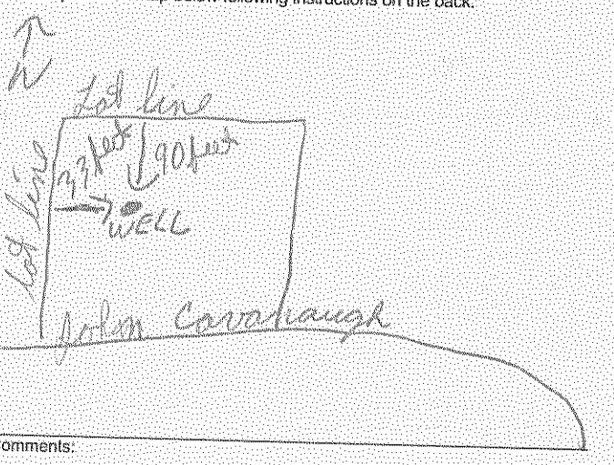
Well production (l/min / GPM): 20

Disinfected? ☑ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	9.02		11.28	
1	9.98	1	10.31	
2	10.27	2	10.09	
3	10.45	3	9.90	
4	10.55	4	9.81	
5	10.61	5	9.68	
10	10.78	10	9.47	
15	10.85	15	9.32	
20	10.92	20	9.12	
25	11.03	25	9.10	
30	11.10	30	8.97	
40	11.18	40	8.95	
50	11.24	50	8.92	
60	11.28	60	8.89	

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.
Mavrec Cayen LTD	1517

Business Address (Street Number/Name)	Municipality
69 RT 200 est Cassleman	Watson

Province	Postal Code	Business E-mail Address
ON	K0M1M0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613 764 2178	Mayrec Cayen

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1517	Mayrec Cayen	2016/06/20

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	2016/06/20	2016/06/20

Ministry Use Only

Audit No. Z232615

Received JUL 19 2016

Contractor's Copy

Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

Dear Erik Ardley:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addrine Thomas 2021.03.11 15:49:43 -05'00'

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) 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: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

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Certificate of Analysis

eurofins | Environment Testing

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1544901 GW 2021-03-04 GW1	1544902 GW 2021-03-04 GW2
Anions	Cl	1	mg/L	AO 250	120	119
	F	0.10	mg/L	MAC 1.5	0.15	0.14
	N-NO2	0.10	mg/L	MAC 1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC 10.0	<0.10	<0.10
	SO4	1	mg/L	AO 500	83	79
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG 500	346	344
	Colour	2	TCU		<2	<2
	Conductivity	5	uS/cm		1100	1100
	DOC	0.5	mg/L	AO 5	1.5	1.5
	pH	1.00		6.5-8.5	7.98	8.02
	S2-	0.01	mg/L	AO 0.05		0.03
		0.1	mg/L	AO 0.05	<0.1*	
	TDS	10	mg/L	AO 500	64[illegible]	640*
	Turbidity	0.1	NTU	AO 5.0	>1[illegible]	2.0
Hardness	Hardness as CaCO3	1	mg/L	OG 100	382*	391*
Indices/Calc	Ion Balance	0.01			1.02	1.04
Metals	Ca	1	mg/L		115	117
	Fe	0.03	mg/L	AO 0.3	3.69*	0.09
	K	1	mg/L		5	4
	Mg	1	mg/L		23	24
	Mn	0.01	mg/L	AO 0.05	0.06*	<0.01
	Na	2	mg/L	AO 200	105	103
Nutrients	N-NH3	0.010	mg/L		0.023	0.021
	Total Kjeldahl Nitrogen	0.100	mg/L		0.197	0.104
Subcontract-Inorg	Phenols	0.001	mg/L		<0.001	<0.001

Guideline = ODWSOG *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

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Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1544901 GW 2021-03-04 GW1	1544902 GW 2021-03-04 GW2
Subcontract-Inorg	Tannin & Lignin	0.1	mg/L			<0.1	<0.1

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 396958 **Analysis/Extraction Date** 2021-03-05 **Analyst** AET **Method** C SM2130B			
Turbidity	<0.1 NTU	100	70-130
Run No 396999 **Analysis/Extraction Date** 2021-03-09 **Analyst** SKH **Method** C SM2540			
TDS	<10 mg/L	99	90-110
Run No 397023 **Analysis/Extraction Date** 2021-03-08 **Analyst** R R **Method** SM 4110			
N-NO2	<0.10 mg/L	113	90-110
N-NO3	<0.10 mg/L	104	90-110
SO4	<1 mg/L	100	90-110
Run No 397049 **Analysis/Extraction Date** 2021-03-08 **Analyst** AET **Method** SM2320,2510,4500H/F			
Alkalinity (CaCO3)	<5 mg/L	106	90-110
Conductivity	<5 uS/cm	100	90-110
F	<0.10 mg/L	102	90-110
pH		100	90-110
Run No 397050 **Analysis/Extraction Date** 2021-03-09 **Analyst** AET **Method** EPA 351.2			

Guideline = ODWSOG *** = Guideline Exceedence**

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

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Total Kjeldahl Nitrogen	<0.100 mg/L	93	70-130
Run No 397051 **Analysis/Extraction Date** 2021-03-09 **Analyst** AET **Method** EPA 350.1			
N-NH3	<0.010 mg/L	114	80-120
Run No 397053 **Analysis/Extraction Date** 2021-03-09 **Analyst** SKH **Method** C SM2120C			
Colour	<2 TCU	98	90-110
Run No 397066 **Analysis/Extraction Date** 2021-03-09 **Analyst** Z S **Method** M SM3120B-3500C			
Calcium	<1 mg/L	105	90-110
Potassium	<1 mg/L	105	87-113
Magnesium	<1 mg/L	103	76-124
Sodium	<2 mg/L	117	82-118
Run No 397091 **Analysis/Extraction Date** 2021-03-09 **Analyst** R R **Method** SM 4110			
Chloride	<1 mg/L	100	90-110
Run No 397096 **Analysis/Extraction Date** 2021-03-10 **Analyst** AET **Method** SM 5310B			
DOC	<0.5 mg/L	97	80-120

Guideline = ODWSOG *** = Guideline Exceedence**

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

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 397103 **Analysis/Extraction Date** 2021-03-10 **Analyst** AET **Method** C SM2340B			
Hardness as CaCO3			
Ion Balance			
Run No 397167 **Analysis/Extraction Date** 2021-03-11 **Analyst** H D **Method** EPA 200.8			
Iron	<0.03 mg/L	92	80-120
Manganese	<0.01 mg/L	92	80-120
Run No 397168 **Analysis/Extraction Date** 2021-03-11 **Analyst** AET **Method** C SM4500-S2-D			
S2-	<0.01 mg/L	89	80-120
Run No 397177 **Analysis/Extraction Date** 2021-03-08 **Analyst** AET **Method** SUBCONTRACT P-INORG			
Phenols	<0.001 mg/L	88	69-132
Tannin & Lignin	<0.1 mg/L	110	

Guideline = ODWSOG *** = Guideline Exceedence**

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Certificate of Analysis

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948880
Date Submitted: 2021-03-05
Date Reported: 2021-03-11
Project: PH4146
COC #: 870803

Sample Comment Summary

Sample ID: 1544901	GW1	Significant amount of solids in preserved bottle were not included in TKN analysis. S2- MRL elevated due to matrix interference (dilution was done).

Guideline = ODWSOG *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

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Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948884
Date Submitted: 2021-03-05
Date Reported: 2021-03-06
Project: PH4146
COC #: 870803

Dear Erik Ardley:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana Dzeletovic 2021.03.06 13:30:34 -05'00'

APPROVAL: _____

Dragana Dzeletovic-Andric, Microbiology Team Lead

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

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Certificate of Analysis

eurofins | Environment Testing

Client: Paterson Group
154 Colonnade Rd. South
Nepean, ON
K2E 7T7
Attention: Mr. Erik Ardley
PO#: 31705
Invoice to: Paterson Group

Report Number: 1948884
Date Submitted: 2021-03-05
Date Reported: 2021-03-06
Project: PH4146
COC #: 870803

				Lab I.D.	1544909	1544910
				Sample Matrix	GW	GW
				Sample Type		
				Sampling Date	2021-03-04	2021-03-04
				Sample I.D.	GW1	GW2
Group	**Analyte**	**MRL**	**Units**	**Guideline**		
Microbiology	Escherichia Coli	0	ct/100mL	MAC 0	0	0
	Total Coliforms	0	ct/100mL	MAC 0	0	0

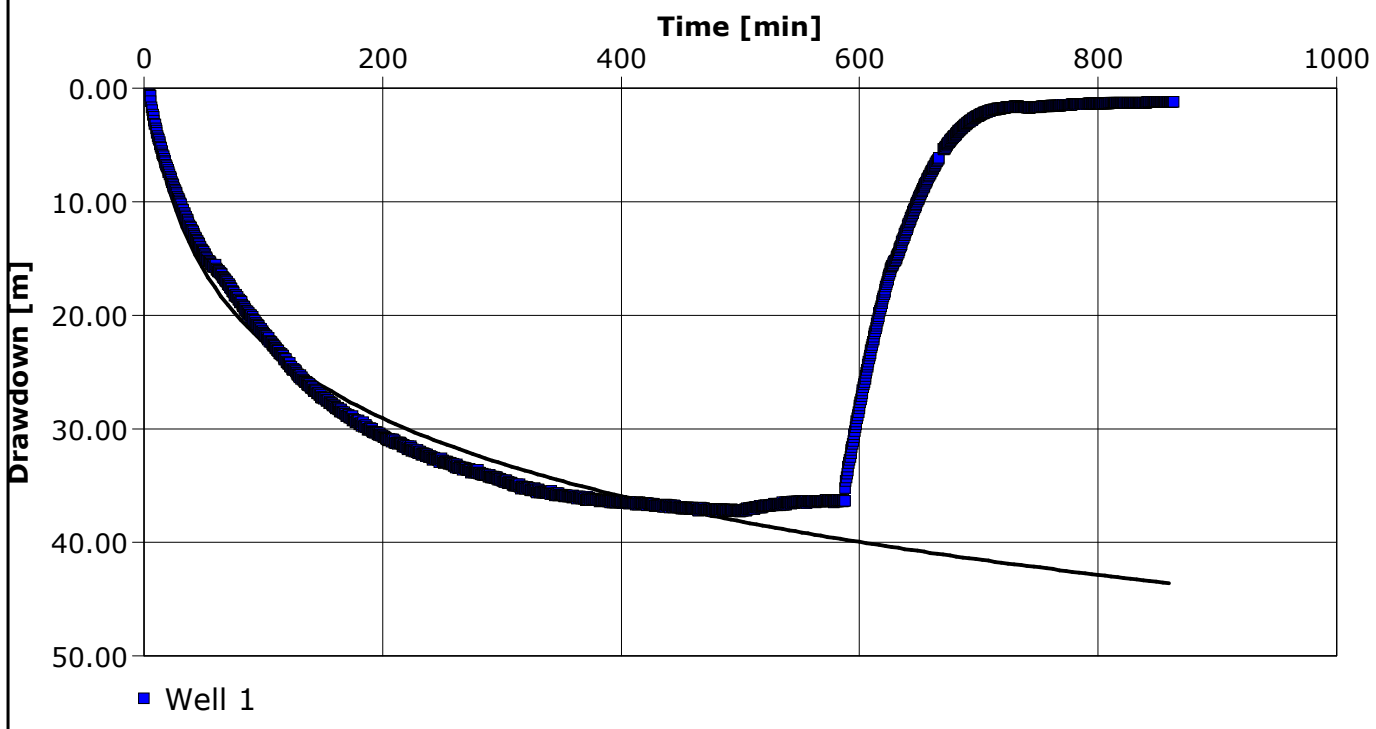
Guideline = ODWSOG *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Analytical Method: AMBCOLM1
additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

	Pumping Test Analysis Report
	Project: Proposed Commercial Building
	Number: PH4146
	Client: M B Ford Construction

Location: 2167 McGee Side Rd.	Pumping Test: TW1 Pumping Test	Pumping Well: Well 1
Test Conducted by: EA		Test Date: 19/03/2021
Analysis Performed by: EA	Theis	Analysis Date: 19/03/2021
Aquifer Thickness:	Discharge: variable, average rate 0.2 [l/s]	

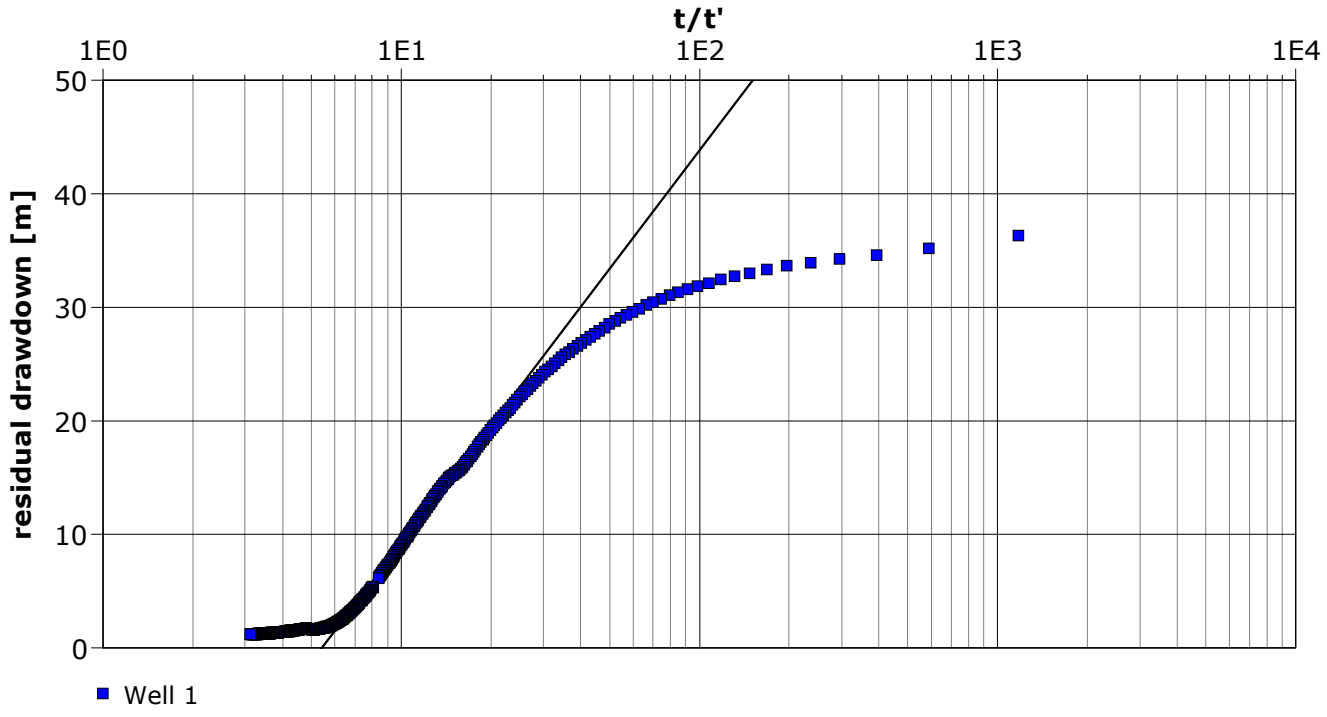


Calculation using Theis

Observation Well	Transmissivity [m²/d]	Storage coefficient	Radial Distance to PW [m]	
Well 1	9.23×10^{-2}		0.08	

	Pumping Test Analysis Report
	Project: Proposed Commercial Building
	Number: PH4146
	Client: M B Ford Construction

Location: 2167 McGee Side Rd.	Pumping Test: TW1 Pumping Test	Pumping Well: Well 1
Test Conducted by: EA		Test Date: 19/03/2021
Analysis Performed by: EA	Theis Recovery	Analysis Date: 19/03/2021
Aquifer Thickness:	Discharge: variable, average rate 0.2 [l/s]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m²/d]	Radial Distance to PW [m]	
Well 1	9.14×10^{-2}	0.08	

	Pumping Test Analysis Report
	Project: Proposed Commercial Building
	Number: PH4146
	Client: M B Ford Construction

Location: 2167 McGee Side Rd.	Pumping Test: TW1 Pumping Test	Pumping Well: Well 1
Test Conducted by: EA		Test Date: 19/03/2021
Aquifer Thickness: NAN m	Discharge: variable, average rate 0.2 [l/s]	

	Analysis Name	Analysis Performed by	Method name	Well	T [m²/d]	S
1	Theis	EA	Theis	Well 1	9.23×10^{-2}	
2	Theis Recovery	EA	Theis Recovery	Well 1	9.14×10^{-2}	
				Average	9.19×10^{-2}	

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Somme Street

PH4089

TW1 inputs

pH	8.02	A	0.18
TDS	640	B	2.42
Hardness	391	C	2.19
Alkalinity	344	D	2.54
Temp.	8.1		
		pHs =	7.172828503

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 = 0.8

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).

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5602

REMARKS

HOLE NO. BH 1-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	117.98		
FILL: Brown silty sand with crushed stone		AU	1						
0.30		AU	2						
		SS	2	25	48	1	116.98		
		SS	3	67	44	2	115.98		
GLACIAL TILL: Dense to very dense, brown silty sand with gravel, cobbles and boulders		SS	4	79	66				
		SS	5	0	50+	3	114.98		
		SS	6	50	50+	4	113.98		
4.80		SS	7	67	50+				
End of Borehole									
Practical refusal to augering at 4.80m depth									
(GWL @ 3.96m - Dec. 2, 2020)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5602

REMARKS

HOLE NO. BH 2-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE									
FILL: Crushed stone with silty sand and gravel		AU	1			0	117.96		
0.30		AU	2						
GLACIAL TILL: Compact to very dense, brown silty sand with gravel, cobbles and boulders		SS	3	75	28	1	116.96		
		SS	4	60	50+				
						2	115.96		
		SS	5	27	50+				
2.82		SS	6		50+				
End of Borehole Practical refusal to augering at 2.82m depth (Piezometer blocked and dry at 2.04m depth - Dec. 2, 2020)									

Pen. Resist. Blows/0.3m: 20 40 60 80

Water Content %: 20 40 60 80

Shear Strength (kPa): 20 40 60 80 100

▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

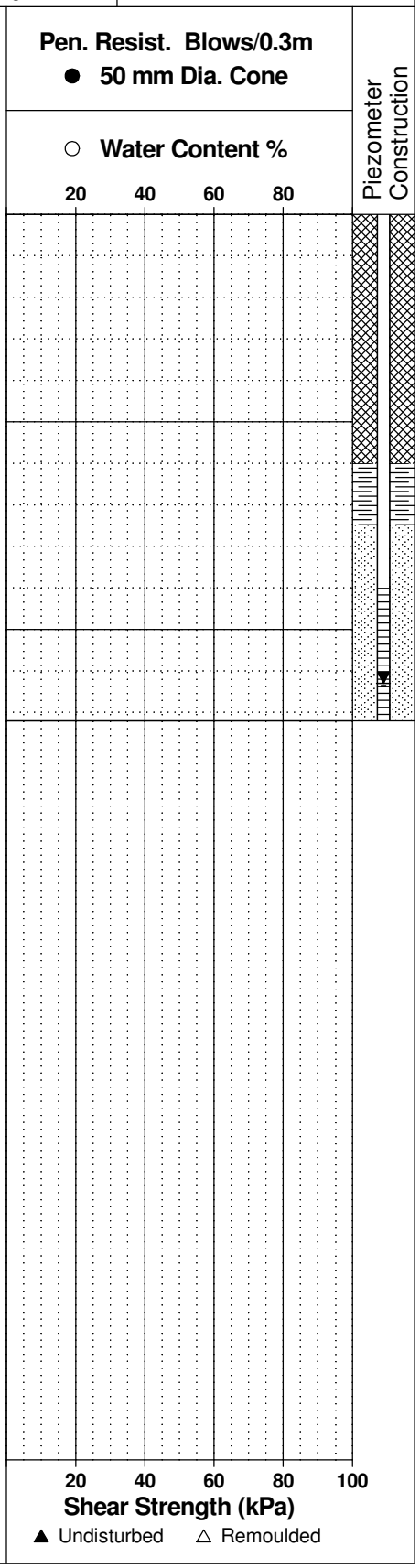
FILE NO. PG5602

REMARKS

HOLE NO. BH 3-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.39
FILL: Brown silty sand, some gravel		AU	1				
0.60							
		SS	2	60	50+	1	116.39
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders		SS	3	22	50+	2	115.39
2.44		SS	4	100	50+		
End of Borehole							
Practical refusal to augering at 2.44m depth							
(GWL @ 2.26m - Dec. 2, 2020)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5602

REMARKS

HOLE NO. BH 4-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.07
FILL: Brown silty sand with crushed stone		AU	1				
0.30							
		AU	2				
GLACIAL TILL: Compact to very dense, brown silty sand with gravel, cobbles and boulders		SS	3	50	28	1	116.07
		SS	4	75	34	2	115.07
		SS	5	50	50+		
2.69							
End of Borehole							
Practical refusal to augering at 2.69m depth							
(GWL @ 0.94m - Dec. 2, 2020)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %

20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

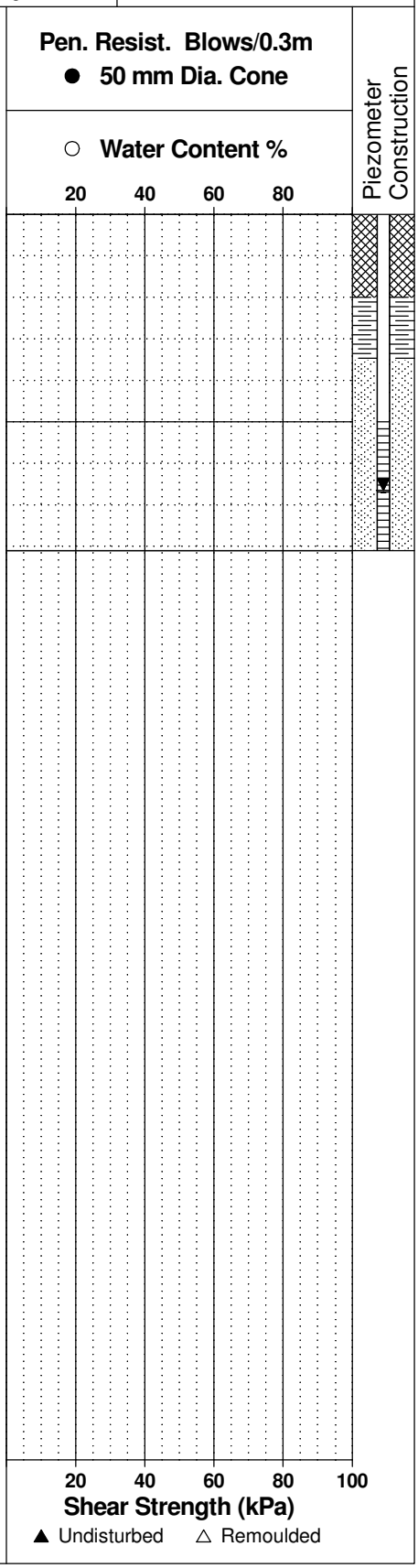
FILE NO. PG5602

REMARKS

HOLE NO. BH 5-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.98
FILL: Brown silty sand, some gravel, trace organics		AU	1				
0.60							
GLACIAL TILL: Compact to very dense, brown silty sand with gravel, cobbles and boulders		SS	2	83	17	1	116.98
1.62		SS	3	100	50+		
End fo Borehole							
Practical refusal to augering at 1.62m depth							
(GWL @ 1.33m - Dec. 2, 2020)							



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5602

REMARKS

HOLE NO. BH 6-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)
GROUND SURFACE						0	117.23
FILL: Crushed stone with silty sand, trace organics		AU	1				
0.30							
GLACIAL TILL: Compact to very dense, light brown silty sand with gravel, cobbles and boulders		SS	2	67	26	1	116.23
		SS	3	75	57	2	115.23
		SS	4	73	50+		
2.57							
End of Borehole							
Practical refusal to augering at 2.57m depth							
(GWL @ 2.09m - Dec. 2, 2020)							

Pen. Resist. Blows/0.3m
● 50 mm Dia. Cone
○ Water Content %
20 40 60 80

Piezometer Construction

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation
Prop. Commercial Building - 2167 McGee Side Road
Ottawa, Ontario

DATUM Geodetic

FILE NO. PG5602

REMARKS

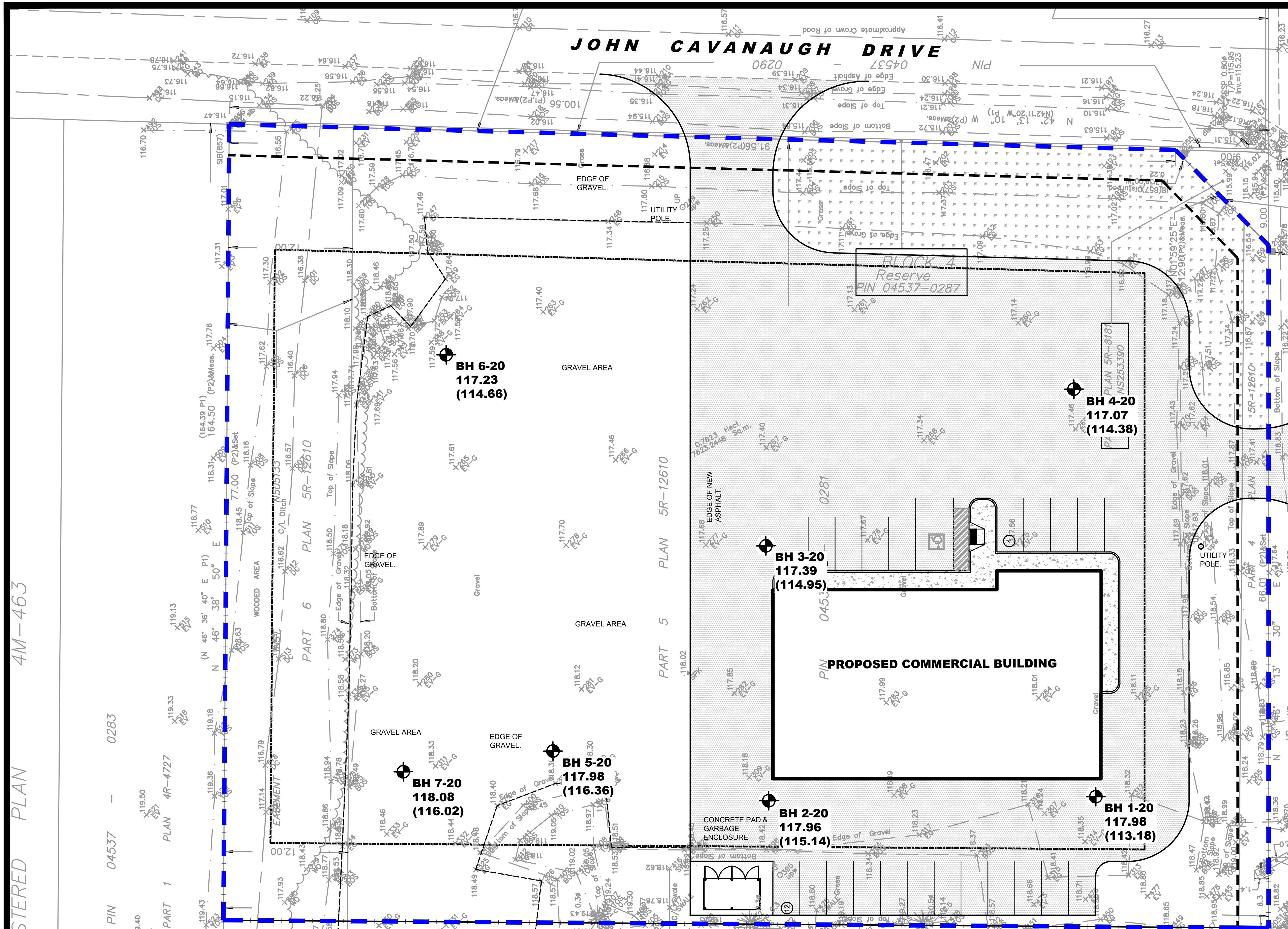
HOLE NO. BH 7-20

BORINGS BY CME-55 Low Clearance Drill **DATE** November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE % RECOVERY	SAMPLE N VALUE or RQD	DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone ○ Water Content %	Piezometer Construction
GROUND SURFACE						0	118.08		
		AU	1						
		AU	2						
GLACIAL TILL: Dense to very dense, brown silty sand with gravel, cobbles and boudlers		SS	3	92	34	1	117.08		
		SS	4	75	50+				
2.06						2	116.08		
End of Borehole Practical refusal to augering at 2.06m depth (Piezometer blocked and dry at 1.38m depth - Dec. 2, 2020)									

Pen. Resist. Blows/0.3m: ● 50 mm Dia. Cone; ○ Water Content %
20 40 60 80

20 40 60 80 100
Shear Strength (kPa)
▲ Undisturbed △ Remoulded



LEGEND:

⌖	BOREHOLE LOCATION
117.96	GROUND SURFACE ELEVATION (m)
(115.14)	PRACTICAL REFUSAL TO AUGERING ELEVATION (m)

SURVEY PLAN PROVIDED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:400

0 5 10 15 20 25m

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154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

M.B. FORD CONSTRUCTION
GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL BUILDING
2167 MCGEE SIDE ROAD
CARP, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:400	Date: 12/2020
Drawn by: YA	Report No.: PG5602-1
Checked by: NP	Dwg. No.: PG5602-1
Approved by: SD	Revision No.:

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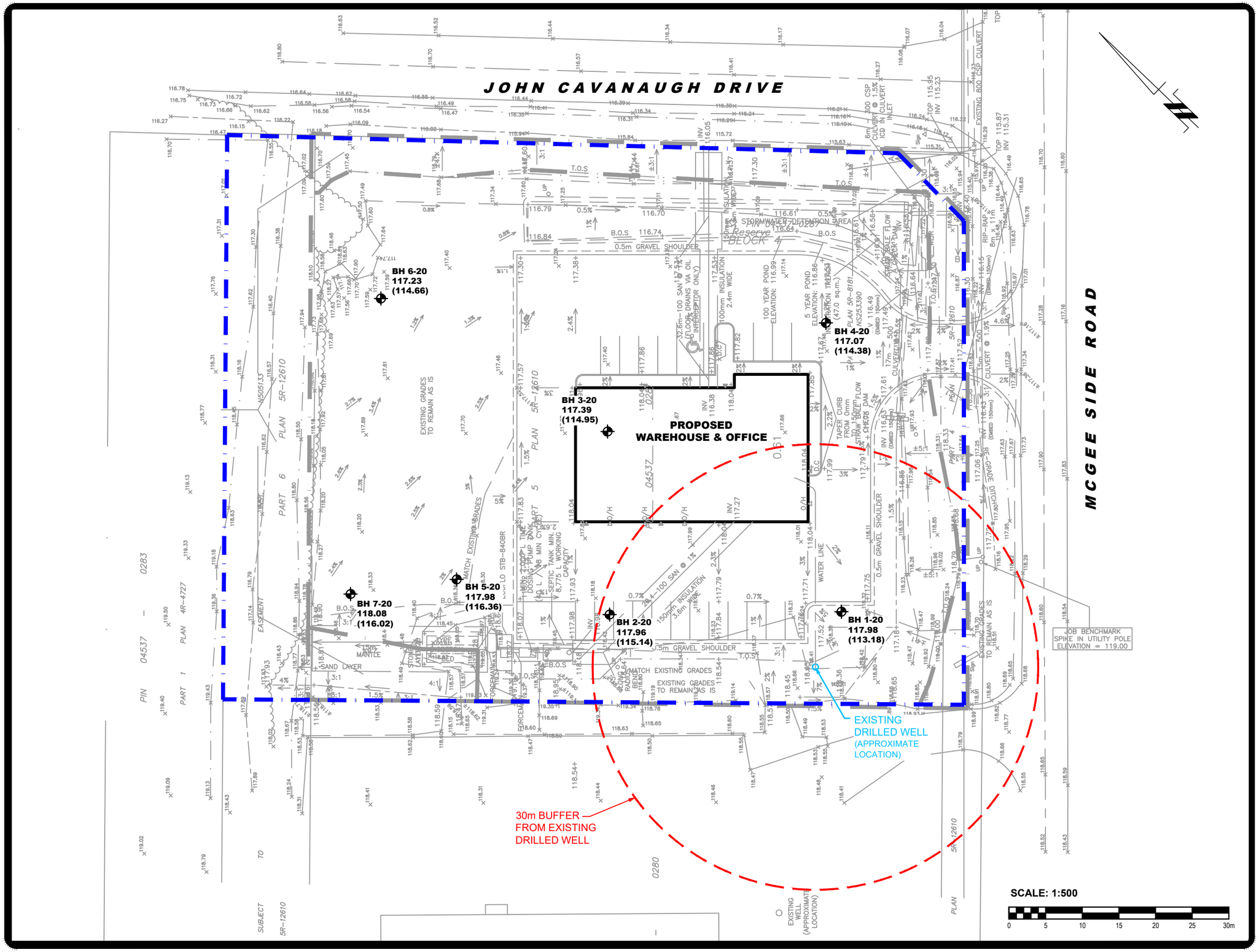

LEGEND:

⌖	BOREHOLE LOCATION
117.96	GROUND SURFACE ELEVATION (m)
(115.14)	PRACTICAL REFUSAL TO AUGERING ELEVATION (m)

BENCHMARK INFORMATION:

All ground surface elevations reference a geodetic datum (NAD83 Zone 18T)

REFERENCE:

Survey Plan provided by D.B. Gray Engineering Inc.

Date	Description	Rev.

Client:

M.B FORD CONSTRUCTION

Consultant:

paterson group
consulting engineers

Project:

PROPOSED WAREHOUSE & OFFICE
2167 MCGEE SIDE ROAD
OTTAWA, ONTARIO

Drawing:

SITE PLAN

Scale: 1:500	Seal:
Date: 03/2021	
Drawn by: JM	
Checked by: KP	
File: PH4146	

Drawing No.:

PH4146-2

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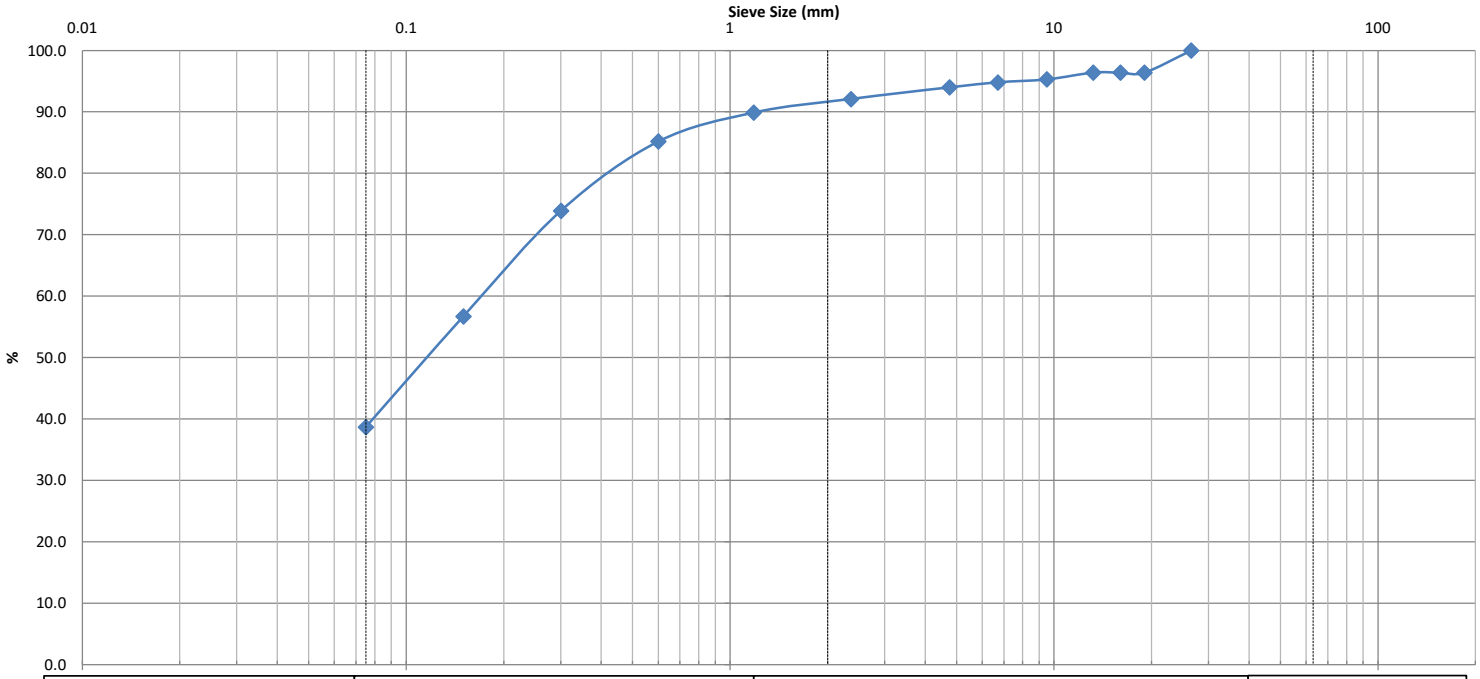
SIEVE ANALYSIS
ASTM C136

CLIENT:	MB Ford Construction Ltd.	DESCRIPTION:	Fine Aggregate	FILE NO:	PH4146
CONTRACT NO.:	-	SPECIFICATION:	**Soil**	LAB NO:	23277
PROJECT:	2167 McGee Side	INTENDED USE:	-	DATE RECEIVED:	6-Jan-21
		PIT OR QUARRY:	-	DATE TESTED:	6-Jan-21
DATE SAMPLED:	20-Nov-21	SOURCE LOCATION:	BH7 - SS2	DATE REPORTED:	8-Jan-21
SAMPLED BY:	-	SAMPLE LOCATION:	2'6 - 4'6	TESTED BY:	D.K



Silt and Clay	Sand			Gravel		Cobble
	Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
										0.89	8.5
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
	26.5	0.17	0.055	0.02	6.0	55.3		38.7			

Comments:

REVIEWED BY:	Curtis Beadow	Joe Fosyth, P. Eng.

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SIEVE ANALYSIS
ASTM C136

CLIENT:	MB Ford Construction Ltd.	DESCRIPTION:	Fine Aggregate	FILE NO.:	PH4146
CONTRACT NO.:	-	SPECIFICATION:	Soil	LAB NO.:	23277
PROJECT:	2167 McGee Side	INTENDED USE:	-	DATE REC'D:	6-Jan-21
		PIT OR QUARRY:	-	DATE TESTED:	6-Jan-21
DATE SAMPLED:	20-Nov	SOURCE LOCATION:	BH7 - SS2	DATE REP'D:	8-Jan-21
SAMPLED BY:	-	SAMPLE LOCATION:	2'6 - 4'6	TESTED BY:	D.K

WEIGHT BEFORE WASH	741.8
WEIGHT AFTER WASH	469.3

SIEVE SIZE (mm)	WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	LOWER SPEC	UPPER SPEC	REMARK
150						
106						
75						
63						
53						
37.5						
26.5	**0.0**	0.0	**100.0**			
19	**26.8**	3.6	**96.4**			
16	**26.8**	3.6	**96.4**			
13.2	**26.8**	3.6	**96.4**			
9.5	**34.9**	4.7	**95.3**			
6.7	**38.3**	5.2	**94.8**			
4.75	**44.8**	6.0	**94.0**			
2.36	**58.4**	7.9	**92.1**			
1.18	**75.1**	10.1	**89.9**			
0.6	**109.7**	14.8	**85.2**			
0.3	**193.8**	26.1	**73.9**			
0.15	**321.5**	43.3	**56.7**			
0.075	**455.0**	61.3	**38.7**			
PAN	**468.5**					
SIEVE CHECK FINE		0.17	0.3% max.			**REFERENCE MATERIAL**

OTHER TESTS	RESULT	LAB NO.	RESULT

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.
		

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2167 McGee Side Road

PH4146

Predictive Nitrate Impact Assessment

PRE DEVELOPMENT CONDITIONS

Groundwater Flow Through	NOT USED	
~~Background Nitrate Concentration (C_b) =~~	~~0~~	~~mg/L~~
~~Hydraulic Conductivity (k) =~~	~~0~~	~~m/s~~
~~Horizontal Gradient (i) =~~	~~0~~	
~~Length (L) =~~	~~0~~	~~m~~
~~Aquifer Thickness (t) =~~	~~0~~	~~m~~
~~Groundwater Flow (Q_b) =~~	~~0~~	~~m^3/day~~
Infiltration Factors		
Topography	~~0~~	
Soil	~~0.00~~	
Cover	~~0.00~~	
Total	**~~0~~**	
Site Characteristics		
Area of Site :	-	m^2
	~~0~~	
	~~0~~	
	~~0~~	
Infiltration Area =	-	m^2
Septic Effluent		
Concentration of Effluent (Cs) =	~~0~~	mg/L
Daily Sewage Flow (Qs)=	~~0~~	m^3
Infiltration Calculation		
Nitrate concentration in precipitation (C_i) =	~~0~~	mg/L
Surplus Water (Environment Canada)		mm/yr
Factored Water Surplus =	~~0~~	mm/yr
Total volume of Infiltration	-	m^3/yr
Infiltration flow entering the system (Q_i) =	~~0~~	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	~~0~~	m^3/day
C_e = concentration of nitrates in the septic effluent	~~0~~	mg/L
Q_i = flow entering the system from infiltration	~~0~~	m^3/day
C_i = Concentration of nitrates in the infiltrate	~~0~~	mg/L
C_T =	**#DIV/0!**	**mg/L**
Estimate Number of Lots	**~~1~~**	**lots**

POST DEVELOPMENT CONDITIONS

Groundwater Flow Through	NOT USED	
~~Background Nitrate Concentration (C_b) =~~	~~0~~	~~mg/L~~
~~Hydraulic Conductivity (k) =~~	~~0~~	~~m/s~~
~~Horizontal Gradient (i) =~~	~~0~~	
~~Length (L) =~~	~~0~~	~~m~~
~~Aquifer Thickness (t) =~~	~~0~~	~~m~~
~~Groundwater Flow (Q_b) =~~	~~0~~	~~m^3/day~~
Infiltration Factors		
Topography	0.25	
Soil	0.30	
Cover	0.10	
Total	**0.65**	
Site Characteristics		
Area of Site :	7,622	m^2
Roof + driveway areas + gravel fill area	3,872	m^2
Length of roadways:	-	m
Width of roadways	-	m^2
Total area of roadways:	-	
Impervious Area	3,872	m^2
Percent Impervious Area =	50.80	%
Infiltration Area =	3,750	m^2
Septic Effluent		
Concentration of Effluent (Cs) =	4	mg/L
Daily Sewage Flow (Qs)=	5.15	m^3
See Note 1 below.		
Infiltration Calculation		
Nitrate concentration in precipitation (C_i) =	0	mg/L
Surplus Water (Environment Canada)	402	mm/yr
Factored Water Surplus =	261	mm/yr
Infiltration % due to stormwater management measures	0%	
Infiltration rate from stormwater management measures =	0	mm/yr
Infiltration Flow Entering the System (Q_i) =	3	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	5.15	m^3/day
C_e = concentration of nitrates in the septic effluent	4	mg/L
Q_i = flow entering the system from infiltration	3	m^3/day
C_i = Concentration of nitrates in the infiltrate	0	mg/L
C_T =	**2.63**	**mg/L**
Estimate Number of Lots	**1**	**lots**

* = see separate weighted infiltration factor calculations

Waterloo BIOFILTER

WaterNOx-S & WaterNOx-LS Nitrogen Removal

Removes up to 95% of total nitrogen from residential or commercial septic systems with a simple, passive, and cost-effective denitrification filter.

Available upgrade for *all* Waterloo Biofilter advanced wastewater treatment systems

Nitrogen is a nutrient naturally found in human wastewater. Excess nitrogen in groundwater is a public health concern, while excess nitrogen in surface waters can stimulate algae blooms and lake eutrophication. Not only can this be a nuisance and interfere with the enjoyment of water bodies - but serious health and ecosystem problems can result such as 'blue baby' syndrome, fish kills, and 'brown or red tide' algae toxins that accumulate in shellfish.

Excess nitrogen in the environment can:

Contaminate Drinking Water Sources with High Levels of Nitrate

Limit Recreation Activities such as Swimming, Boating, and Fishing

Lower Property Values by Impairing Quality of Surface Water

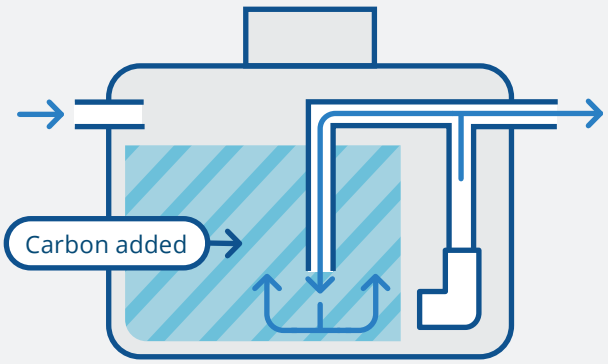
Lower Dissolved Oxygen Levels and Reduce Fish Populations

Multiple Levels of Removal

The Waterloo Biofilter system itself removes 25-35% of total nitrogen with a single-pass configuration, and 50-65% of total nitrogen with a double-pass configuration where treated effluent is recirculated back to the septic tank. With a WaterNOx-S or WaterNOx-LS denitrification filter installed after the Waterloo Biofilter treatment unit, up to 95% total nitrogen removal can be achieved.

WaterNOx-S

The WaterNOx-S recirculates nitrified effluent up through a plastic filtration media with external carbon source added for denitrification.



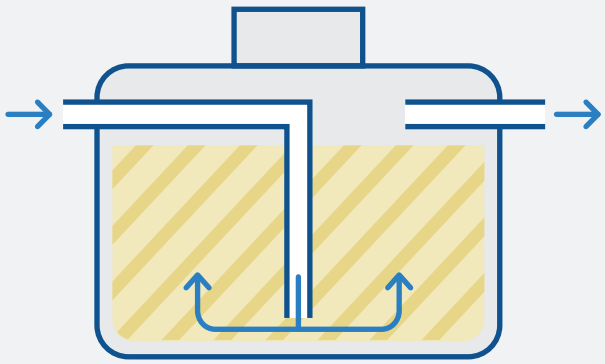
A pump re-circulates the water through the filtration media. External carbon is added.

WaterNOx-S Benefits

- Permanent filtration medium
- Easy set-up and servicing
- No filter media backwashing
- Safe, non-toxic carbon source
- Low energy use
- New or retrofit applications

WaterNOx-LS

The WaterNOx-LS uses autotrophic bacteria to denitrify nitrified effluent in a proprietary blend of agricultural minerals.



Water goes down to the bottom of the tank, then flows up through the media and out the outlet.

WaterNOx-LS Benefits

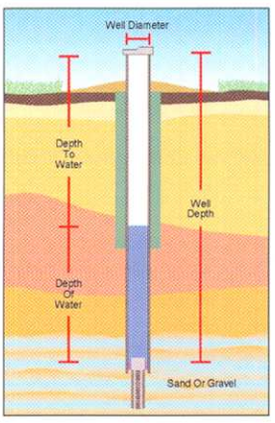
- 100% passive, no energy used
- No extra pump necessary
- No chemical addition
- Long, 10+ year filter media lifespan
- Self-buffered to neutral pH
- Minimal increase to BOD and TSS

For more information:

www.waterloo-biofilter.com
1-866-366-4329
info@waterloo-biofilter.com

Waterloo BIOFILTER

Disinfection Instruction Sheet



If your drinking water continues to test positive on repeated submissions, consult your local health unit, which can help you interpret the results of your tests and provide you with advice on what measures you can take to safeguard your drinking water.

The first step in identifying the reason for repeated adverse water quality is to conduct a visual inspection of your well. Start with a close look at your well. The area around it should be clear of any potential contaminant sources, such as pets, lawn care products, and gardens. Once you're satisfied that the area around your well is okay, take a good, close look at the well itself. If you have an older well, make sure that the cap and the sealant around the well casing isn't cracked or damaged. If it is, you need to fix or replace it right away.

If the source of the problem can't be detected, consult a licensed well contractor right away to identify the source of the problem and eliminate it. You can save yourself a lot of money by doing this instead of rushing out to buy a home treatment device that may be expensive to install, operate, and maintain. And it may not eliminate the source of your trouble.

(If you have a cistern, please talk to your public health unit about disinfection requirements.)

1. Measure the diameter of the well.
2. Measure the well depth and the static or resting water level, then calculate the depth of water in the well.
3. Using the table on this sheet, measure out the amount of bleach needed. (The table gives the volume of bleach needed for different well sizes.) Then, pour the mixture into your well.
4. If possible, mix the water in the well. This can be accomplished by attaching a hose to a tap, running water from the well, through the hose and back into the well.
5. After adding chlorine to the well, remove or bypass any carbon filters that are in the system for water treatment. If you don't, these filters will remove the chlorine from the water, and any pipes beyond the filter will not get disinfected. Replace with new filters after chlorination to avoid reintroducing bacteria into the system.
6. Run water at every faucet in the house (and barn, if you have one) until a strong chlorine odour is detected. Be aware that your nose may lose its ability to detect chlorine.
7. If there is no chlorine smell or it is very weak, add more bleach to the well and repeat Step 6 above.
8. Drain the water heater and fill with chlorinated water.
9. Backflush the water softener and all water filters (except carbon filters).
10. Let the chlorinated water stand in the system for at least 12 hours.
11. Clear chlorine from the well by running an outside hose to the ground surface. Then, run clear water through the faucets until the water no longer smells of chlorine.
12. Avoid putting too much chlorine into the septic system because the bacteria needed for septic decomposition may be killed.
13. Do not drink the water without boiling it until test results show the water is safe to drink.

Volume of Bleach to Add for Every 3 Metres (10 Feet) of Water in the Well*

Casing Diameter		Volume of Unscented Bleach (5.25% solution)
Millimetres	Inches	Millilitres
50	2	6
100	4	30
150	6	60
200	8	100
250	10	200
300	12	250
400	16	400
500	20	650
600	24	900
900	36	2000 (2 litres)
1200	48	3600 (3.6 litres)

For example: If you have 6 metres (20 feet) of water in your well and it has a casing diameter of 100 mm or 4 inches, you would add 60 mm or 2 fluid ounces of bleach.

* For questions or more information on how to disinfect your well, contact your local health unit.

For more information

Ontario Government Ministry Abbreviations

Ministry of Health and Long-Term Care
MOHLTC (also MOH)

Ministry of the Environment
MOE (also MOEE)

Ontario Ministry of Agriculture and Food
OMAF (also OMAFRA)

Ontario Government Information Lines

MOE Public Information Centre: 1-800-565-4923

MOE Water Well Records: 1-888-396-9355

MOHLTC INFOline: 1-800-268-1154

OMAF Agricultural Information Contact Centre: 1-877-424-1300

Ontario Government Web Sites

MOE: www.ene.gov.on.ca

MOHLTC: www.health.gov.on.ca

OMAF: www.gov.on.ca/omaf

Publications available on-line

Health Canada: www.hc-sc.gc.ca

- *A Guide to Well Water Treatment and Maintenance;*
- *Water treatment devices for disinfection of drinking water.*

MOHLTC: www.health.gov.on.ca

- *How to use water safely during a "Boil Water Advisory";*
- *E. coli Bacteria;*
- List of Public Health Units in Ontario.

OMAF: www.gov.on.ca/omaf

- *Assessing the Potential for Ground Water Contamination on Your Farm*, Publication 97-017;
- *Best Management Practices: Water Wells*, OMAFRA and Agriculture and Agri-Food Canada, 2003 (to order).

MOE: www.ene.gov.on.ca

- *Important Facts About Water Well Construction*, Publication 3788;
- *Water Wells and Groundwater Supplies: The Protection of Water Quality in Bored and Dug Wells*, Information Sheet PIB 601b;
- *Water Wells and Groundwater Supplies: The Protection of Water Quality in Drilled Wells*, Information Sheet PIB 602b.

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