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March 26, 2021
File: PH4146-LET.01

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Geotechnical Engineering
Environmental Engineering
Hydrogeology
Geological Engineering
Materials Testing
Building Science

www.patersongroup.ca

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 m²/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).

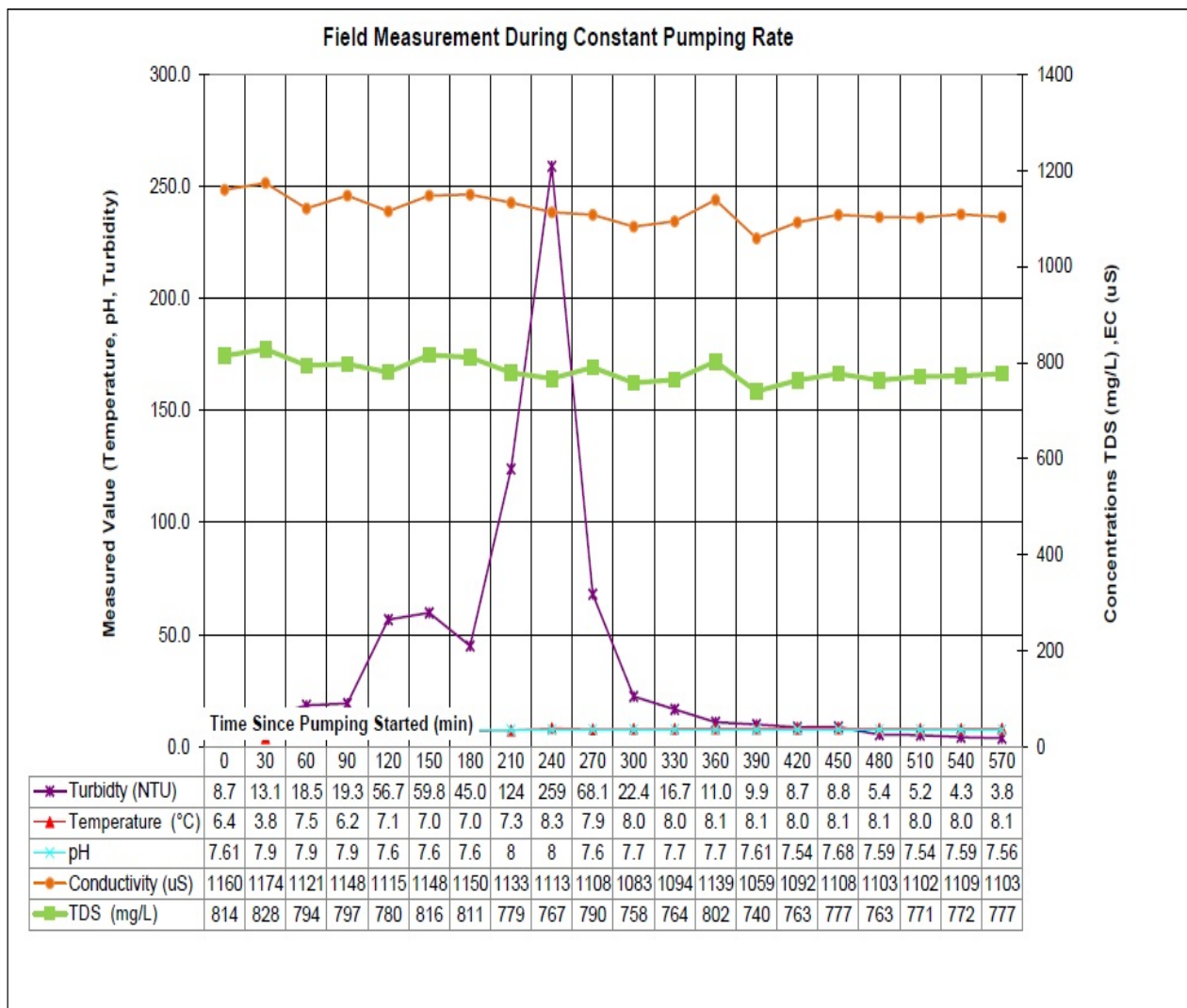
Based on the information summarized in Table 1, it is readily apparent that the new water supply well has intercepted an adequately strong water supply aquifer. It is considered to have sufficient quantity to service the proposed commercial development under typical usage, in addition to the neighboring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



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)	GW2 (9.5 hr)
				2021-03-05	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 CaCO₃)
- 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 CaCO₃

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 minimum 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.

<input type="checkbox"/>	Site area	0.8 Ha
<input type="checkbox"/>	Impervious area %	34.54 %
<input type="checkbox"/>	Daily sewage flow (Average daily flow - Peak. It is expected that actual volumes will be much lower)	Maximum 5.15 m ³
<input type="checkbox"/>	Concentration of nitrate in effluent (Value based on typical effluent concentration)	40 mg/L
<input type="checkbox"/>	Concentration of nitrate in effluent with treatment (Value based on tertiary treatment system with 90% nitrate reduction)	4 mg/L
<input type="checkbox"/>	Surplus Water (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.	402 mm/year

□	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 24.6 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 24.6 mg/L of nitrates for the fully sized system, a 50 to 65% reduction would result in a value of 8.0 to 11.5 mg/L and a 90% reduction would provide a value of 2.3 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 minimum 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.

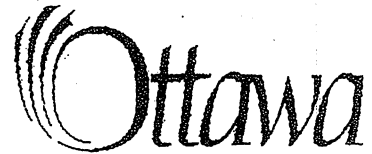
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CERTIFICATE OF WELL COMPLIANCE



I (Jeremy Hanna) AIR ROCK DRILLING CO. LTD. - DO HEREBY CERTIFY

that I am licensed to drill water wells in the Province of Ontario, and that I have supervised the drilling of the water well on the property of :

OWNER: 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



Measurements recorded in: Metric Imperial

Page ___ of ___

Well Owner's Information

First Name: 11840398 Last Name/Organization: Canada Inc. E-mail Address: Well Constructed by Well Owner
 Mailing Address (Street Number/Name): Unit #4-11 Triston Court Municipality: Nepean Ont Province: KAM Postal Code: 1B4 Telephone No. (inc. area code): 184

Well Location

Address of Well Location (Street Number/Name): #2167 MCGEE SIDE ROAD Township: Huntley Lot: 11 Concession: 2
 County/District/Municipality: Ottawa-Carleton City/Town/Village: Carp Province: Ontario Postal Code:
 UTM Coordinates Zone: Easting: 18421937 Northing: 5018421 Municipal Plan and Sublot Number: PLAN 5R-126 10 Other: 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 (mft) From 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 (mft) From 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

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Time (min)	Draw Down		Recovery	
	Water Level (mft)	Time (min)	Water Level (mft)	Time (min)
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	

Pump intake set at (mft): 290'
 Pumping rate (l/min/GPM): 345
 Duration of pumping: 1 hrs + 0 min
 Final water level end of pumping (mft): 65' 8"
 If flowing give rate (l/min/GPM): 2
 Recommended pump depth (mft): 450'
 Recommended pump rate (l/min/GPM): 2
 Well production (l/min/GPM): 2
 Disinfected? Yes No

Method of Construction

Cable Tool Diamond Public Commercial Not used
 Rotary (Conventional) Jetting Domestic Municipal Dewatering
 Rotary (Reverse) Driving Livestock Test Hole Monitoring
 Boring Digging Irrigation Cooling & Air Conditioning
 Air percussion Industrial Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (mft)		Status of Well
			From	To	
6 1/4"	Steel	.188"	+2'	58'	<input checked="" type="checkbox"/> Water Supply <input checked="" type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify
6"	Open Hole		58'	500'	

Construction Record - Screen

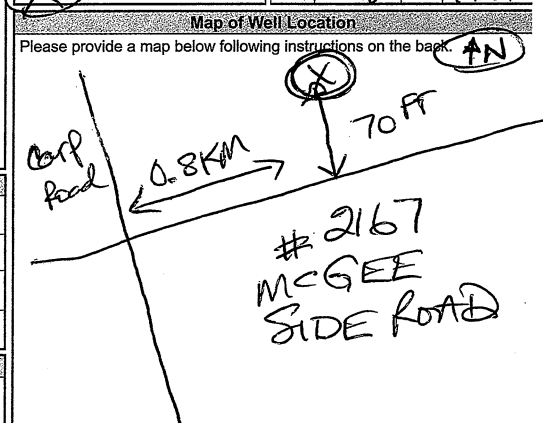
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (mft)	
			From	To

Water Details

Water found at Depth (mft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested <input type="checkbox"/> Other, specify	Hole Diameter	
		Depth (mft) From To	Diameter (cm/in)
297 (mft) <input type="checkbox"/> Gas		0' 58'	9 3/4"
487 (mft) <input type="checkbox"/> Gas		58'	500' 6"

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING Co LTD Well Contractor's Licence No.: C7681
 Business Address (Street Number/Name): 6639 Franktown Road Municipality: Richmond
 Province: Ont Postal Code: K6A2Z6 Business E-mail Address:
 Bus. Telephone No. (inc. area code): 6158382170 Name of Well Technician (Last Name, First Name): HANNA Jeremy
 Well Technician's Licence No.: T3632 Signature: [Signature] Date Submitted: 00210430



Comments: 1HP 5GPM SA @ 450 FT

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	20210423	Audit No: Z355007
	Date Work Completed	Received

JK



GROUND WATER BRANCH
 15 JUN 1 1962 No. 3005
 ONTARIO WATER RESOURCES COMMISSION

UTM 18Z 421860 E

5R 5018000 N

The Ontario Water Resources Commission Act

Elev. 5R 0380

WATER WELL RECORD

Basin 25 Carleton

Township, Village, Town or City Huntley
Date completed 30 April 1962
(day month year)

Con. 2 Lot 10

Address RR 3 Corp.

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

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Clay</u>	<u>0</u>	<u>2</u>		
<u>limestone</u>	<u>2</u>	<u>120</u>	<u>120</u>	<u>FRESH</u>

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 Ben Edwards

Address _____

Licence Number 000

Name of Driller or Borer Ben Edwards

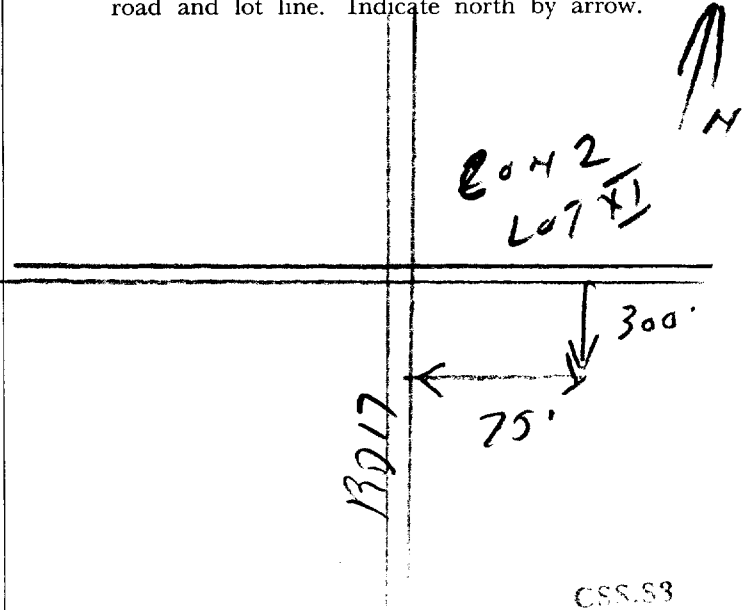
Address 413 Edgeworth

Date May 28/62

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



5 231
 UTM 18Z 421690 E
 5R 5018200 N



15 No 3068

GROUND WATER BRANCH
 MAY 25 1961
 ONTARIO WATER RESOURCES COMMISSION

Elev. 4R 0380
 Basin 25
 Lot 11

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 May 1961
 (day month year)
 Address Carp Ont

Casing and Screen Record

Pumping Test

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"

Static level 10'
 Test-pumping rate 5 G.P.M.
 Pumping level 20'
 Duration of test pumping 1/2 hr
 Water clear or cloudy at end of test Clear
 Recommended pumping rate 5 G.P.M.
 with pumping level of SET 90'

Well Log

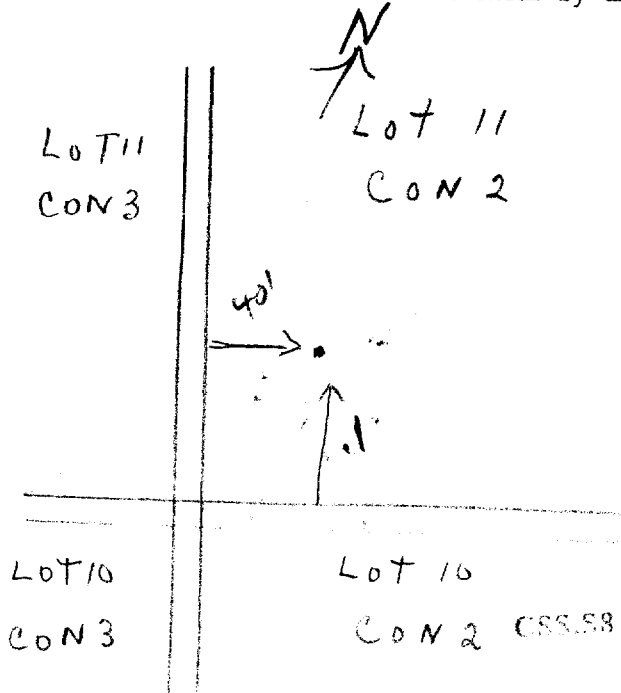
Water Record

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)
<u>Clay & loam</u>	<u>0</u>	<u>14'</u>	<u>98'-100'</u>	<u>90'</u>	<u>fresh</u>
<u>grey limestone</u>	<u>14'</u>	<u>100'</u>			

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.



UTM 18 Z 421735 E
5 R 5018140 N
 Elev. 4 R 0380



GROUND WATER BRANCH
 JUN 15 1962
 ONTARIO WATER RESOURCES COMMISSION

3069

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin 25 County or District Carleton Township, Village, Town or City Bentley
 Con. 2 Lot 11 Date completed 28 May 62
 Address RR3 Corp

Casing and Screen Record

Inside diameter of casing 4 1/2"
 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 1 1/2
 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

previously drilled
limestone

From ft.

To ft.

Depth(s) at which water(s) found

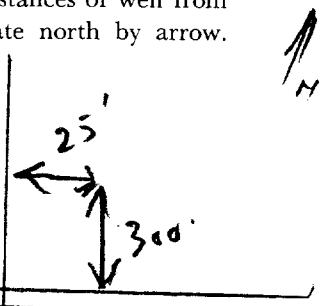
Kind of water (fresh, salty, sulphur)

		<u>70</u>		
<u>70</u>	<u>130</u>		<u>125'</u>	<u>fresh</u>

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 Sparks
 Address
 Licence Number 700
 Name of Driller or Borer Ben E Sparks
 Address 413 Edgeworth
 Date May 28/62
 (Signature of Licensed Drilling or Boring Contractor)
Ben E Sparks

Location of Well

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



RD17

COH2
 LOT10



UTM 18Z 421750E

WATER RESOURCES COMMISSION
15 No 3070
JUN 13 1964
ONTARIO WATER RESOURCES COMMISSION

5R 5018265N

The Ontario Water Resources Commission Act

Elev: 4R 0380

WATER WELL RECORD

Basin 25
County or District Hamilton

Township, Village, Town or City Huntley

Con. ~~2~~ 2 Lot 11

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

Address Camp

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

Water Record

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

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

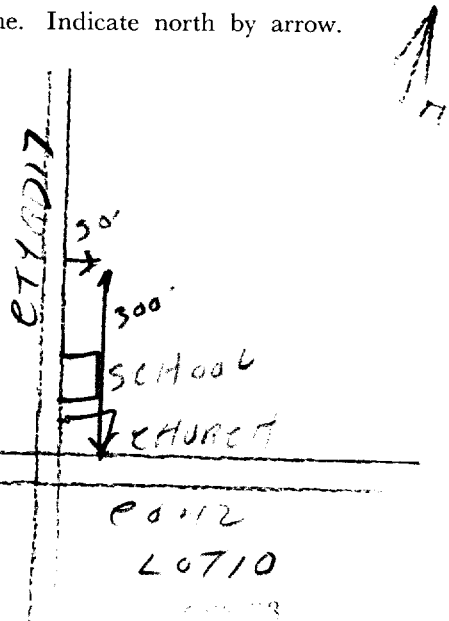
Address Pakenham

Date June 5/64

Austin Stanton
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



13



GROUND WATER BRANCH
15 FEB 20 1962 No. 324
ONTARIO WATER RESOURCES COMMISSION

UTM 18 721710 E

5R 5018050 N

Elev. 4R 0375

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin 25 | Carleton

Township, Village, Town or City Huntley

County or District 3 Lot 11

Date completed 28 Sept 61
(day month year)

Address Carp Ont

Casing and Screen Record

Pumping Test

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"

Static level 20'
Test-pumping rate 5 G.P.M.
Pumping level 25'
Duration of test pumping 1/2 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

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Clay loam</u>	<u>0'</u>	<u>7'</u>		
<u>grey limestone</u>	<u>7'</u>	<u>101'</u>	<u>100-101'</u>	<u>fresh</u>

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

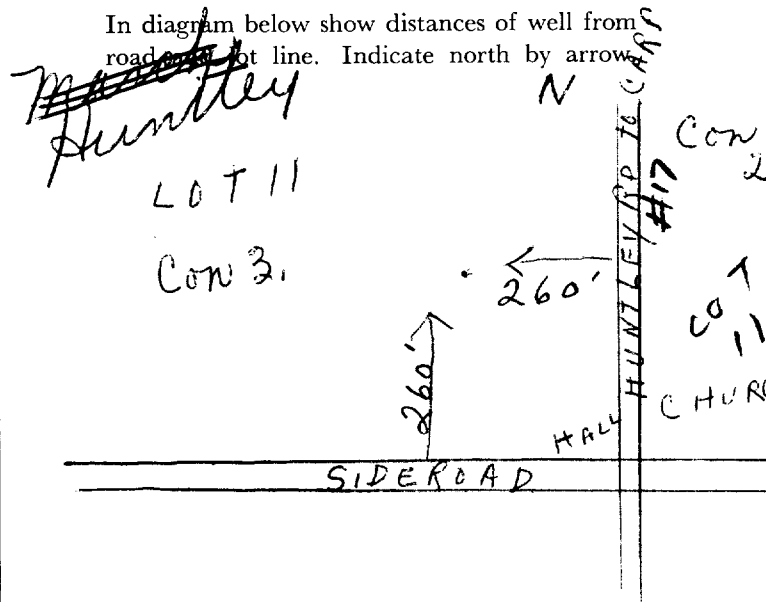
Address _____

Date Sept 28 / 61

W M E Sparks
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



UTM CON III
78 421600 E
5R 5618220 N



15 No. 3126
 SEP 1964
 HUNTLEY
 Sept 8 1964

Elev. 4 R 0390

WATER WELL RECORD

Basin 25 Carleton
 County or District

Township, Village, Town or City Huntley

Con. 3 Lot 11

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

Address Carp

Casing and Screen Record

Inside diameter of casing 6 1/4"
 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

Water Record

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

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

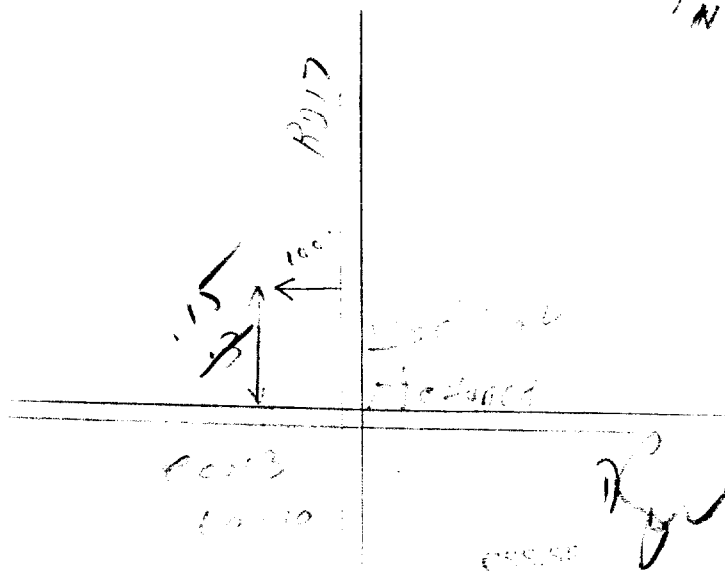
Address Pakenham

Date Sept 3/64

A. Stanton
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



H. Easthouse



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.

15005

CON.

CON

92

COUNTY OR DISTRICT Carleton TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Huntley CON., BLOCK, TRACT, SURVEY, ETC. 1510511 LOT 25-27

DATE COMPLETED 48-53 24 MO. 07 YR. 69

WATER FOUND AT - FEET 018 KIND OF WATER 1 FRESH 3 SULPHUR 4 MINERAL 4

INSIDE DIAM. INCHES 4 MATERIAL 1 STEEL 2 GALVANIZED 3 CONCRETE 4 OPEN HOLE 5 WALL THICKNESS INCHES 0.38 DEPTH - FEET FROM 0 TO 27

BASIN CODE 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
<u>Grey shale</u>				<u>0</u>	<u>9</u>
<u>" limestone</u>				<u>9</u>	<u>121</u>

31 0009217 0121215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
<u>0073</u>	<input checked="" type="checkbox"/> FRESH <input type="checkbox"/> SALTY <input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERAL
<u>0121</u>	<input checked="" type="checkbox"/> FRESH <input type="checkbox"/> SALTY <input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
<u>06</u>	<input checked="" type="checkbox"/> STEEL	<u>.188</u>	<u>0</u>	<u>0027</u>
<u>6 1/4</u>	<input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE			<u>27</u>

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	
18-21	
26-29	

71 PUMPING TEST

PUMPING TEST METHOD PUMP BAILER

PUMPING RATE 0010 GPM. DURATION OF PUMPING 01 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING			
19-21 FEET	22-24 FEET	15 MINUTES 26-28 FEET	30 MINUTES 29-31 FEET	45 MINUTES 32-34 FEET	60 MINUTES 35-37 FEET
<u>021</u>	<u>080</u>	<u>038</u>	<u>050</u>	<u>068</u>	<u>080</u>

IF FLOWING, GIVE RATE _____ GPM. PUMP INTAKE SET AT _____ FEET. WATER AT END OF TEST _____ FEET.

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: saline

FINAL STATUS OF WELL

WATER SUPPLY OBSERVATION WELL TEST HOLE RECHARGE WELL

ABANDONED, INSUFFICIENT SUPPLY ABANDONED, POOR QUALITY UNFINISHED

WATER USE

DOMESTIC STOCK IRRIGATION INDUSTRIAL OTHER

COMMERCIAL MUNICIPAL PUBLIC SUPPLY COOLING OR AIR CONDITIONING NOT USED

METHOD OF DRILLING

CABLE TOOL ROTARY (CONVENTIONAL) ROTARY (REVERSE) ROTARY (AIR) AIR PERCUSSION

BORING DIAMOND JETTING DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR Austin Stanton LICENCE NUMBER 3389

ADDRESS 19 Kenham

NAME OF DRILLER OR BORER SEMP LICENCE NUMBER _____

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

OFFICE USE ONLY

DATA SOURCE 1 CONTRACTOR 4806 DATE RECEIVED 170270

DATE OF INSPECTION _____ INSPECTOR _____

REMARKS: _____



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 151005 CAN 02

COUNTY OR DISTRICT: Carleton TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntley 3 9 CON., BLOCK, TRACT, SURVEY, ETC.: Con 2 LOT: 12 25-27 24

OWNER (SURNAME FIRST): [REDACTED] ADDRESS: P#2, Carp DATE COMPLETED: 03 MO: May 72

RC: 19320 4 10385 5 125 30 31

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

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

31 001120511 0139215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0139	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	188	0	0028
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			0139
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE: _____ DEPTH TO TOP OF SCREEN: _____

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER

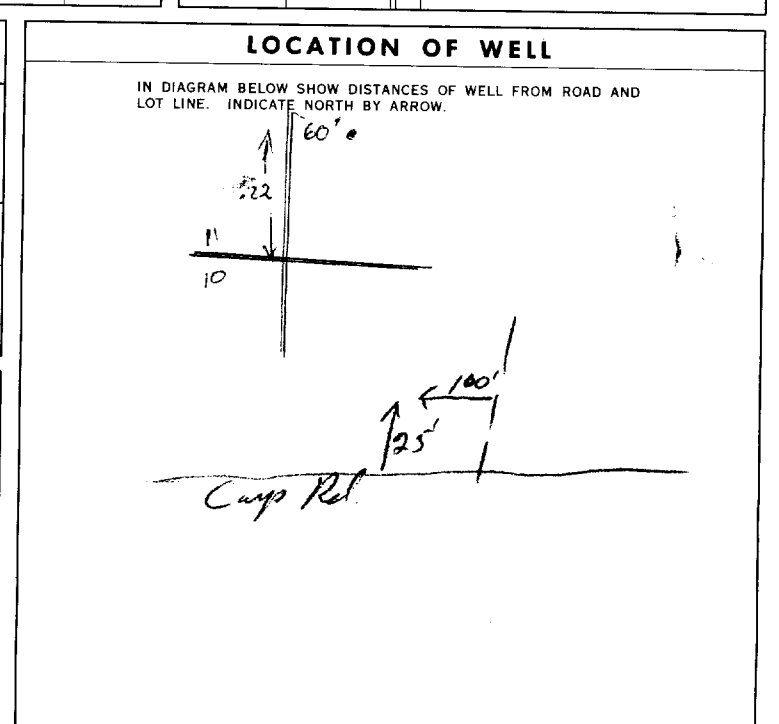
PUMPING RATE: 0005 GPM DURATION OF PUMPING: 01 HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING				
022	070	15 MINUTES: 045	30 MINUTES: 060	45 MINUTES: 070	60 MINUTES: 070	

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 070 FEET

RECOMMENDED PUMPING RATE: 0005 GPM



FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

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

WELL CONTRACTOR

NAME OF WELL CONTRACTOR: Henry Mavis Well Drilling LICENCE NUMBER: 3644
ADDRESS: 366 326, Repinore Ont.
NAME OF MILLER OR OPERATOR: Brent Robitton LICENCE NUMBER: _____
SIGNATURE OF CONTRACTOR: Henry Mavis SUBMISSION DATE: 3 May 72

OFFICE USE ONLY

DATA SOURCE: 1 CONTRACTOR: 3644 DATE RECEIVED: 180572
DATE OF INSPECTION: _____ INSPECTOR: _____
REMARKS: _____
P K
WI

ARC COPY



The Ontario Water Resources Commission Act WATER WELL RECORD

319/5d

Water management in Ontario 1. PRINT ONLY IN SPACES PROVIDED
2. CHECK CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT: Cauleton TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntsley 3 9
MUNICIPALITY: 1511921 10 14 15 22 23 24
CON. BLOCK, TRACT, SURVEY, ETC.: 2 LOT: 011 25-27
OWNER (SURNAME FIRST): [REDACTED] ADDRESS: Bram. Marie Rd. RR #2 DATE COMPLETED: 011 48-53
DAY: 06 MO. 05 YR. 72
ELEVATION: 018326 4 394 4 26 BASIN CODE: JAN 12, 1975 44

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
<u>brown</u>	<u>sand</u>		<u>fill</u>	<u>0</u>	<u>3</u>
<u>brown</u>	<u>"</u>	<u>stones</u>	<u>packed</u>	<u>3</u>	<u>9</u>
<u>grey</u>	<u>limestone</u>			<u>9</u>	<u>141</u>

31 000362801 000962812 0141215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
<u>0090</u>	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
<u>0138</u>	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

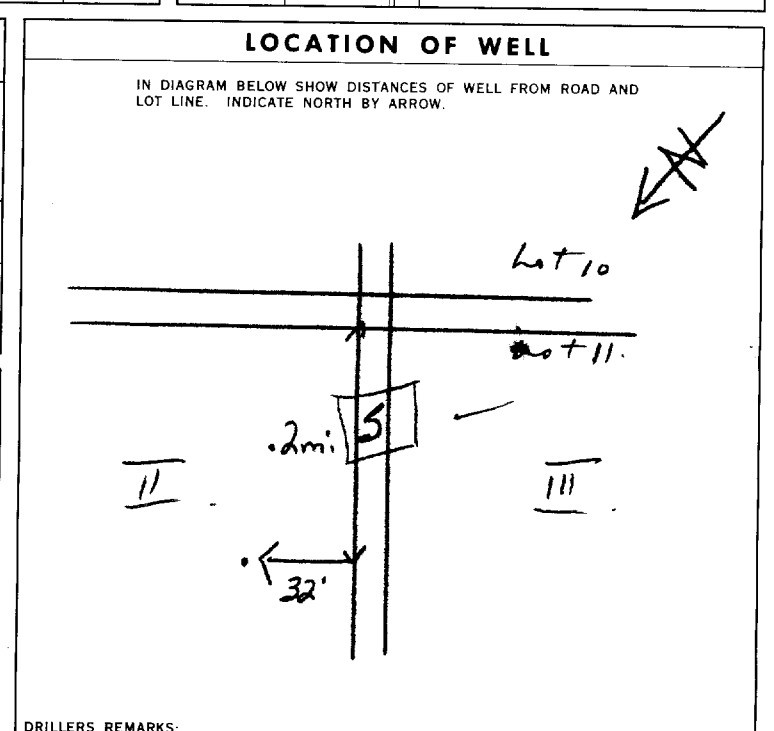
INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
<u>1 1/4</u>	<input checked="" type="checkbox"/> STEEL	<u>188</u>	<u>0</u>	<u>0022</u>
<u>5/8</u>	<input checked="" type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE		<u>22</u>	<u>141</u>
<u>06</u>	<input checked="" type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE		<u>22</u>	<u>0141</u>

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER
PUMPING RATE: 0007 GPM.
DURATION OF PUMPING: 01 HOURS 00 MINS.
STATIC LEVEL: 020 FEET
WATER LEVEL END OF PUMPING: 075 FEET
WATER LEVELS DURING PUMPING: 15 MINUTES: 075 FEET, 30 MINUTES: 075 FEET, 45 MINUTES: 075 FEET, 60 MINUTES: 075 FEET
PUMP INTAKE SET AT: 090 FEET
WATER AT END OF TEST: 0005 GPM.
RECOMMENDED PUMP TYPE: SHALLOW DEEP
RECOMMENDED PUMP SETTING: 090 FEET
RECOMMENDED PUMPING RATE: 0005 GPM.
50-53: 000.1 GPM/FT. SPECIFIC CAPACITY



FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

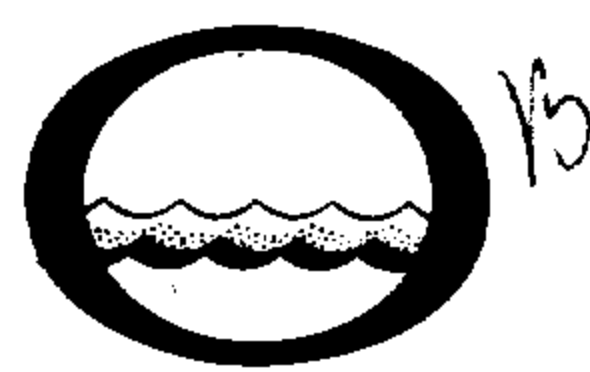
1 CABLE TOOL 6 BORING
2 ROTARY (CONVENTIONAL) 7 DIAMOND
3 ROTARY (REVERSE) 8 JETTING
4 ROTARY (AIR) 9 DRIVING
5 AIR PERCUSSION

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply LICENCE NUMBER: 1558
ADDRESS: Box 490 Stittsville Ont.
NAME OF DRILLER OR BORER: Walter Hannagh LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Walter Hannagh SUBMISSION DATE: DAY 5 MO. 5 YR. 72

OFFICE USE ONLY

DATA SOURCE: 1 58 CONTRACTOR: 1558 59-62 DATE RECEIVED: 041072 63-68 80
DATE OF INSPECTION: _____ INSPECTOR: _____
REMARKS: _____
P. R. _____
WI _____



The Ontario Water Resources Commission Act WATER WELL RECORD

314/5d

Water management in Ontario 1. PRINT ONLY IN SPACES PROVIDED
2. CHECK CORRECT BOX WHERE APPLICABLE

11

1512118

MUNICIP. 15005

CON. 101172

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

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

TIME FACTING 21 1512118 18	NORTHING 421776	RC. ELEVATION 5017994	RC. BASIN CODE 4 393 4 26	II JAN 12, 1975	III	IV 44
--------------------------------------	---------------------------	---------------------------------	-------------------------------------	---------------------------	-----	-----------------

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

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

31 0015/21/78	0125/21/5
32	

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13 0124	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
8 1/2	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE	188	0	0021-16
5 7/8	4 <input checked="" type="checkbox"/> OPEN HOLE		21	125
6	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		21	0125
6	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			27-30

SCREEN

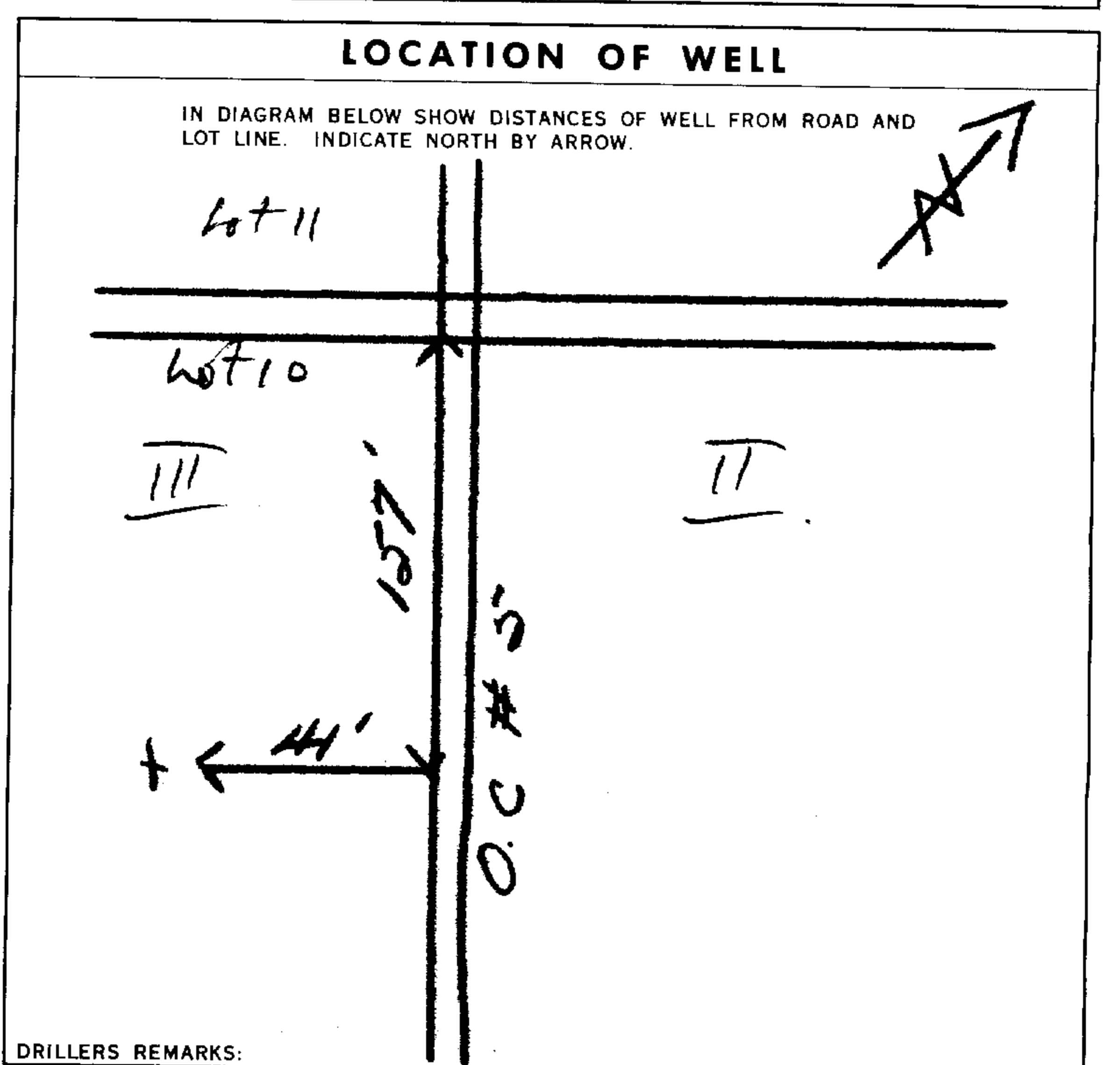
SIZE(S) OF OPENING (SLOT NO.)	31-33	DIAMETER	34-38	LENGTH	39-40
MATERIAL AND TYPE				DEPTH TO TOP OF SCREEN	41-44
				INCHES	FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD 1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER	PUMPING RATE 0010 GPM	DURATION OF PUMPING 01 HOURS 00 MINS.
STATIC LEVEL 025 FEET	WATER LEVEL END OF PUMPING 075 FEET	WATER LEVELS DURING PUMPING
19-21	22-24	15 MINUTES 26-28 075 FEET
		30 MINUTES 29-31 075 FEET
		45 MINUTES 32-34 075 FEET
		60 MINUTES 35-37 075 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT GPM	WATER AT END OF TEST FEET
		1 <input type="checkbox"/> CLEAR 2 <input checked="" type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 075 FEET	RECOMMENDED PUMPING RATE 0005 GPM.
50-53 000.2 GPM./FT. SPECIFIC CAPACITY		



54 FINAL STATUS OF WELL

1 <input checked="" type="checkbox"/> WATER SUPPLY	5 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
2 <input type="checkbox"/> OBSERVATION WELL	6 <input type="checkbox"/> ABANDONED, POOR QUALITY
3 <input type="checkbox"/> TEST HOLE	7 <input type="checkbox"/> UNFINISHED
4 <input type="checkbox"/> RECHARGE WELL	

55-56 WATER USE

1 <input checked="" type="checkbox"/> DOMESTIC	5 <input type="checkbox"/> COMMERCIAL
2 <input type="checkbox"/> STOCK	6 <input type="checkbox"/> MUNICIPAL
3 <input type="checkbox"/> IRRIGATION	7 <input type="checkbox"/> PUBLIC SUPPLY
4 <input type="checkbox"/> INDUSTRIAL	8 <input type="checkbox"/> COOLING OR AIR CONDITIONING
<input type="checkbox"/> OTHER	9 <input type="checkbox"/> NOT USED

57 METHOD OF DRILLING

1 <input type="checkbox"/> CABLE TOOL	6 <input type="checkbox"/> BORING
2 <input type="checkbox"/> ROTARY (CONVENTIONAL)	7 <input type="checkbox"/> DIAMOND
3 <input type="checkbox"/> ROTARY (REVERSE)	8 <input type="checkbox"/> JETTING
4 <input type="checkbox"/> ROTARY (AIR)	9 <input type="checkbox"/> DRIVING
5 <input checked="" type="checkbox"/> AIR PERCUSSION	

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 <i>Walter Kavanagh</i>	SUBMISSION DATE DAY 6 MO. 10 YR. 72

OFFICE USE ONLY

DATA SOURCE 1	CONTRACTOR 1558	DATE RECEIVED 101172
DATE OF INSPECTION	INSPECTOR L	
REMARKS:		P R
		WI



1512382

316/59 P

3502376

The Ontario Water Resources Commission Act

WATER WELL RECORD

1 8 7 4 2 1 6 4 0
 4 R 5 0 1 8 3 1 0
 5 R 0 3 9 5
 Basin 2 5

County or District Simcoe Township, Village, Town or City Huntley
 Con. 2 Lot 11 Date completed 18 Sept. 1968
 (day) (month) (year)
 Address Carp

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 22'
 Type of screen L
 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

Shale
grey limestone

From ft.

To ft.

Depth(s) at which water(s) found

Kind of water (fresh, salty, sulphur)

0
10

10
129

63
129

fresh

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

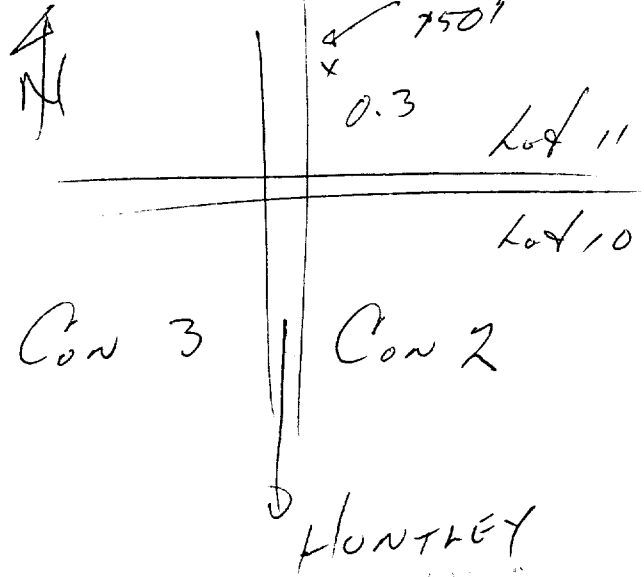
Address _____

Date Sept 18/68

Austin Stanton
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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





Ontario

WATER WELL RECORD

31/5d

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

11

1514247

MUNICIPALITY 15005

CON. C/N

02

COUNTY OR DISTRICT Carleton Place	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Huntley	CON., BLOCK, TRACT, SURVEY, ETC. 2	LOT 011
DATE COMPLETED DAY 08 MO. 07 YR. 74			

ADDRESS: **73 Smith Falls, Ontario**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	clay	sand	packed	0	6
grey	hardpan	boulders & gravel	packed	6	30
grey	limestone		broken	30	39
grey	limestone		medium	33	62

31 0.0066 0.052879 0.02302 1/4 131/4 0.0332 1.571 0.0622 1.5

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0044	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
0060	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

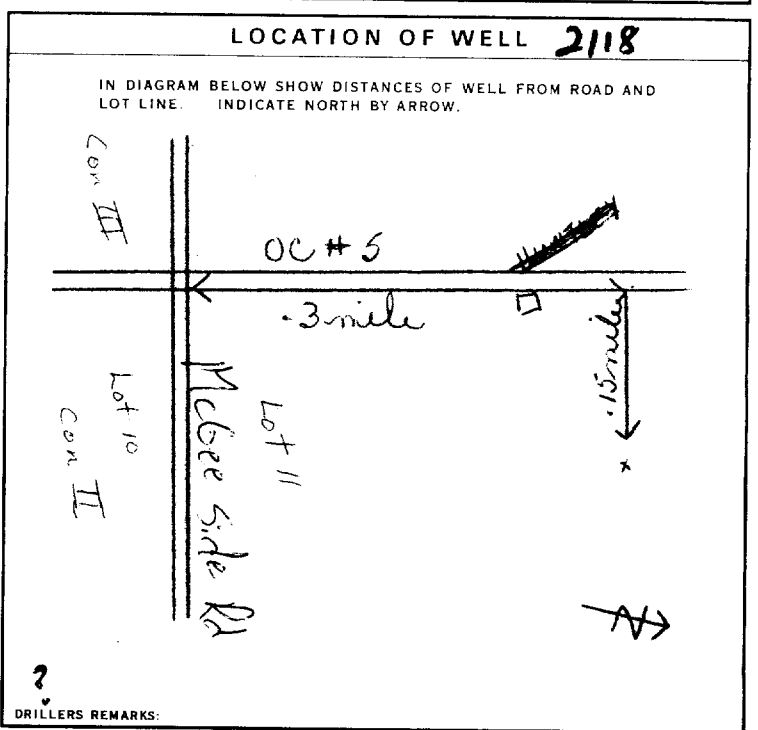
INSIDE DIA. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6.75	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE	1.88	0	0033
5.75	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		33	62
06	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE			0062

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER	10 PUMPING RATE 0030 GPM.	11-14 DURATION OF PUMPING 01 HOURS 00 MINS
25 WATER LEVELS DURING	1 <input checked="" type="checkbox"/> PUMPING 2 <input type="checkbox"/> RECOVERY	
19-21 0.40 FEET	22-24 0.40 FEET	28-28 0.40 FEET
29-31 0.40 FEET	32-34 0.40 FEET	35-37 0.40 FEET
38-41 PUMP INTAKE SET AT 0.50 FEET	42 WATER AT END OF TEST 1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY	
43-45 RECOMMENDED PUMP SETTING 0.50 FEET	46-49 RECOMMENDED PUMPING RATE 0005 GPM.	



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

85-88 WATER USE
1 DOMESTIC 5 COMMERCIAL
2 STOCK 6 MUNICIPAL
3 IRRIGATION 7 PUBLIC SUPPLY
4 INDUSTRIAL 8 COOLING OR AIR CONDITIONING
9 OTHER 9 NOT USED

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

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: **22 08 74**

DATE OF INSPECTION: **May 20, 1976** INSPECTOR: **W. Kentney**

REMARKS: *checked out based at line of insp*

P *OK*
WI

WATER WELL RECORD

Ontario

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

11

1516282

MUNICIPALITY 15005

CON. CEN

02

COUNTY OR DISTRICT: **CARLETON** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **HUNTLEY** CON. BLOCK, TRACT, SURVEY, ETC.: **CON. #1 II** LOT: **21**

DATE COMPLETED: DAY **16** MO **08** YR **77**
Carp Rd - R.R. #1, KANATA

GRIDING: **018099** RC: **0380** RC: **26**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	SAND	Small Boulders	Coarse	0	37
				0	50
White	Sandstone	—	Coarse	0	21
				21	50

31 002161013 005011863
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 <input checked="" type="checkbox"/> STEEL		10-13
11-16	2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	1.88	13-16
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		20-23
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN FEET
		41-44

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	CEMENT GROUT LEAD PACKER, ETC.
10-13		
18-21		
22-25		
26-29		
30-33		
80		

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER

PUMPING RATE: 0020 GPM

DURATION OF PUMPING: 02 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING
007	030	15 MINUTES: 030 30 MINUTES: 030 45 MINUTES: 030 60 MINUTES: 030

IF FLOWING, GIVE RATE: _____ GPM

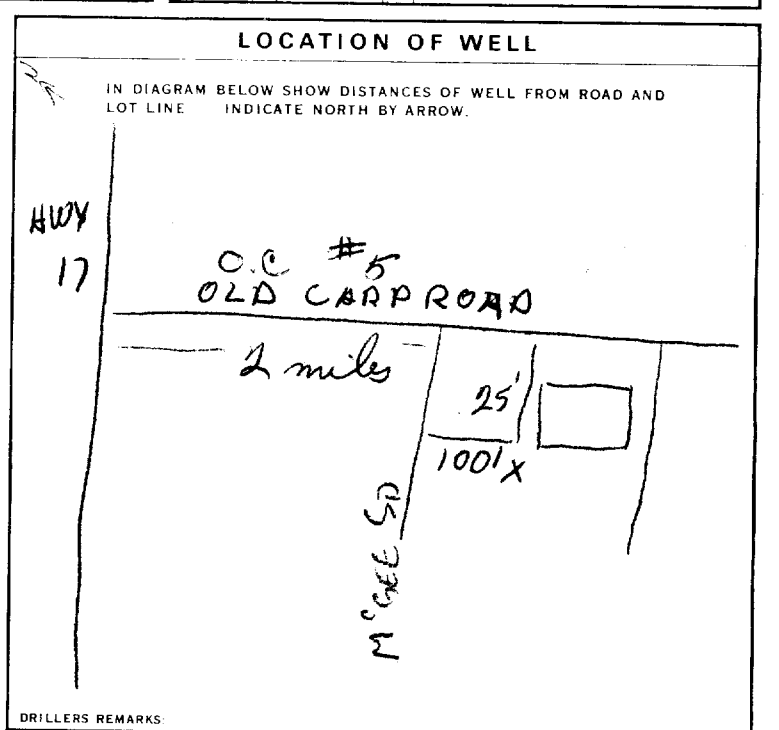
PUMP INTAKE SET AT: _____ FEET

WATER AT END OF TEST: 1 CLEAR 2 CLOUDY

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 040 FEET

RECOMMENDED PUMPING RATE: 0010 GPM



FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: **MARLE LEAF DRILLING CO.** LICENCE NUMBER: **1365**

ADDRESS: **877 RIDLEY BLVD.**

NAME OF DRILLER OR BORER: **Simon Skuse** LICENCE NUMBER: _____

SIGNATURE OF CONTRACTOR: **Robert Bissan** SUBMISSION DATE: DAY **27** NO. **10** YR. **77**

OFFICE USE ONLY

DATA SOURCE: **1** CONTRACTOR: **1365** DATE RECEIVED: **181177**

DATE OF INSPECTION: **11/25/73** INSPECTOR: **TH DN**

REMARKS: _____

085.88



WATER WELL RECORD

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

(11) 1516579 MUNICIPALITY 15005 CON. CPN 02

COUNTY OR DISTRICT: Carleton TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Huntley CON. BLOCK, TRACT, SURVEY, ETC.: Con 2 LOT: 25077
 OWNER (SURNAME FIRST): ANGEL CHRIST CHURCH Anglican Church Carleton Place Ont. DATE COMPLETED: 27 MO 06 YR 78
 UZON: 18 NORTHING: 5018300 ELEVATION: 50385 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	TO
grey	hardpan	gravel		0	10
grey	shale	gravel		10	42
grey	limestone			42	64

31 001021411 004221711 0064215
 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER			
10-13	<input checked="" type="checkbox"/> FRESH	<input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERAL
15-18	<input type="checkbox"/> FRESH	<input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERAL
20-23	<input type="checkbox"/> FRESH	<input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERAL
25-28	<input type="checkbox"/> FRESH	<input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERAL
30-33	<input type="checkbox"/> FRESH	<input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
10-11	<input checked="" type="checkbox"/> STEEL	-188	FROM	TO
17-18	<input type="checkbox"/> GALVANIZED			
24-25	<input type="checkbox"/> GALVANIZED			

SCREEN

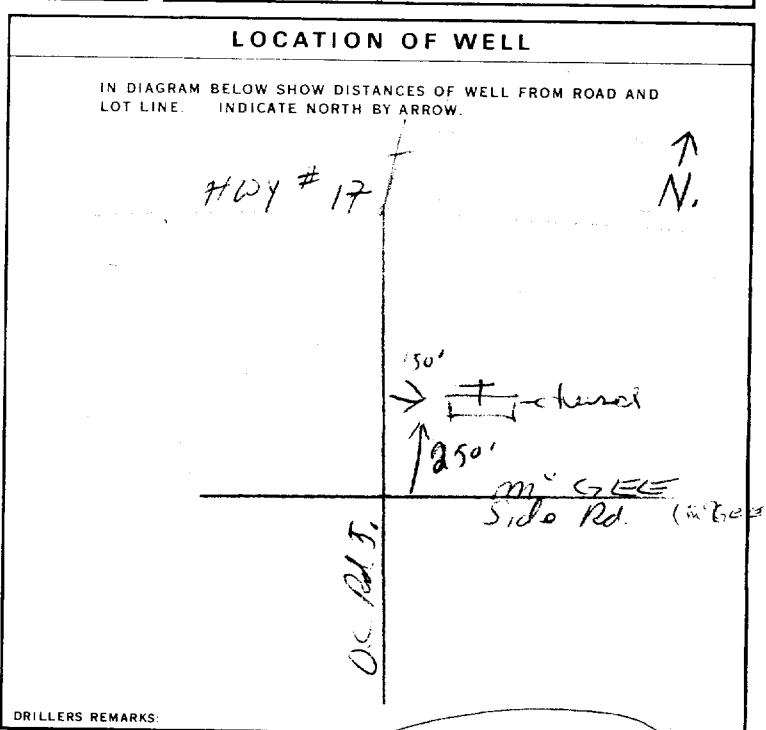
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN FEET
		41-44

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	
18-21	
26-29	

71 PUMPING TEST

PUMPING TEST METHOD: PUMP BAILER
 PUMPING RATE: 0006 GPM DURATION OF PUMPING: 01:00 HOURS
 WATER LEVELS DURING PUMPING:
 15 MINUTES: 050 FEET 30 MINUTES: 050 FEET 45 MINUTES: 050 FEET 60 MINUTES: 050 FEET
 RECOMMENDED PUMP SETTING: 050 FEET RECOMMENDED PUMPING RATE: 0005 GPM



FINAL STATUS OF WELL: 1 WATER SUPPLY
WATER USE: 1 DOMESTIC
METHOD OF DRILLING: 5 AIR PERCUSSION

CONTRACTOR
 NAME OF WELL CONTRACTOR: Henry Mains Well Drilling LICENCE NUMBER: 3644
 ADDRESS: Box 32 60 Richmond Ont.
 NAME OF DRILLER OR BORER: Henry Mains
 SIGNATURE OF CONTRACTOR: [Signature] SUBMISSION DATE: [Blank]

OFFICE USE ONLY
 DATA SOURCE: 1 CONTRACTOR: 3644 DATE RECEIVED: 27 08 78
 DATE OF INSPECTION: 17/05/79 INSPECTOR: [Signature]
 REMARKS: [Blank]

WATER WELL RECORD

31589

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

11

1517377

MUNICIPALITY 15.005

CON. CQN

02

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: West Carleton (Hardly)
CON. BLOCK, TRACT, SURVEY, ETC: Con 2.
LOT: 010
DATE COMPLETED: DAY 30 MO 10 YR 80
ELEVATION: 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	TO
grey	clay	stones		0	12
grey	shaly limestone			12	84

00121212 008421582

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0080	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
06 1/2	STEEL	1/8	0-20
17-18	STEEL		20-23
24-25	STEEL		27-30

SCREEN

SIZE OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
		41.44

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	LEMENT GROUT LEAD PACKER ETC.
10-13		
18-21		
26-29		

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER

PUMPING RATE: 0004 GPM

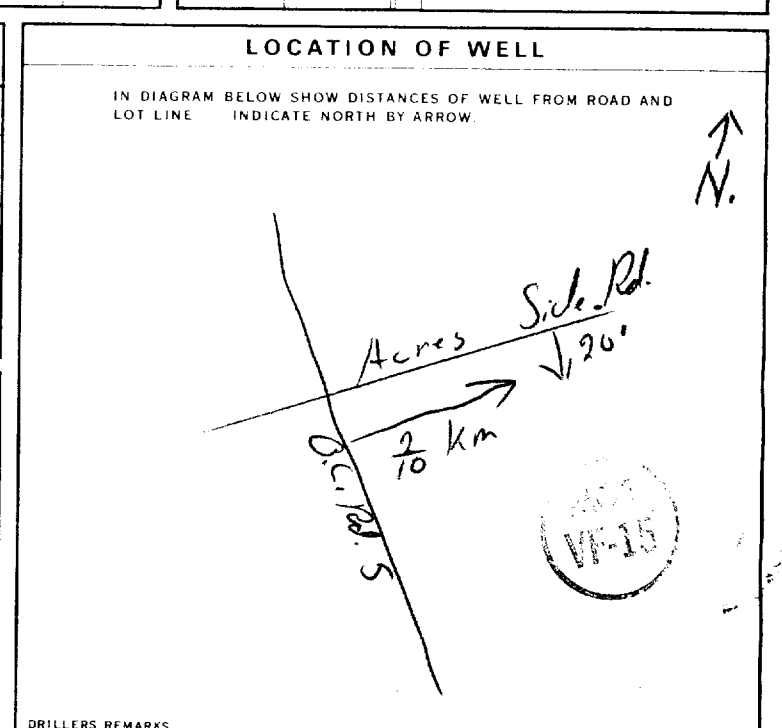
DURATION OF PUMPING: 01:00 HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING PUMPING
025	080	15 MINUTES: 080 30 MINUTES: 080 45 MINUTES: 080 60 MINUTES: 080

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 080 FEET

RECOMMENDED PUMPING RATE: 0004 GPM



FINAL STATUS OF WELL

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

WATER USE

1 DOMESTIC
2 STOCK
3 IRRIGATION
4 INDUSTRIAL
5 OTHER
6 COMMERCIAL
7 MUNICIPAL
8 PUBLIC SUPPLY
9 COOLING OR AIR CONDITIONING
10 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 Mains Well Drilling
ADDRESS: Box 326, Richmond Ont.
NAME OF DRILLER OR BORER: Henry Mains
SIGNATURE OF CONTRACTOR: [Signature]
SUBMISSION DATE: DAY 1 NO 11 YR 80

LICENCE NUMBER: 3644

OFFICE USE ONLY

DATA SOURCE: 1
CONTRACTOR: 3644
DATE RECEIVED: 011280
DATE OF INSPECTION: [Blank]
INSPECTOR: [Signature]
REMARKS: [Blank]



Ministry
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The Ontario Water Resources Act

WATER WELL RECORD

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

11

1517526

MUNICIPALITY **15005**

COM. **CGM**

LOT **0117**

COUNTY OR DISTRICT **Carleton** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE **Huntley** CON. BLOCK, TRACT, SURVEY, ETC. **3 II** DATE COMPLETED **22 10 80**

OWNER (SURNAME FIRST) **Pri-Tec Ltd.** ADDRESS **R. R. # 5, Box 933, Ottawa, Ontario**

ZONE **21** EASTING **421599** NORTHING **5018299** ELEVATION **0365** BASIN CODE **26**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Sand	Stones	Fill	0	4
Brown	Sandy Clay	Boulders		4	13
Grey	Limestone		soft	13	150



31 00046281201 00136051381 015021585

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0048 10-13	1 <input type="checkbox"/> FRESH 2 <input checked="" type="checkbox"/> SALTY
0145 15-18	1 <input type="checkbox"/> FRESH 2 <input checked="" type="checkbox"/> SALTY
20-23	1 <input type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY
25-28	1 <input type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY
30-33	1 <input type="checkbox"/> FRESH 2 <input type="checkbox"/> SALTY

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 10-11	STEEL	.188	0	0021
06	GALVANIZED			
5 7/8 12-18	STEEL		21	150
06	GALVANIZED			
24-25	STEEL			

SCREEN

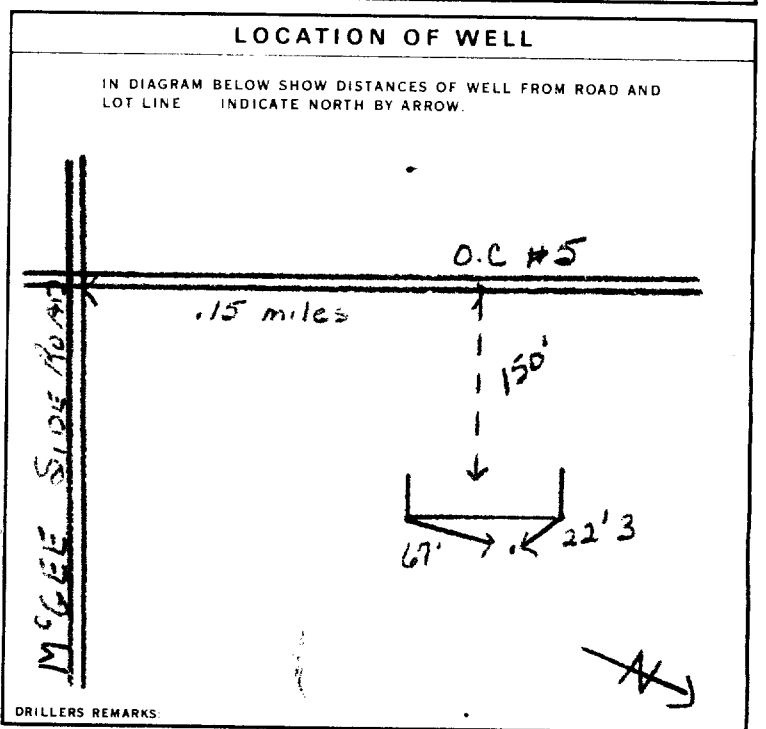
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
	34-38	39-40
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN FEET
		41-44

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS
1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER	0010	01
STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING PUMPING
020	040	15 MINUTES 040 FEET
		30 MINUTES 040 FEET
		45 MINUTES 040 FEET
		60 MINUTES 040 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT GPM	WATER AT END OF TEST
	40	1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
<input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	060	0005



FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

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

CONTRACTOR

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

ADDRESS **Box 490, Stittsville, Ontario.**

NAME OF DRILLER OR BORER **S. Miller** LICENCE NUMBER

SIGNATURE OF CONTRACTOR **[Signature]** SUBMISSION DATE **25 10 80**

OFFICE USE ONLY

DATA SOURCE **1** CONTRACTOR **1558** DATE RECEIVED **20 03 81**

DATE OF INSPECTION _____ INSPECTOR _____

REMARKS _____

CS. GS



Ontario

WATER WELL RECORD

31651

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

11 1517781

MUNICIPALITY 15005 CON. CON. 02

COUNTY OR DISTRICT Ottawa-Carleton	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE West Carleton - Huntley	CON., BLOCK, TRACT, SURVEY, ETC. Conc. 2 II 011
OWNER (SURNAME FIRST) ██████████ Pritec Ltd.	ADDRESS Carp Rd., Carp, Ontario	DATE COMPLETED DAY 30 MO 09 YR 81

21 ZONE 18 EASTING 421899 NORTHING 5018299 RC 4 ELEVATION 0370 BASIN CODE 26

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Sand	Boulders		0	15
Gray	Limestone			15	250
Black	Limestone			250	298

31 001562813 0250215 0298815

32

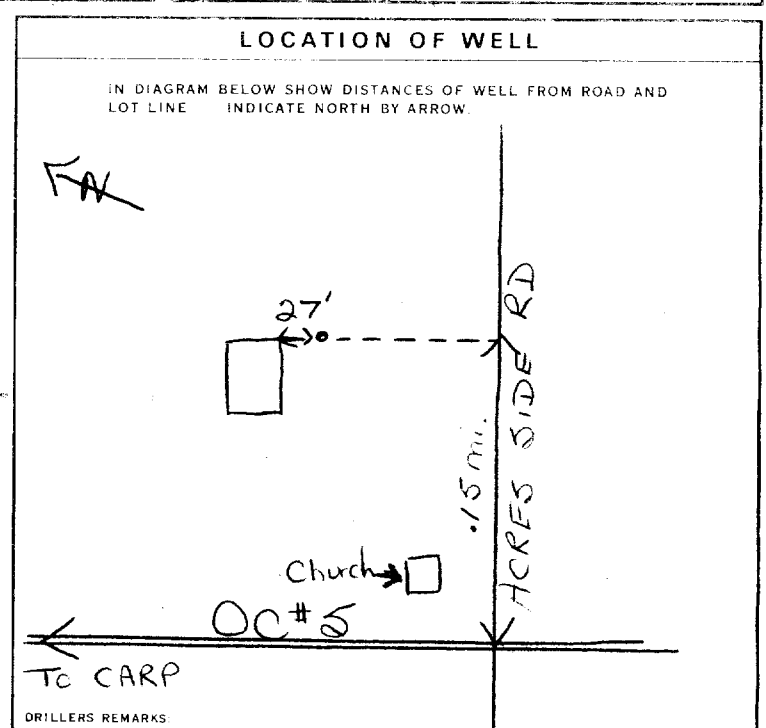
WATER FOUND AT - FEET	KIND OF WATER
0030'	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL slight
0290'	1 <input type="checkbox"/> FRESH 3 <input checked="" type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
06	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	188	0 0022
06	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		22 0298
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		27-30

SIZE (S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
		41-44
		80

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

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER	0005 GPM	01 15-16 HOURS 00 17-18 MINS
STATIC LEVEL	WATER LEVELS DURING	
020 FEET	15 MINUTES 125 FEET	30 MINUTES 125 FEET
	45 MINUTES 125 FEET	60 MINUTES 125 FEET
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
<input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	225 FEET	0005 GPM



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

NAME OF WELL CONTRACTOR Capital Water Supply Ltd.	LICENCE NUMBER 1558
ADDRESS Box 490, Stittsville, Ont. KOA 3G0	
NAME OF DRILLER OR BORER S. Miller	LICENCE NUMBER
SIGNATURE OF CONTRACTOR <i>S. Miller</i>	SUBMISSION DATE DAY 02 MO 10 YR 81

DATA SOURCE 1	CONTRACTOR 1558	DATE RECEIVED 03 03 82
DATE OF INSPECTION	INSPECTOR	
REMARKS:		



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The Ontario Water Resources Act

3165d

WATER WELL RECORD

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1519074

MUNICIPALITY 15005

CONTRACTOR ESN

02

COUNTY OR DISTRICT Ottawa-Carleton	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE West Carleton-Huntley	CON. BLOCK, TRACT, SURVEY ETC. Conc. 2 II	LOT 011
DATE COMPLETED 13090; Kanata, Ontario, K2K 1X3			DATE COMPLETED 48-53 DAY 05 MO 06 YR 84
GRID 18299	ELEVATION 0365	BASIN CODE 4 26	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Sand		Packed	0	4
Gray	Sand	Gravel	Packed	4	8
Gray	Limestone		Soft	8	12
Gray	Limestone		Medium	12	260

MCE
VF-18

31 **000462879** **00082281179** **001221585** **026021578**

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13 0155'	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERAL
15-18 0250'	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input checked="" type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

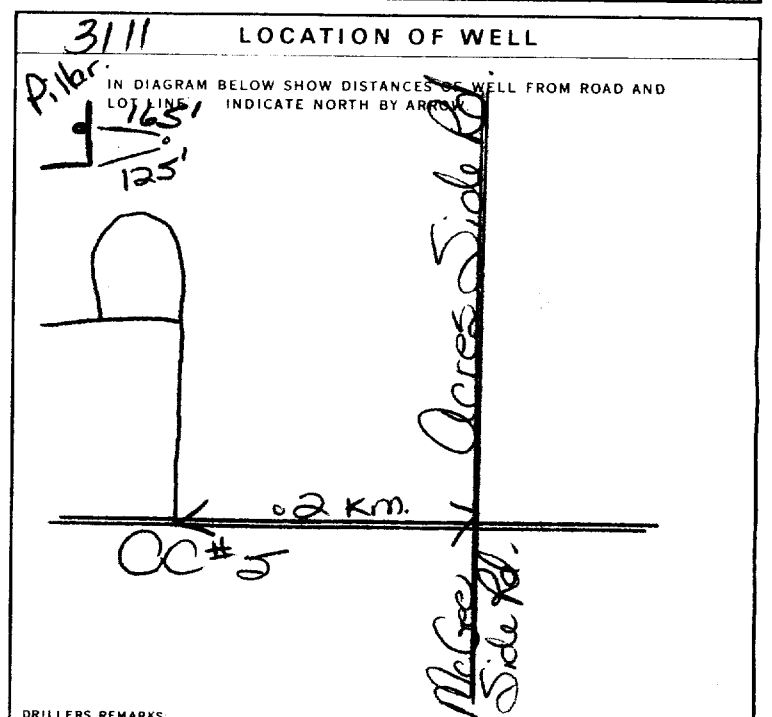
DEPTH - FEET	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	188	0	22
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		22	260
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	CEMENT GROUT LEAD PACKER, ETC.
10-13		
14-17		
18-21		
22-25		
26-29		
30-33		
34-40		

71 PUMPING TEST

PUMPING TEST METHOD 1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	PUMPING RATE 0015 GPM	DURATION OF PUMPING 15-16 HOURS 17-18 MINS 01 00
STATIC LEVEL 19-21 020 FEET	WATER LEVEL END OF PUMPING 22-24 060 FEET	WATER LEVELS DURING 1 <input checked="" type="checkbox"/> PUMPING 2 <input type="checkbox"/> RECOVERY
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT 38-41 080 FEET	WATER AT END OF TEST 42 1 <input type="checkbox"/> CLEAR 2 <input checked="" type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 43-45 080 FEET	RECOMMENDED PUMPING RATE 46-49 0005 GPM



FINAL STATUS OF WELL 54

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

WATER USE 55-56

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

METHOD OF DRILLING 57

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

CONTRACTOR

NAME OF WELL CONTRACTOR
Capital Water Supply Ltd.

LICENCE NUMBER
1558

ADDRESS
Box 400; 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**

OFFICE USE ONLY

DATA SOURCE 58
1 1588

CONTRACTOR 59-62
07 08 84

DATE OF INSPECTION

INSPECTOR

REMARKS

CCS. B.

A049703

Well Owner's Information

First Name: **Cantor Industries** Last Name: _____ E-mail Address: _____ Well Constructed by Well Owner

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

Part A Construction and/or Major Alteration of a Well

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

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

UTM Coordinates: NAD 83 Zone: **18** Easting: **42192150** Northing: **8437** GPS Unit Make: **Magellan** Model: **200** Mode of Operation: Undifferentiated Averaged Differentiated, specify _____

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

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From	Depth (Metres) To
	Sand Gravel			0	4.27
	Grey Limestone			4.27	152.3

*** Plan RPSR 12610 ***

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

Results of Well Yield Testing

Check box if after test of well yield, water was:

Clear and sand free

Cannot develop to sand-free state

If pumping discontinued, give reason: _____

Pumping test method: **Subpump**

Pump intake set at (Metres): **91.44**

Pumping rate (Litres/min): **26.5**

Duration of pumping: **1** 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): _____

Draw Down		Recovery	
Time (Min)	Water Level (Metres)	Time (Min)	Water Level (Metres)
Static Level	5.75	Static Level	31.90
1	7.08	1	32.36
2	8.20	2	31.30
3	9.30	3	30.22
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	23.37	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

Method of Construction:

Cable Tool Diamond Public Commercial Not used

Rotary (Conventional) Jetting Domestic Municipal Dewatering

Rotary (Reverse) Driving Livestock Test Hole Monitoring

Rotary (Air) Digging Irrigation Cooling & Air Conditioning

Air percussion Boring Industrial Other, specify _____

Other, specify _____

Status of Well:

Water Supply Dewatering Well Observation and/or Monitoring Hole

Replacement Well Abandoned, Insufficient Supply Alteration (Construction)

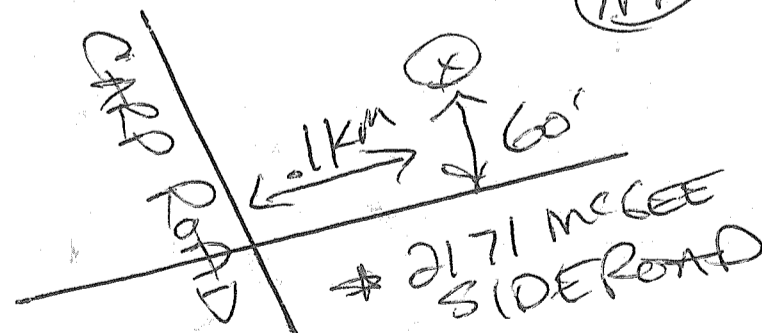
Test Hole Abandoned, Poor Water Quality Other, specify _____

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")
- digital pictures of inside of well can also be provided



Water Details

Water found at Depth (Metres)	Kind of Water
105.63	<input type="checkbox"/> Gas <input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals
117.82	<input type="checkbox"/> Gas <input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals
_____	<input type="checkbox"/> Gas <input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals

Casing Used	Screen Used	Casing and Well Details
<input type="checkbox"/> Galvanized <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete	<input type="checkbox"/> Galvanized <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete	Diameter of the Hole (Centimetres): 14.28
		Depth of the Hole (Metres): 152.37
		Wall Thickness (Metres): 1.48cm
		Inside Diameter of the Casing (Metres): 1.588
		Depth of the Casing (Metres): 6.11

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

Well Contractor and Well Technician Information

Business Name of Well Contractor: **AIR ROCK DRILLING CO LTD** Well Contractor's Licence No.: **10119**

Business Address (Street No./Name, number, RR): **RR#1** Municipality: **RICHMOND**

Province: **ONT** Postal Code: **K0A 2R0** Business E-mail Address: _____

Bus. Telephone No. (inc. area code): **613-838-2170** Name of Well Technician (Last Name, First Name): **Desautniers Ken**

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

No Casing and Screen Used

Open Hole **6.10-152.37**

Disinfected? Yes No

Ministry Use Only

Audit No.: **z60149** Well Contractor No.: _____

Date Received (yyyy/mm/dd): **OCT 15 2007** Date of Inspection (yyyy/mm/dd): _____

Remarks: _____

Measurements recorded in: Metric Imperial

Page _____ of _____

A204317

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	<input type="checkbox"/> Well Constructed by Well Owner
	Lor-Issa Const. Inc	lilles@lorissa.ca	
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code
3140 Camp Rd.	West Carleton	Ont	K0A1K0
Telephone No. (inc. area code)		613 839 3784	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
139 John Cavanaugh	West Carleton	11	Concession 2
County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Camp	Ontario	K0A1K0
UTM Coordinates	Zone	Easting	Northing
NAD 83	18	421743	5017692
Municipal Plan and Sublot Number		Other	

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	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)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0 to 20	inert sand	4 Bags

Results of Well Yield Testing				
After test of well yield, water was:	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
<input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify				
If pumping discontinued, give reason:	Static Level	9.02		11.28
	1	9.98	1	10.31
Pump intake set at (m/ft)	2	10.27	2	10.09
	3	10.45	3	9.90
Pumping rate (l/min / GPM)	4	10.55	4	9.81
	5	10.61	5	9.68
Duration of pumping	10	10.78	10	9.47
Final water level end of pumping (m/ft)	15	10.85	15	9.32
	20	10.92	20	9.12
If flowing give rate (l/min / GPM)	25	11.03	25	9.10
	30	11.10	30	8.97
Recommended pump depth (m/ft)	40	11.18	40	8.95
	50	11.24	50	8.92
Recommended pump rate (l/min / GPM)	60	11.28	60	8.89
Well production (l/min / GPM)				
Disinfected?				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				

Method of Construction		Well Use		
<input checked="" type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not used
<input type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input type="checkbox"/> Domestic	<input type="checkbox"/> Municipal	<input type="checkbox"/> Dewatering
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Driving	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole	<input type="checkbox"/> Monitoring
<input type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning	
<input type="checkbox"/> Air percussion		<input type="checkbox"/> Industrial		
<input type="checkbox"/> Other, specify		<input type="checkbox"/> Other, specify		

Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify
			From	To	
6.4	steel	188	0	22	

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

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m/ft)	Diameter (cm/in)
30	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	From To	
		0 75	6 inch
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested		
65	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify		
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested		
	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify		

Well Contractor and Well Technician Information			
Business Name of Well Contractor	Well Contractor's Licence No.		
Hanvic Casing LTD	115117		
Business Address (Street Number/Name)	Municipality		
709 RT 700 St Casselman	Watson		
Province	Postal Code	Business E-mail Address	
Ont	K0M1M0		
Business Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)		
437 764 237	Vespan Cayer		
Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted	
17117	Vespan Cayer	21st 6/10/20	

Map of Well Location		
Please provide a map below following instructions on the back.		
Well owner's information package delivered	Date Package Delivered	Ministry Use Only
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	21st 6/10/20	
Date Work Completed	Audit No.	2232515
21st 6/10/20		
Received		JUL 19 2016

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

Page 1 of 7

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>.

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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	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	640*
Turbidity	0.1	NTU	AO 5.0	>1	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

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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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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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

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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

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

Page 1 of 2

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

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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

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1544909 GW 2021-03-04 GW1	1544910 GW 2021-03-04 GW2
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

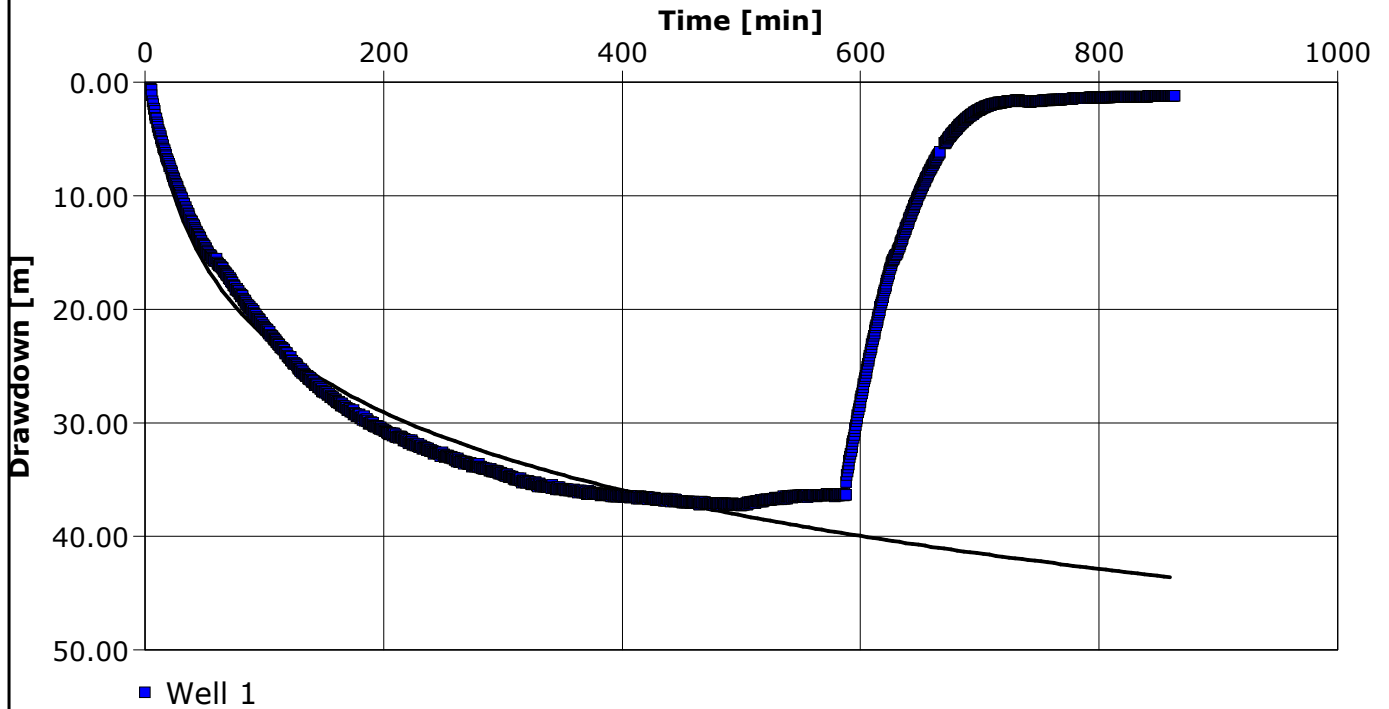
Analysis Performed by: EA

Theis

Analysis Date: 19/03/2021

Aquifer Thickness:

Discharge: variable, average rate 0.2 [l/s]



Calculation using Theis

Observation Well	Transmissivity [m ² /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

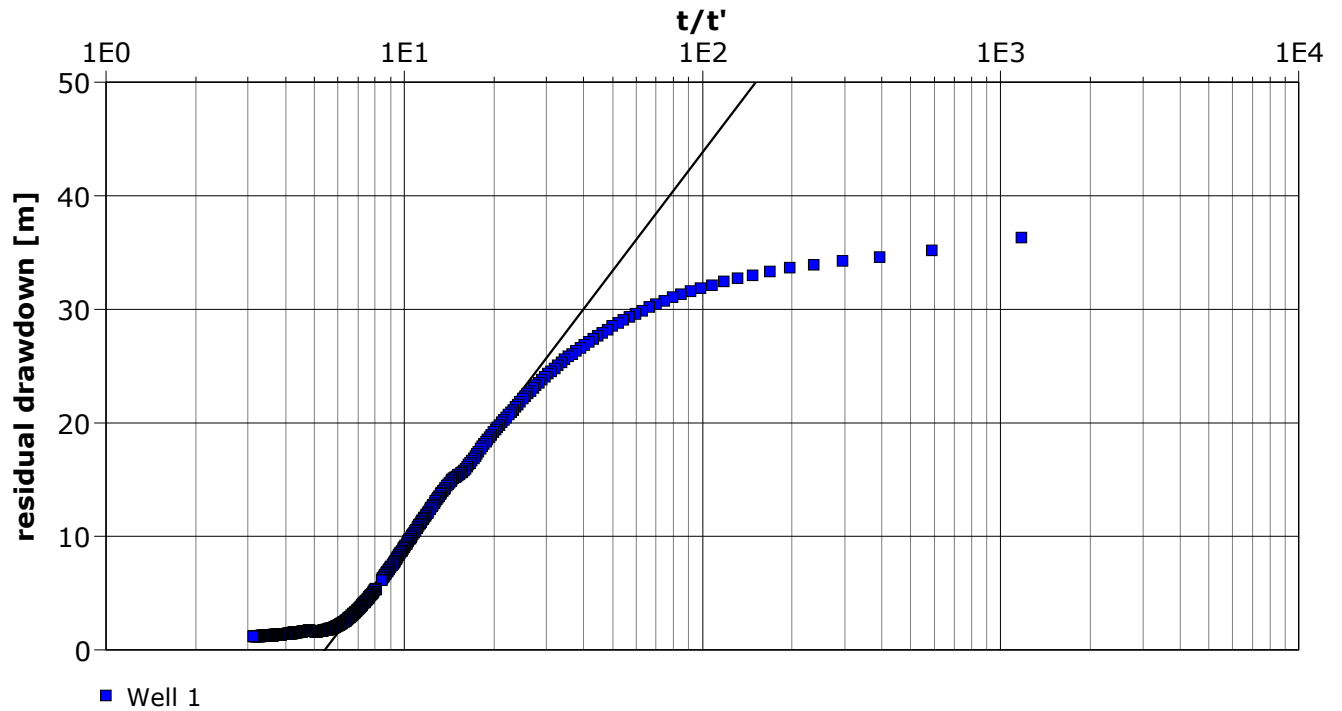
Analysis Performed by: EA

Theis Recovery

Analysis Date: 19/03/2021

Aquifer Thickness:

Discharge: variable, average rate 0.2 [l/s]



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m ² /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 [m ² /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	

--	--	--	--	--	--	--

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	A = (Log10 [TDS] - 1) / 10	
pHs = (9.3 + A + B) - (C + D)	B = -13.12 x Log10 (oC + 273) + 34.55	
Where:	C = Log10 [Ca ²⁺ as CaCO ₃] - 0.4	
	D = Log10 [alkalinity as CaCO ₃]	
		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).	

DATUM Geodetic

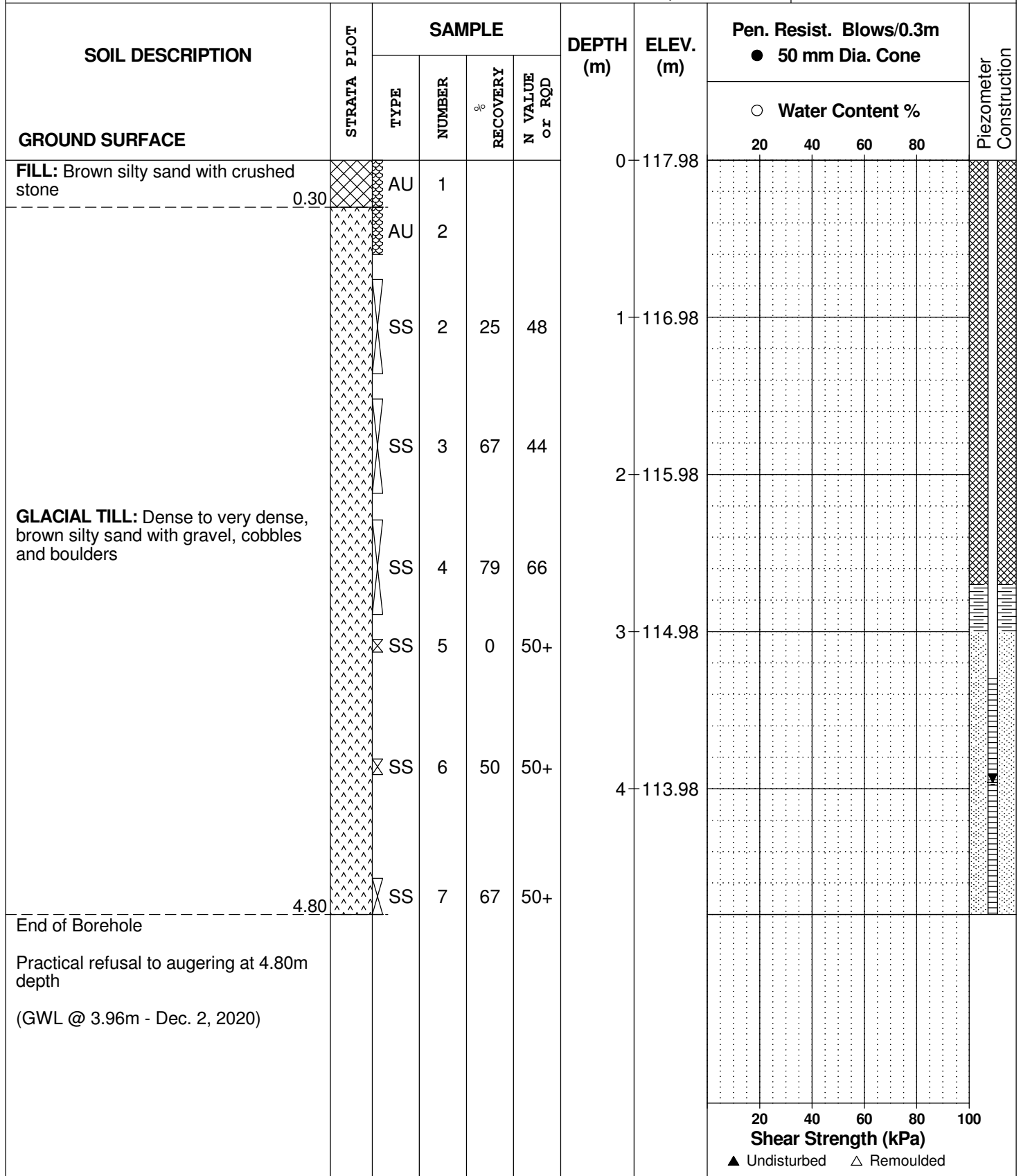
FILE NO. **PG5602**

REMARKS

HOLE NO. **BH 1-20**

BORINGS BY CME-55 Low Clearance Drill

DATE November 20, 2020



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				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			20	40	60	80	
GROUND SURFACE												
FILL: Crushed stone with silty sand and gravel	0.30	AU	1			0	117.96					
		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+							
		SS	5	27	50+							
		SS	6		50+							
End of Borehole	2.82					2	115.96					
Practical refusal to augering at 2.82m depth (Piezometer blocked and dry at 2.04m depth - Dec. 2, 2020)												

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

DATUM Geodetic

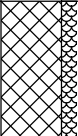
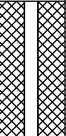



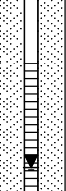


FILE NO. **PG5602**

REMARKS

HOLE NO. **BH 3-20**

BORINGS BY CME-55 Low Clearance Drill

DATE November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE			DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %			N VALUE or RQD	○ Water Content %				
GROUND SURFACE							20	40	60	80		
FILL: Brown silty sand, some gravel		AU	1		0	117.39						
	0.60											
GLACIAL TILL: Very dense, brown silty sand with gravel, cobbles and boulders		SS	2	60	50+	1	116.39					
		SS	3	22	50+	2	115.39					
		SS	4	100	50+							
End of Borehole	2.44											
Practical refusal to augering at 2.44m depth (GWL @ 2.26m - Dec. 2, 2020)												
							20	40	60	80	100	
							Shear Strength (kPa)					
							▲ Undisturbed △ Remoulded					

SOIL PROFILE AND TEST DATA

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

DATUM Geodetic

REMARKS

BORINGS BY CME-55 Low Clearance Drill

DATE November 20, 2020

FILE NO. **PG5602**

HOLE NO. **BH 4-20**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE													
FILL: Brown silty sand with crushed stone	0.30	AU	1			0	117.07						
GLACIAL TILL: Compact to very dense, brown silty sand with gravel, cobbles and boulders		AU	2										
		SS	3	50	28	1	116.07						
		SS	4	75	34								
		SS	5	50	50+	2	115.07						
End of Borehole Practical refusal to augering at 2.69m depth (GWL @ 0.94m - Dec. 2, 2020)	2.69												

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

DATUM Geodetic




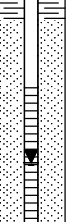

FILE NO. **PG5602**

REMARKS

HOLE NO. **BH 5-20**

BORINGS BY CME-55 Low Clearance Drill

DATE November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			20	40	60	80		
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												
End fo Borehole Practical refusal to augering at 1.62m depth (GWL @ 1.33m - Dec. 2, 2020)		SS	3	100	50+								
								20	40	60	80	100	
								Shear Strength (kPa)					
								▲ Undisturbed △ Remoulded					

DATUM Geodetic

REMARKS

BORINGS BY CME-55 Low Clearance Drill

DATE November 20, 2020

FILE NO. **PG5602**

HOLE NO. **BH 6-20**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	117.23					
FILL: Crushed stone with silty sand, trace organics	0.30	AU	1									
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							
		SS	4	73	50+	2	115.23					
End of Borehole	2.57											
Practical refusal to augering at 2.57m depth (GWL @ 2.09m - Dec. 2, 2020)												

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

DATUM Geodetic

FILE NO. **PG5602**

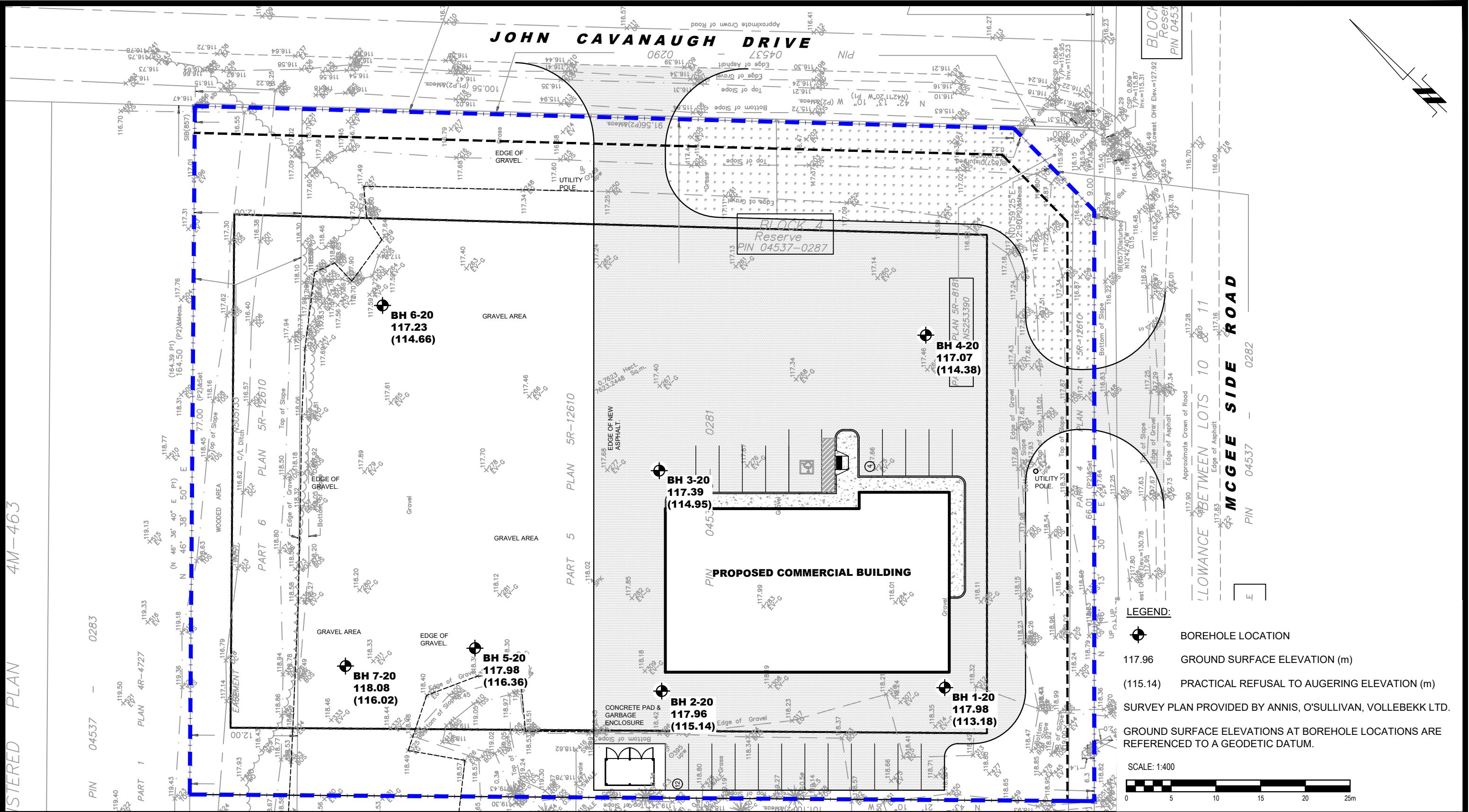
REMARKS

HOLE NO. **BH 7-20**

BORINGS BY CME-55 Low Clearance Drill

DATE November 20, 2020

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction		
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			20	40	60	80			
GROUND SURFACE						0	118.08							
GLACIAL TILL: Dense to very dense, brown silty sand with gravel, cobbles and boulders		AU	1											
		AU	2											
		SS	3	92	34	1	117.08							
		SS	4	75	50+									
End of Borehole	2.06					2	116.08							
Practical refusal to augering at 2.06m depth (Piezometer blocked and dry at 1.38m depth - Dec. 2, 2020)														
								20	40	60	80	100		
								Shear Strength (kPa)						
								▲ Undisturbed △ Remoulded						



patersongroup
consulting engineers

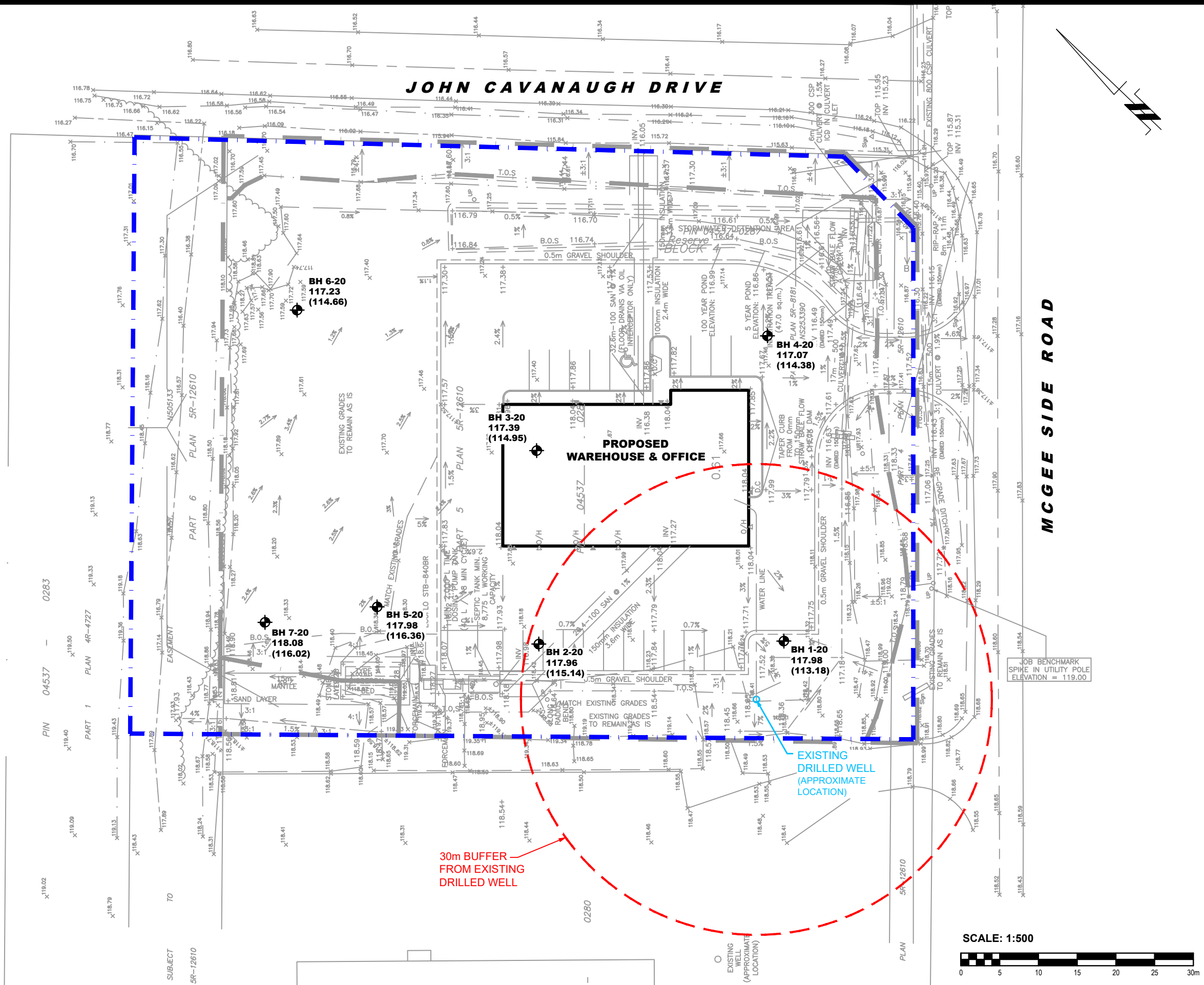
154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

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

CARP,
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.:	



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

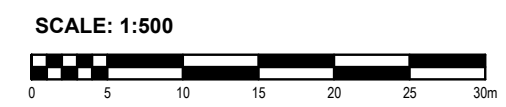
Drawing:

SITE PLAN

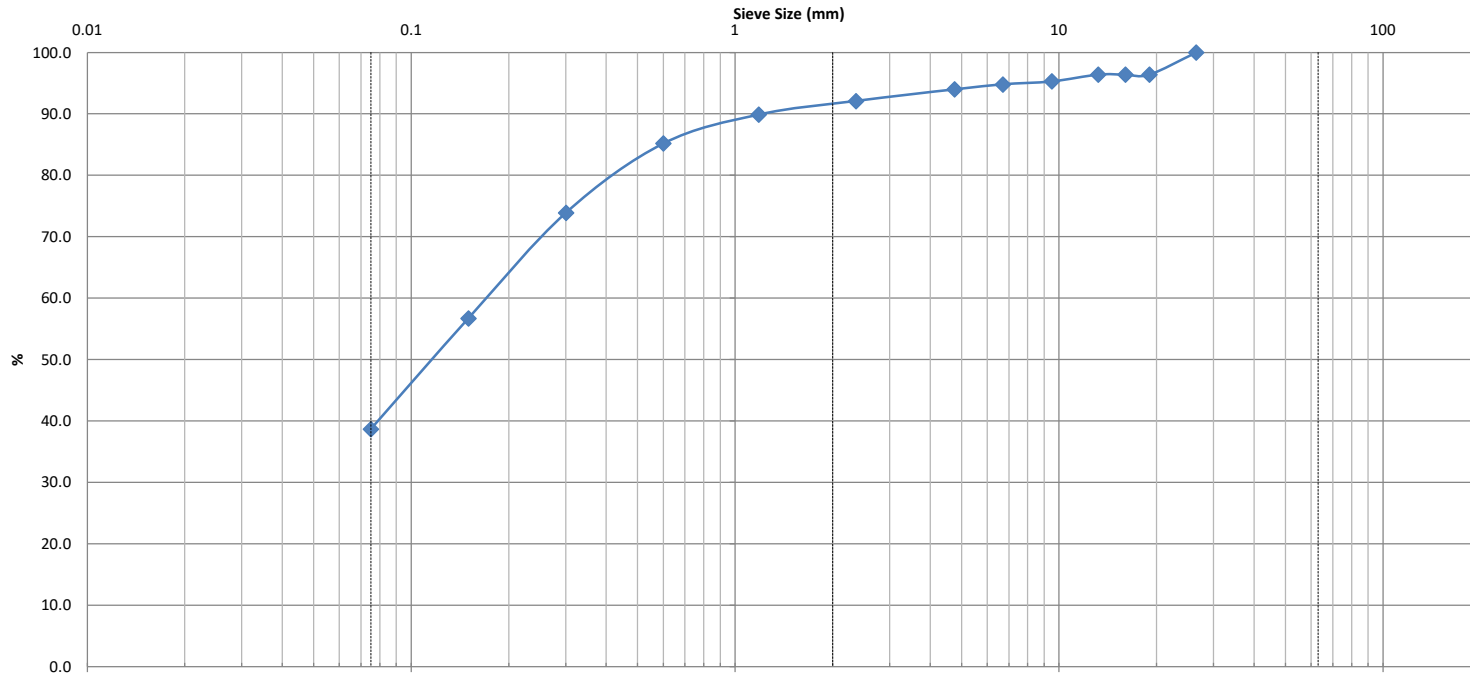
Scale:	1:500	Seal:
Date:	03/2021	
Drawn by:	JM	
Checked by:	KP	
File:	PH4146	

Drawing No.:

PH4146-2



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
	D100	D60	D30	D10	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	0.89	8.5	
	26.5	0.17	0.055	0.02	6.0	55.3	38.7				

Comments:

REVIEWED BY:	Curtis Beadow	Joe Fosyth, P. Eng.
	<i>[Signature]</i>	<i>[Signature]</i>

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
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WEIGHT AFTER WASH	469.3
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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
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OTHER TESTS	RESULT	LAB NO.	RESULT

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

Predictive Nitrate Impact Assessment

PRE DEVELOPMENT CONDITIONS	POST DEVELOPMENT CONDITIONS
<p>Groundwater Flow Through NOT USED</p> <p>Background Nitrate Concentration (C_b) = 0 mg/L</p> <p>Hydraulic Conductivity (k) = 0 m/s</p> <p>Horizontal Gradient (i) = 0</p> <p>Length (L) = 0 m</p> <p>Aquifer Thickness (t) = 0 m</p> <p>Groundwater Flow (Q_b) = 0 m³/day</p>	<p>Groundwater Flow Through NOT USED</p> <p>Background Nitrate Concentration (C_b) = 0 mg/L</p> <p>Hydraulic Conductivity (k) = 0 m/s</p> <p>Horizontal Gradient (i) = 0</p> <p>Length (L) = 0 m</p> <p>Aquifer Thickness (t) = 0 m</p> <p>Groundwater Flow (Q_b) = 0 m³/day</p>
<p>Infiltration Factors</p> <p>Topography 0</p> <p>Soil 0.00</p> <p>Cover 0.00</p> <p style="text-align: right;">Total 0</p>	<p>Infiltration Factors</p> <p>Topography 0.25</p> <p>Soil 0.30</p> <p>Cover 0.10</p> <p style="text-align: right;">Total 0.65</p>
<p>Site Characteristics</p> <p>Area of Site : - m²</p> <p style="padding-left: 20px;">0</p> <p style="padding-left: 20px;">0</p> <p style="padding-left: 20px;">0</p> <p>Infiltration Area = - m²</p>	<p>Site Characteristics</p> <p>Area of Site : 7,622 m²</p> <p>Roof + driveway areas 2,633 m²</p> <p>Length of roadways: - m</p> <p>Width of roadways: 0 m</p> <p>Total area of roadways: -</p> <p>Impervious Area 2,633 m²</p> <p>Percent Impervious Area = 34.54 %</p> <p>Infiltration Area = 4,989 m²</p>
<p>Septic Effluent</p> <p>Concentration of Effluent (C_s) = 0 mg/L</p> <p>Daily Sewage Flow (Q_s) = 0 m³</p>	<p>Septic Effluent</p> <p>Concentration of Effluent (C_s) = 4 mg/L</p> <p>Daily Sewage Flow (Q_s) = 5.15 m³</p> <p>See Note 1 below.</p>
<p>Infiltration Calculation</p> <p>Nitrate concentration in precipitation (C_i) = 0 mg/L</p> <p>Surplus Water (Environment Canada) mm/yr</p> <p>Factored Water Surplus = 0 mm/yr</p> <p>Total volume of Infiltration - m³/yr</p> <p>Infiltration flow entering the system (Q_i) = 0 m³/day</p>	<p>Infiltration Calculation</p> <p>Nitrate concentration in precipitation (C_i) = 0 mg/L</p> <p>Surplus Water (Environment Canada) 402 mm/yr</p> <p>Factored Water Surplus = 261 mm/yr</p> <p>Infiltration % due to stormwater management measures 0%</p> <p>Infiltration rate from stormwater management measures = 0 mm/yr</p> <p>Infiltration Flow Entering the System (Q_i) = 4 m³/day</p>
<p>Mass Balance Model (MOEE, 1995)</p> <p style="text-align: center;">$C_T = (Q_b C_b + Q_e C_e + Q_i C_i) / (Q_b + Q_e + Q_i)$ = Cumulative Nitrate Concentration</p> <p>Q_b = flow entering the system across the upgradient area 0 m³/day</p> <p>C_b = background nitrate concentration 0 mg/L</p> <p>Q_e = flow entering the system from the septic drainfield 0 m³/day</p> <p>C_e = concentration of nitrates in the septic effluent 0 mg/L</p> <p>Q_i = flow entering the system from infiltration 0 m³/day</p> <p>C_i = Concentration of nitrates in the infiltrate 0 mg/L</p> <p style="text-align: right;">C_T = #DIV/0! mg/L</p> <p>Estimate Number of Lots 1 lots</p>	<p>Mass Balance Model (MOEE, 1995)</p> <p style="text-align: center;">$C_T = (Q_b C_b + Q_e C_e + Q_i C_i) / (Q_b + Q_e + Q_i)$ = Cumulative Nitrate Concentration</p> <p>Q_b = flow entering the system across the upgradient area 0 m³/day</p> <p>C_b = background nitrate concentration 0 mg/L</p> <p>Q_e = flow entering the system from the septic drainfield 5.15 m³/day</p> <p>C_e = concentration of nitrates in the septic effluent 4 mg/L</p> <p>Q_i = flow entering the system from infiltration 4 m³/day</p> <p>C_i = Concentration of nitrates in the infiltrate 0 mg/L</p> <p style="text-align: right;">C_T = 2.36 mg/L</p> <p>Estimate Number of Lots 1 lots</p>
<p>* = see separate weighted infiltration factor calculations</p>	

WaterNO_x-S & WaterNO_x-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:



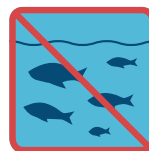
Contaminate Drinking Water Sources with High Levels of Nitrate



Limit Recreation Activities such as Swimming, Boating, and Fishing



Lower Property Values by Impairing Quality of Surface Water



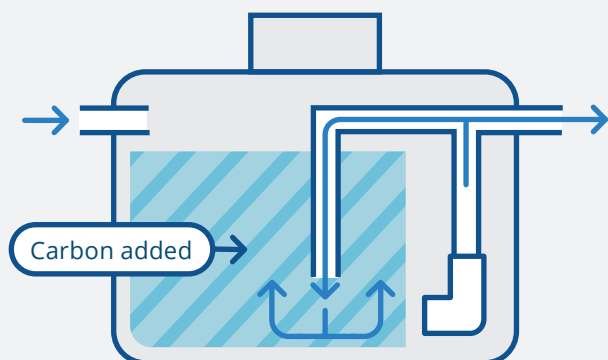
Lower Dissolved Oxygen Levels and Reduce Fish Populations

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.



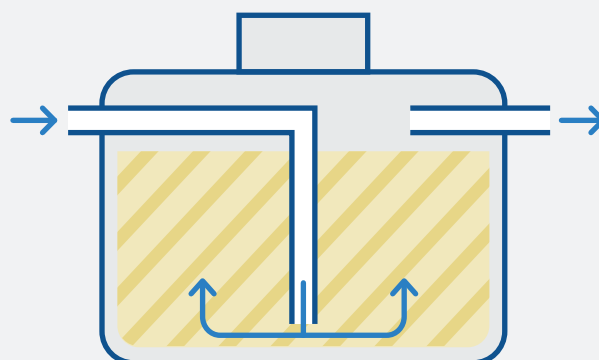
A pump re-circulates the water through the filtration media. External carbon is added.

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

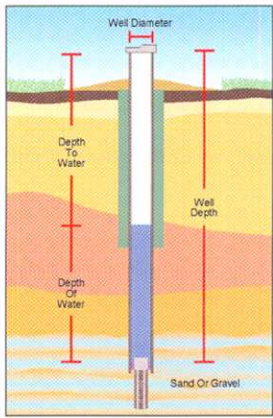
- ▶ 100% passive, no energy used
- ▶ No extra pump necessary
- ▶ No chemical addition
- ▶ Long, 10+ year filter media lifespan
- ▶ Self-buffered to neutral pH
- ▶ Minimal increase to BOD and TSS

For more
information:

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



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.