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Potable Water Supply Assessment

Proposed Commercial Development
6045 Bank Street
Ottawa (Greely), Ontario



Prepared For
Greely Family Farm Inc. and
Maverick Development Corporation

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Report No: PH3207-REP.01

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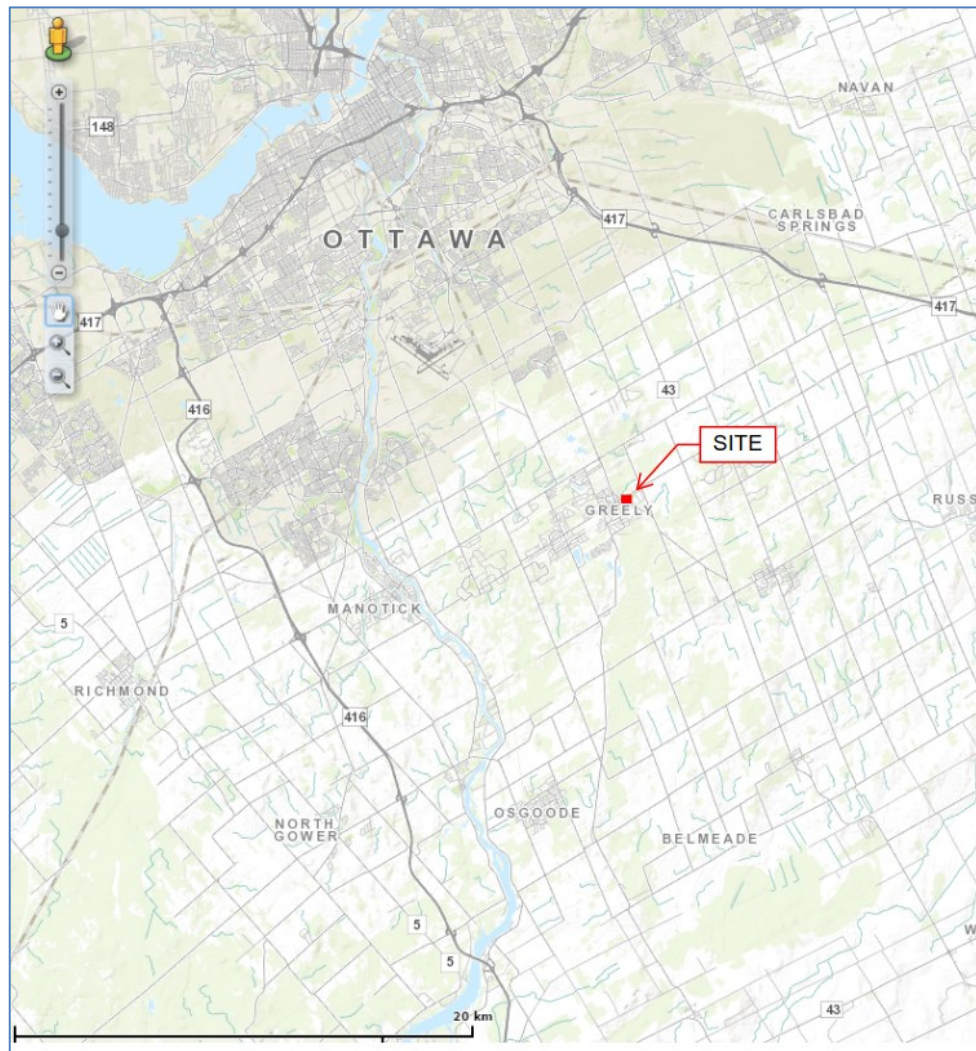
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1.0 INTRODUCTION

Paterson Group (Paterson) was retained by Greely Family Farm Inc. and Maverick Development Corporation to conduct a potable water supply assessment for a proposed commercial development located at 6045 Bank Street, Ottawa (Greely), Ontario. The site location is indicated on Figure 1, below.

Figure 1 - Site Location



Ref: <http://maps.ottawa.ca/geottawa/>

This study was conducted in general accordance with Ontario Ministry of the Environment and Climate Change (MOECC) guidance document Procedure D-5-5: Technical Guideline for Private Wells: Water Supply Assessment (MOEE, 1996).

The scope of the assessment is limited to the determination of the potential yield and raw water quality of the bedrock water supply aquifer intercepted by a newly drilled onsite well (TW2), as it relates to the future servicing potential for the proposed commercial development at the subject site.

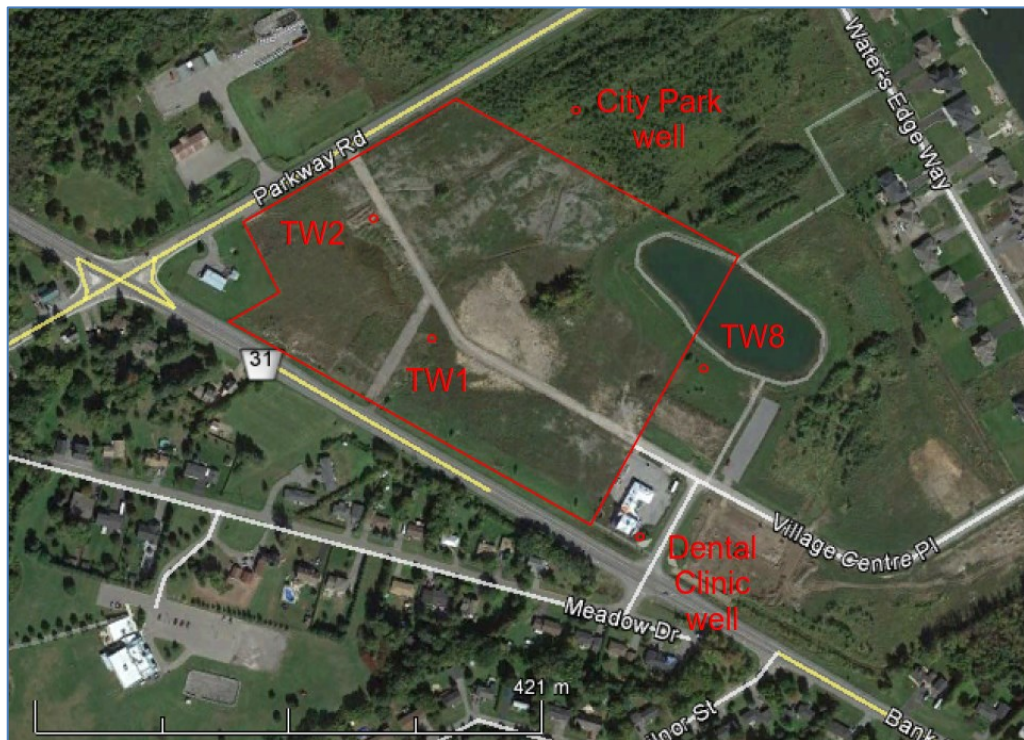
The investigation involved the following major components:

- Review of available information regarding the subject site, the proposed development, and surrounding lands.
- Hydrogeological analysis including a pumping test, groundwater sampling, geological information review, aquifer analysis and water quantity assessment.

2.0 SITE DESCRIPTION

The subject property at 6045 Bank Street is approximately 8.1 hectares (Ha) in size. The site is generally flat, mostly cleared and is bisected by a gravel laneway. Some shallow ditches enhance the onsite drainage.

Figure 2 - Site Layout



Ref: Google Earth Pro 2016

The site has an existing water supply well (TW1) with a total depth of 30.48 m and steel casing that extends to 9.14 m below ground surface (bgs). This test well was installed as part of a previous hydrogeological study by Paterson (Paterson File PH0145). Please Note: the City of Ottawa has indicated that this well is not suitable for the purpose of assessing the bedrock aquifer at this site, so a new drilled well was installed (see below). A new water supply well (TW2) was installed at the site on October 11, 2016 (details provided below in Section 3.2).

The onsite topographic elevation varies from approximately 88 to 92 m asl.

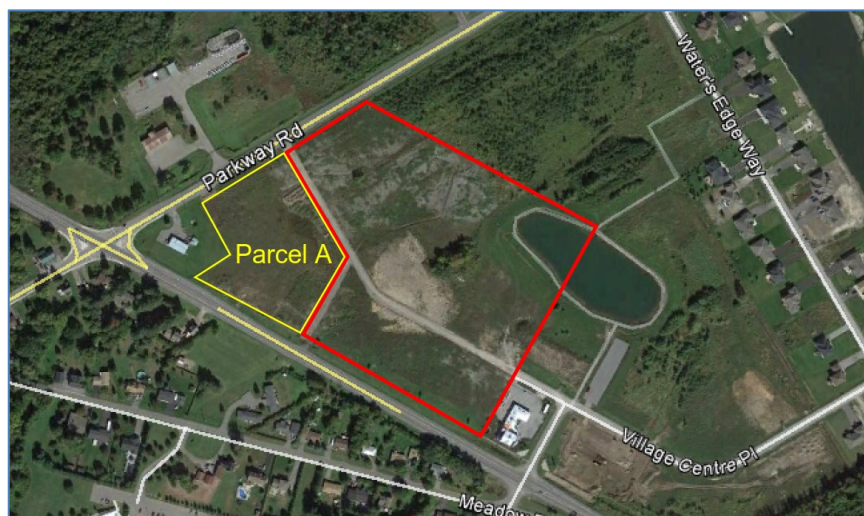
The following legal description of the subject lot was obtained from the City of Ottawa's interactive GIS mapping system, GeoOttawa (<http://maps.ottawa.ca/geoottawa/>):

- PIN 043200416
- Part Lot 73 & 74 Compiled Plan 903 4R-15291

2.1 Proposed Commercial Development

Greely Family Farm Inc. and Maverick Development Corporation propose to sever the subject lands to create a new commercial lot (subject to site plan approval). The severed parcel (Parcel A) will be approximately 1.9 Ha in size (see Figure 3). It is being proposed to develop Parcel A as a retail shopping plaza. The retained parcel will be developed as commercial property at some point in the future. This report has been prepared to support the proposed development of Parcel A.

Figure 3 - Proposed Severance



Ref: Google Earth Pro 2016

The proposed commercial development of Parcel A includes three stand-alone retail buildings. A preliminary site development plan is included in Appendix 4.

The buildings will be single storey structures with slab on grade construction. No municipal services are currently available at this site. The site will be serviced by a private water supply well and a private communal sewage treatment system.

Wastewater will be treated by a communal sewage works which has been approved by MOECC (ECA #6166-8SNL4C). The potable water supply will consist of an onsite water supply well (or wells).

2.2 Surrounding Land Uses

Surrounding land uses are described below:

North

- Parkway Road (right-of-way)
- Former road maintenance patrol yard
- Church
- Unused land

East

- City Park
- Unused land (flat and mostly cleared)
- Residential subdivision (single family houses)

West

- Veterinary clinic
- Bank Street (right-of-way)
- Mixed residential and commercial development (single family houses and small businesses)

South

- Dental clinic
- Bank Street (right-of-way)
- Residential development (single family houses)

2.3 Potential Sources of Contamination

Onsite

No potential sources of onsite contamination were identified. Clean fill material, consisting of site excavated soil, has been spread around over a portion of the site.

Offsite

The following potential offsite sources of contamination were identified:

- Former road maintenance patrol yard (bulk storage and handling of road salt, automotive maintenance activities, bulk storage and handling of liquid fuels).
- Bank Street and Parkway Road (potential spills, road salt use).

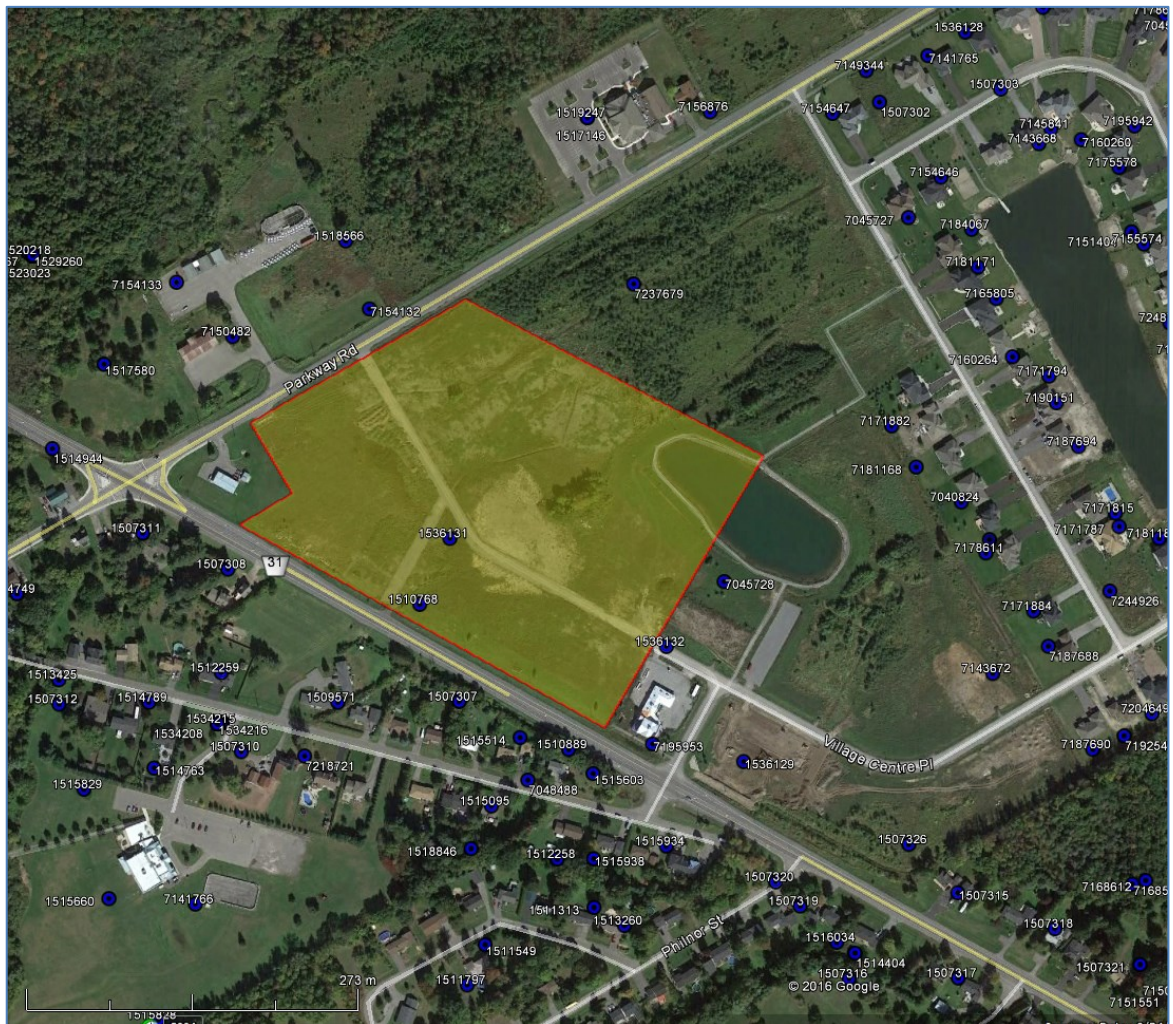
The City has required that wells in the surrounding developments must have casing that extends through the shallow bedrock aquifer (Oxford and March Formations), and into the deep bedrock aquifer (Nepean Formation).

3.0 METHOD OF STUDY

3.1 Water Well Record Search

A search of the MOECC water well records database was conducted for the site and surrounding properties. Key information from water well records in the vicinity of the site is summarized below in Table 1. MOECC water well records are included in Appendix 1, and the locations are indicated on Figure 4, below.

Figure 4 - Water Well Records



Ref: Google Earth Pro 2016, and <https://www.ontario.ca/environment-and-energy/map-well-records>

Table 1 - Well Records Summary

WATER WELL RECORDS SUMMARY								
Well Record ID	Year Drilled	Depth to Bedrock (m)	Casing Depth (m)	Depth to Water Bearing Fractures (m)			Total Depth (m)	Recommended Pumping Rate (L/min)
1507307	1961	5.18	7.00	7.0			7.01	23
1507308	1962	6.40	6.71	7.9			7.92	14
1507311	1965	7.32	8.53	10.6			10.67	23
1507326	1965	not encountered	12.80	12.8			12.80	23
1509571	1968	6.40	6.4	7.3			7.92	23
1510768	1970	25.60	26.52	26.2			27.13	23
1510889	1970	7.31	7.31	9.1			9.75	68
1512259	1972	7.92	7.92	13.1			13.72	23
1514944	1975	9.14	9.14	13.1			13.72	36
1515514	1976	12.49	12.50	13.4			13.72	23
1515603	1976	6.40	6.40	7.6			8.53	45
1515934	1977	7.62	8.53	12.8			13.41	23
1517146	1979	7.92	8.53	38.7			40.23	36
1517580	1981	10.67	11.28	17.7			18.90	45
1518566	1983	8.53	8.53	10.1			10.67	45
1519247	1984	9.45	10.06	10.9			12.09	23
1536129	2005	7.01	8.53	45.0			48.76	not provided
1536131	2005	7.62	9.14	28.0			30.48	not provided
1536132	2005	7.92	9.14	53.0			54.86	not provided
7040824	2007	7.92	54.86	26.8	58.8		60.96	91
7045727	2007	8.53	58.82	59.7	63.7		73.15	45
7045728	2007	8.69	56.39	61.8			64.00	91
7048488	2007	well extension						
7143672	2010	8.99	60.35	63.1	64.3		67.06	91
7150482	2010	monitoring wells - cluster record						
7154132	2010	PVC monitoring well						
7154133	2010	PVC monitoring well						
7154647	2010	9.30	60.35	62.5	70.4		73.15	73
7156876	2010	7.31	60.35	71.3			73.15	91
7171882	2011	9.45	60.35	63.4			67.06	91
7171884	2011	7.31	60.35	62.8	64.3		67.06	91
7178611	2012	8.23	60.35	63.7	65.2		67.06	91
7181168	2012	9.45	60.35	63.7	76.5		79.25	91
7187688	2012	8.23	60.35	64.3			67.06	91
7190154	2012	8.53	60.35	61.9	64.6		67.06	91
7195953	2012	11.28	60.35	87.8	109.1		110.95	91
7237679	2015	6.10	60.35	79.2	83.8		85.95	91

3.2 Test Wells

A new drilled well (designated TW2) was installed at the site on October 11, 2016 by Air Rock Drilling Co. Ltd. (Air Rock) of Richmond, Ontario (Well Contractor License No.1119). The new well was drilled to a total depth of 106.98 m. Steel casing was installed to a depth of 60.35 m. The drilling, installation, and construction procedures were observed by Paterson to be in compliance with the requirements of Ontario Regulation 903 (Wells). See Table 2 (below) for details.



Air Rock Drilling rig at 6045 Bank Street

The test well was constructed in general conformance with the well construction requirements for the adjacent 'Water's Edge' residential subdivision and Greely Commercial Centre, which requires all wells to be cased "through the limestone formation and extend into the sandstone formation".

The existing drilled well (TW1) was used as an observation well. This well terminates in the Oxford Formation at approx. 30.5 m bgs, and the well casing only extends to 9.1 m bgs. This well configuration does not conform to the City's requirements for the adjacent developments.

Table 2 - Test Wells Summary

Test Wells Summary							
Test Well ID	Year Drilled	Depth to Bedrock (m)	Casing Depth (m)	Depth to Water Bearing Fractures (m)		Total Depth (m)	Recommended Pumping Rate (L/min)
TW2	2016	8.23	60.35	105.2		106.98	91
TW1	2005	7.62	9.14	28.0		30.48	not available
TW8	2007	8.69	56.39	61.87		64.00	91
Dental Clinic	2012	11.28	60.35	87.8	109.1	110.95	91
City Park	2015	6.10	60.35	79.2	83.8	85.95	91

3.3 24 Hour Pumping Test

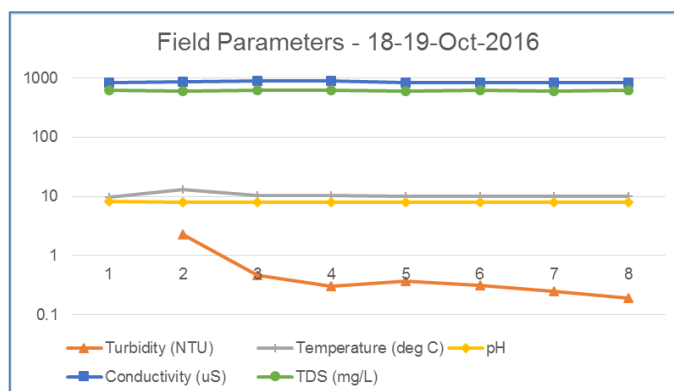
Paterson conducted a pumping test at TW2 on October 18, 2016. The well was pumped at approx. 34 L/min for 24 hours, and was allowed to recover.

During the test the pumping rate was monitored at regular intervals to ensure the rate of discharge remained constant (i.e. < 5% variation). Drawdown observations during pumping and recovery were recorded using manual measurements taken with an electronic water level tape. Electronic dataloggers were also installed in the pumping well and at two observation wells (TW1 and the City Park well) to record changes in water level throughout the test.

Turbidity measurements were taken using a Hanna™ HI93414 Fast Tracker portable meter at the well head at regular intervals during the pumping test. Free chlorine residual measurements were taken using a Hach™ Pocket Colorimeter II™ handheld unit immediately prior to the collection of each groundwater sample. Field measurements of pH, temperature, conductivity and TDS were carried out during the test using an Extech™ ExStik II portable multi-meter. Field parameter results for the pumping test are provided in Table 3 below.

Table 3 - Field Parameters

FIELD PARAMETERS					
Time after start of pumping (min)	Turbidity (NTU)	Temperature (deg C)	pH	Conductivity (uS)	TDS (mg/L)
6	-	9.7	8.28	843	622
20	2.29	12.9	8.06	871	598
160	0.47	10.4	7.95	896	630
240	0.30	10.3	7.88	892	624
805	0.37	10.2	7.98	846	607
1335	0.31	10.1	7.92	832	612
1395	0.25	10.2	7.86	850	605
1445	0.19	10.1	7.90	842	617



3.4 Offsite Well Owner Interviews

The neighbouring well owner to the south (Dental Clinic) was interviewed about their well and septic system. A standard form was used to conduct the brief interview. The form includes standard questions about the well location, water quality, water quantity and potential environmental concerns. Well owner interview log sheet is included in Appendix 4.

3.5 Groundwater Sampling

Groundwater samples were collected at TW2 during the pumping test. Samples were collected at 12 hours and 24 hours after the start of pumping. Prior to collection of the groundwater samples, the free chlorine residual was verified to be non-detectable.

All groundwater samples were submitted for comprehensive testing of bacteriological, chemical and physical water quality parameters consistent with the standard 'Subdivision Water Supply' suite of parameters.

The final sample from the test well (TW2) was also submitted for analysis of 'RVCA recommended metals', and phosphate.

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

Exova is fully accredited by the Canadian Association for Laboratory Accreditation (CALA) having received a Certificate of Laboratory Proficiency in 1991 (CALA Registration Number 2602). Exova has ISO 17025 accreditation (Standards Council of Canada) and is fully accredited for Ontario Safe Drinking Water Act (OSDWA) testing.

Offsite Well Sampling

One offsite water sample was collected at 7906 Village Centre Place (Dental Clinic - see Figure 2 for location) on October 19, 2016. The sample was submitted to EXOVA Ottawa for analysis of the standard 'subdivision water supply' suite of parameters (see Section 5.3 for a discussion of the results).

3.6 Additional Six Hour Pumping Test

Paterson conducted a six (6) hour pumping test at TW2 on October 19, 2016. The well was pumped at approx. 100 L/min for 6 hours, and was allowed to recover.

During the test the pumping rate was monitored at regular intervals to ensure the rate of discharge remained constant (i.e. < 5% variation). Drawdown observations during pumping and recovery were recorded using manual measurements taken with an electronic water level tape. Electronic dataloggers were also installed in the pumping well and at two observation wells (TW1 and the City Park well) to record changes in water level throughout the test.

4.0 GEOLOGY

4.1 Overburden Geology

Surficial geology mapping information from the Ontario Geological Survey (OGS) was obtained from the OGS Earth website at: <http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearch>, and is included on Figure 5 (Overburden Geology), below.

The mapping data from OGS shows that the site has till (diamicton) and coarse grained glaciomarine deposits at surface.

The thickness of the overburden unit, based on available water well record information from wells located in the vicinity of the subject site, varies from approximately 7 to 11 m.

A geotechnical investigation was conducted at the site by Paterson in October 2016 (Paterson, 2016). The findings of the geotechnical investigation are presented under separate cover (Paterson, 2016).

Generally the soil profile consists of topsoil, followed by an intermittent layer of silty clay, which is predominantly underlain by granular deposits of sand to sandy silt.

Figure 5- Overburden Geology



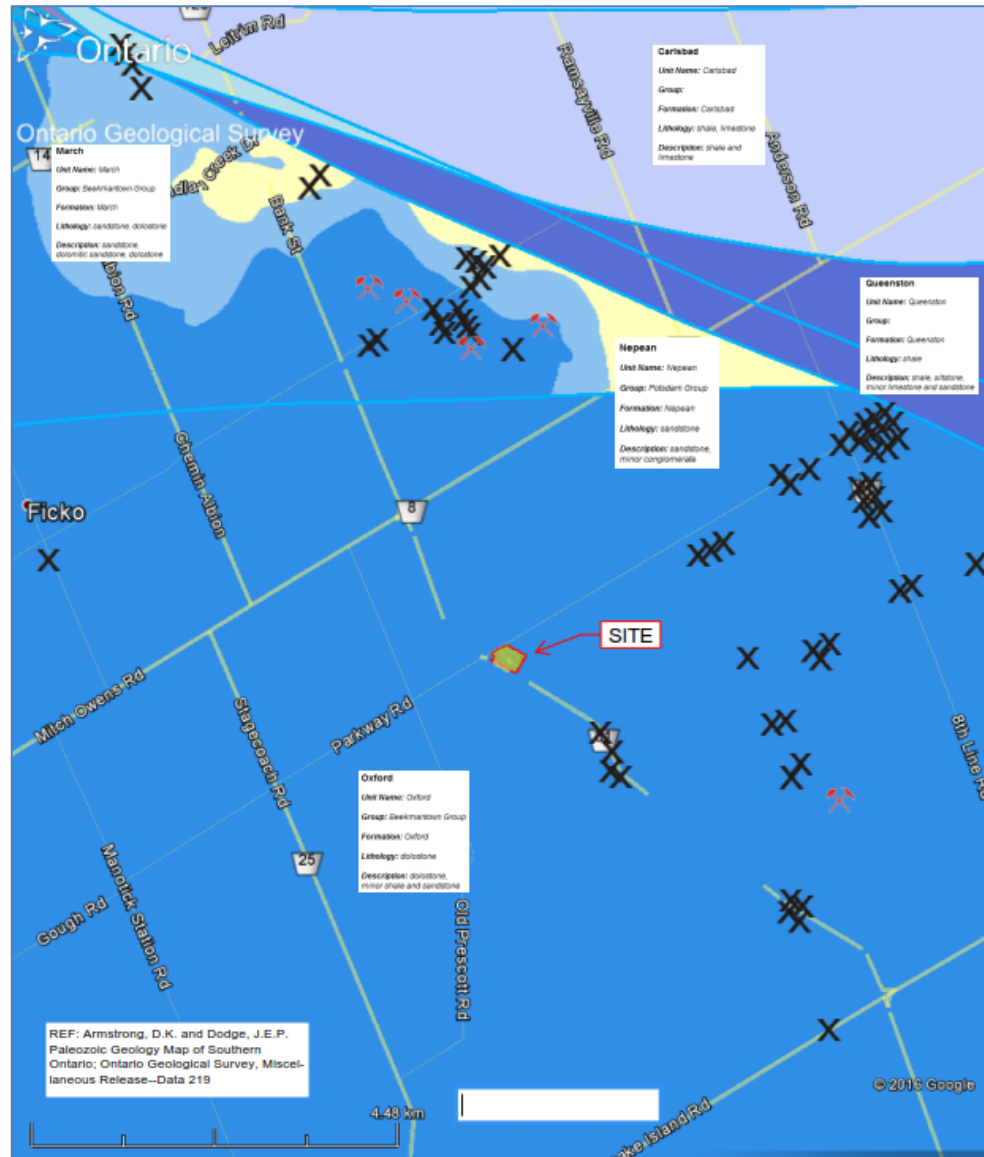
Ref: Google Earth Pro 2016, and <http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth>

4.2 Bedrock Geology

Geological mapping information from the OGS Earth website (OGS, 2016) shows that the site is located in an area where the **Oxford Formation** is the uppermost bedrock unit. The lithology is described as dolostone, minor shale and sandstone. The Oxford formation is a recognized water bearing aquifer unit in the Ottawa region which typically has good water

quality and quantity. Figure 6 (below), shows the OGS Earth mapping information in the vicinity of the site.

Figure 6 - Bedrock Geology



Ref: Google Earth Pro 2016, and <http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearch>

4.3 Hydrogeology

A limited investigation of the overburden aquifer was conducted by Paterson as part of the geotechnical investigation. Three boreholes were instrumented with PVC monitoring well components (schedule 40 PVC well screen and riser with end caps). A shallow unconfined

aquifer exists in the overburden layer. Groundwater was encountered at depths from 2.5 to 2.8 m below ground surface (see Table 4, below). The inferred direction of shallow groundwater flow at the site based on the borehole water level elevations is towards the northwest.

Table 4 - Overburden Groundwater Elevations

OVERBURDEN GROUNDWATER ELEVATIONS				
Stand-pipe well ID	Ground Surface Elevation (m)	Top of Riser Elevation (m)	Groundwater Depth (m)	Groundwater Elevation (m)
			20/10/2016	
BH12	89.88	90.67	3.321	87.35
BH15	89.47	91.14	4.199	86.94
BH29	90.51	92.14	4.482	87.66
The test hole reference elevations were provided by Ark Engineering.				

The bedrock aquifer consists of water bearing fracture zones (i.e. horizontal bedding plane fracture zones) that occur between relatively unfractured layers of massive bedrock. The upper bedrock layer tends to form a confining layer. The interpreted direction of groundwater flow in bedrock at the site is probably towards the northeast. This interpretation is consistent with previous studies completed for the neighbouring development (Paterson 2007, Consolidation Terrain Analysis Hydrogeological report PH0145-07).

5.0 AQUIFER ANALYSIS

5.1 Aquifer Characteristics

The pumping test data was analyzed using Aquifer Test Pro™ (V2016) software. Drawdown data was measured using an electronic water level tape. An electronic datalogger unit was also used to monitor drawdown in the test well.

Pressure data from the dataloggers was corrected for atmospheric pressure variations (i.e. barometric compensation) using Schlumberger Diver-Office™ software and a barometric pressure data logger that was deployed during the investigation.

The drawdown data was analyzed using the Theis (Theis, 1935), and the Cooper & Jacob methods of analysis (Cooper & Jacob, 1946). Recovery data was also analyzed using Theis. Aquifer transmissivity is estimated to be approximately **6,960 m²/day**. Aquifer storativity is estimated to be approximately 1×10^{-4} .

Table 5 - Summary of Aquifer Characteristics

SUMMARY OF AQUIFER CHARACTERISTICS	
Parameter	TW2
Transmissivity (m ² /d)	6960
Storativity	1.0E-04
Average Test Pumping Rate (L/min)	100
Average Test Pumping Rate (m ³ /day)	144
Available Draw down (m)	102.75
Draw down at 100 mins (m)	4.511
Maximum Test Draw down (m)	4.553
Draw down at 20 years (extrapolated)	5.25
% of available draw down	5.1%
Specific Capacity (L/min/m)	22
Q20 safe well yield (m ³ /day) Farvolden	341918
Q20 safe well yield (m ³ /day) Maarthus & van der Kamp	1973
Q20 safe well yield (L/min) Maarthus & van der Kamp	1370
Farvolden, 1959	
Maarthus & van der Kamp, 2006	

Pumping at TW2 did not have any effect on the nearby wells that were monitored (TW1, City Park, Dental Clinic and TW8). Dataloggers placed on TW1 and in the City Park well did not show any response to pumping. TW8 and the Dental Clinic well were also monitored manually during the pumping test and did not show any indication of the pumping at TW2.

There appears to be a significant degree of hydraulic isolation between the upper bedrock aquifer (Oxford and March Formations) and the Nepean Sandstone aquifer. Pumping at TW2 did not have any significant effect on TW1.

5.2 Groundwater Quantity

The pumping test results show that test well TW2 has a very high yield. Drawdown at a pumping rate of 34 L/min for 24 hours was approx. 5 cm. 95% recovery was achieved almost immediately. The drawdown at a pumping rate of 100 L/min for 6 hours was 22 cm. 95% recovery was achieved approximately 4.25 hours after the end of pumping.

A determination of the long term safe yield (i.e. Q20 pumping rate) of test well TW2 was calculated using the method described by Fervolden (Fervolden, 1959) as described in Maarthus & van der Kamp, 2006. The inputs and results of the calculation are presented in Table 3 (above). The results of the 20 year safe yield analysis show that the well could be pumped at up to **1370 L/min** continuously without causing an adverse impact to surrounding well users.

The total volume of water pumped during the 24 hour pumping event was 48,960 L. The total volume of water pumped during the 6 hour pumping event was 36,000 L.

The water demand for the proposed commercial development is limited to the maximum sewage flow for the site. As a condition of sale for Parcel A, the maximum sewage flow generated by the proposed development is 40,000 L/day.

For the proposed commercial development (as detailed in the preliminary Site Development Plan in Appendix 4), the peak daily water demand has been estimated based on OBC requirements for calculating the total daily design sanitary sewage flow (TDDSSF). In accordance with Table 8.2.1.3B of the OBC the TDDSSF for the proposed development is 36,763 L. Refer to Table 6 (below) for a summary of the estimated sewage flow. The estimated peak daily sewage flow for the proposed development is less than the maximum flow permissible under the sales agreement.

Table 6- Estimate of Dailey Sewage Flows

ESTIMATE OF DAILY SEWAGE FLOWS				
Building ID	Building Type	Floor Area (m ²)	Flow Multiplier	Estimated Sewage Flow (L)
A	Grocery store			
	retail space	2495	40 L / 9.25 m ²	10,789
	bakery	110	190 L / 9.25 m ²	1,308
	delicatessan	110	190 L / 9.25 m ²	1,308
	meat department	130	380 L / 9.25 m ²	5,341
	water closets	2 W.C.s	950 L each	1,900
B	Retail	975	5 L / m ²	4,875
C	Office	929	75 L / 93 m ²	7,492
D	Restaurant	173 m ² 30 seats	125 L / seat	3,750
			TDDSSF	36,763

Water use will mostly occur within a 12 hour period each day. This equates to an average water demand of approximately 26 L/min, which is below the pumping rate that was used during the 24 hour test.

The total volume of water pumped during the 24 hour pumping event was 48,960 L, which is 22% more than daily maximum sewage flow limit. The total volume of water pumped during the 6 hour pumping event was 36,000 L.

The new well at 6045 Bank Street will provide a sufficient quantity of water for the proposed commercial use. In Paterson's professional opinion the probable well yield determined on the basis of this investigation is representative of the yield that can be expected in the long term.

5.3 Groundwater Quality

Water quality analysis data from TW2 is summarized in Table 7 (below). Laboratory certificates of analysis are included in Appendix 2.

The analytical results show that water quality at the subject site is acceptable and that there are no exceedances of the applicable health related parameter limits of the Ontario Drinking Water Standards (ODWS).

With respect to aesthetic objectives and operational guidelines, the analytical results indicate the following exceedances:

- Hardness
- TDS

Hardness

Hardness, an operational guideline, does not appear in the ODWS. Rather it appears in the Technical Support Documents for Drinking Water Standards, Objectives, Guidelines (Technical Support Documents) as a parameter with an operational guideline of 100 mg/L. At the measured concentrations, the water is considered to be very hard, however it is below the reasonable treatment limit of 500 mg/L specified in Table 3 of the guidance document, titled, " Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment", published by MOECC (MOE, 1995).

Table 7 - Groundwater Geochemistry (TW2)

GROUNDWATER GEOCHEMISTRY - TW2				
PARAMETER	UNITS	TW2-WS1	TW2-WS2	ODWS LIMIT
		18-Oct-16	19-Oct-16	
HEALTH RELATED LIMITS				
Microbiological				
Escherichia Coli	ct/100 mL	0	0	0 ^{MAC}
Total Coliforms	ct/100 mL	0	0	0 ^{MAC}
Chemical				
Fluoride	mg/L	0.32	0.28	1.5 ^{MAC}
N-NH3 (Ammonia)	mg/L	0.12	0.13	-
N-NO2 (Nitrite)	mg/L	<0.10	<0.10	1 ^{MAC}
N-NO3 (Nitrate)	mg/L	<0.10	<0.10	10 ^{MAC}
Total Kjeldahl Nitrogen	mg/L	0.1	0.1	-
Turbidity (Lab)	NTU	2.6	2.1	1.0 ^{MAC} /5.0 ^{AO}
AESTHETIC and OPERATIONAL RELATED LIMITS				
Hardness as CaCO3	mg/L	298	298	100 ^{OG}
Alkalinity (as CaCO3)	mg/L	222	223	500 ^{OG}
TDS (COND - CALC)	mg/L	604	606	500 ^{AO}
Calcium	mg/L	70	70	-
Chloride	mg/L	126	127	250 ^{AO}
Colour	TCU	<2	<2	5 ^{AO}
Conductivity	uS/cm	929	932	-
DOC	mg/L	1.3	1.2	5 ^{AO}
Hydrogen Sulphide	mg/L	<0.02	<0.02	0.05 ^{AO}
pH	-	7.89	8.00	6.5-8.5 ^{AO}
Phenols	mg/L	<0.001	<0.001	-
Sulphate	mg/L	81	82	500 ^{AO}
Tannin & Lignin	mg/L	<0.1	<0.1	-
Magnesium	mg/L	30	30	-
Potassium	mg/L	7	7	-
Sodium	mg/L	76	76	200 ^{AO}
Iron	mg/L	0.21	0.2	0.3 ^{AO}
Manganese	mg/L	0.03	0.03	0.05 ^{AO}
NOTE: Values exceeding the ODWS limits are highlighted in yellow				

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 be 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.

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 = 0.6) indicate the water

is super saturated and tends to precipitate a scale layer of calcium carbonate (scale forming but non-corrosive). See Appendix 3 for calculation details.

Additional Parameters

The final sample from the test well (TW2) was submitted for analysis of 'RVCA recommended metals', and phosphate. The analytical results are all non-detectable and/or below the applicable ODWS limits. See Table 8 (below). Laboratory certificates of analysis are included in Appendix 2.

Table 8 – Groundwater Geochemistry (TW2 - Additional Parameters)

GROUNDWATER GEOCHEMISTRY - TW2 - ADDITIONAL PARAMETERS			
		ODWS	TW2-WS2
Parameters	Units	Limit	19-Oct-16
RVCA Metals			
Silver	mg/L	not specified	<0.0001
Aluminum	mg/L	0.1 ^{OG}	<0.01
Arsenic	mg/L	0.025 ^{IMAC}	<0.001
Boron	mg/L	5 ^{IMAC}	0.14
Barium	mg/L	1 ^{MAC}	0.08
Beryllium	mg/L	not specified	<0.0005
Cadmium	mg/L	0.005 ^{MAC}	<0.0001
Chromium	mg/L	0.05 ^{MAC}	<0.001
Copper	mg/L	1.0 ^{AO}	<0.001
Molybdenum	mg/L	not specified	0.07
Nickel	mg/L	not specified	<0.005
Lead	mg/L	0.010 ^{MAC}	<0.001
Antimony	mg/L	0.006 ^{MAC}	0.0006
Selenium	mg/L	0.01 ^{MAC}	<0.001
Strontium	mg/L	not specified	4.56
Thallium	mg/L	not specified	<0.0001
Uranium	mg/L	0.02 ^{MAC}	<0.001
Zinc	mg/L	5 ^{AO}	<0.01
Mercury	mg/L	0.001 ^{MAC}	<0.0001
Chemical Parameters			
Phosphate (as P)	mg/L		<0.6
MAC = Maximum Acceptable Concentration; OG = Operational Guideline; AO = Aesthetic Objective			
ODWS = Ontario Drinking Water Standards, Objectives and Guidelines (MOE, 2003)			

Offsite Well Water Quality

A water sample was collected at the Dental Clinic at 7606 Village Centre Place on October 19, 2016. The analytical results are summarized in Table 9 (below).

The analytical results show that water quality at the Dental Clinic is acceptable and that there are no exceedances of the applicable health related parameter limits of the Ontario Drinking Water Standards (ODWS). The only exceedances are for the operational guideline limit for hardness, and the aesthetic objective limit for TDS. As discussed above, elevated hardness is normal in wells drilled throughout eastern Ontario due to the limestone bedrock.

Table 9 - Groundwater Geochemistry - Offsite Well (Dental Clinic)

GROUNDWATER GEOCHEMISTRY - OFFSITE WELL			
PARAMETER	UNITS	Dental Clinic	ODWS LIMIT
		19-Oct-16	
HEALTH RELATED LIMITS			
Microbiological			
Escherichia Coli	ct/100 mL	0	0 ^{MAC}
Total Coliforms	ct/100 mL	0	0 ^{MAC}
Chemical			
Fluoride	mg/L	0.32	1.5 ^{MAC}
N-NH3 (Ammonia)	mg/L	0.15	-
N-NO2 (Nitrite)	mg/L	<0.10	1 ^{MAC}
N-NO3 (Nitrate)	mg/L	<0.10	10 ^{MAC}
Total Kjeldahl Nitrogen	mg/L	0.1	-
Turbidity (Lab)	NTU	1.9	1.0 ^{MAC} /5.0 ^{AO}
AESTHETIC and OPERATIONAL RELATED LIMITS			
Hardness as CaCO3	mg/L	281	100 ^{OG}
Alkalinity (as CaCO3)	mg/L	211	500 ^{OG}
TDS (COND - CALC)	mg/L	593	500 ^{AO}
Calcium	mg/L	63	-
Chloride	mg/L	122	250 ^{AO}
Colour	TCU	<2	5 ^{AO}
Conductivity	uS/cm	912	-
DOC	mg/L	1.5	5 ^{AO}
Hydrogen Sulphide	mg/L	<0.02	0.05 ^{AO}
pH	-	7.99	6.5-8.5 ^{AO}
Phenols	mg/L	0.004	-
Sulphate	mg/L	88	500 ^{AO}
Tannin & Lignin	mg/L	<0.1	-
Magnesium	mg/L	30	-
Potassium	mg/L	7	-
Sodium	mg/L	81	200 ^{AO}
Iron	mg/L	0.21	0.3 ^{AO}
Manganese	mg/L	0.03	0.05 ^{AO}
NOTE: Values exceeding the ODWS limits are highlighted in yellow			

6.0 DEVELOPMENT CONSIDERATIONS

6.1 Well Water Treatment

The water within the bedrock aquifer displays elevated hardness. Installation of a standard commercial grade water softener will reduce the concentrations of hardness to acceptable levels. Conventional water softeners introduce sodium into the water supply, so it may be appropriate to bypass the water softener with a separate tap for drinking water.

7.0 CONCLUSIONS

The following statements and conclusions are based on the investigation and analysis contained within this report:

- The new onsite well (TW2) is technically suitable and appropriate for the purpose of characterizing the water supply aquifer for the proposed commercial site development.
- The bedrock aquifer at the subject site will provide a sufficient quantity of water for the intended commercial use (based on a maximum daily water demand of 40,000 L). In Paterson's professional opinion the probable well yield determined on the basis of this investigation is representative of the yield that can be expected in the future. The well yield is very high, and long term safe yield calculations suggest that pumping at the peak demand rate will be sustainable.
- The bedrock aquifer at the subject site will provide sufficient water quality for the intended commercial use. Elevated hardness and iron can be treated with the existing residential grade water softener.
- Historical land use of the subject property is not considered to be a concern as a potential source of contamination to the underlying bedrock aquifer.
- The only two potential offsite sources of groundwater contamination that were identified in the vicinity of the site are potential spills and road salt use along Bank Street and Parkway Road. Potential impacts to the bedrock aquifer are considered to be unlikely due to the confining nature of the upper bedrock.
- The subject site is considered to be suitable for commercial development based on the available well water yield and quality as determined by this investigation.

8.0 RECOMMENDATIONS

- The new drilled well (TW2) at 6045 Bank Street should be used for water supply for the proposed development.
- Water softener treatment is likely to cause an elevated concentration of sodium (> 20 mg/L) in the treated water. The local Medical Officer of Health should be notified in order to alert persons with medical conditions requiring a low sodium diet.

In summary, it is Paterson's professional opinion that this site is suitable for the commercial development. The hydrogeological recommendations contained within this report, if followed, will ensure that the development takes place in an effective manner, with a minimal impact on the natural environment.

patersongroup



Russell L. Chown, P.Geo.
Senior Hydrogeologist

Principal / Senior Engineer
Stephen J. Walker, P.Eng.



Stephen J. Walker, P.Eng
Principal

9.0 STATEMENT OF LIMITATIONS

This Potable Water Supply Assessment report has been prepared in general accordance with the agreed scope-of-work and the requirements of MOECC Procedure D-5-5: Technical Guideline for Private Wells: Water Supply Assessment (August 1996).

The conclusions presented herein are based on information gathered from a limited historical review along with a field inspection and testing program. The findings of this investigation are based on a review of readily available geological, historical, and regulatory information and a cursory review made at the time of the field assessment. The historical research relies on information supplied by provincial agencies and was limited within the scope-of-work, time, and budget of the project herein.

This report was prepared for the sole use of **Greely Family Farm Inc. and Maverick Development Corporation**. Permission from the above noted party and our firm will be required to release this report to any other party.

10.0 REFERENCES

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Appendix 1

- **MOECC Water Well Records**



Ontario

Ministry of the Environment
and Climate Change

W Tag #: A 207711 (Below)

A207711

TW2 (new well)

Well Record

Regulation 903 Ontario Water Resources Act

Page of

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name	Last Name / Organization Greely Development Inc.	E-mail Address	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name) 1500 Woodbine Ave # 30055	Municipality Toronto	Province ON	Postal Code M4C 5J2
Telephone No. (inc. area code)			

Well Location

Address of Well Location (Street Number/Name) 6045 Bank Street		Township Osgoode	Lot P/L 6 & 7	Concession 5
County/District/Municipality Ottawa-Carleton		City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates	Zone 18	Easting 456485	Northing 5012447	Municipal Plan and Sublot Number RP-4R-1529
Other Part 1				

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)
	Silty Sand			From To
	Cobble + Gravel			0' 18'
				18' 27'
Grey	Limestone			27' 151'
Grey	Sandstone	w/ Grey Limestone		151' 180'
Grey	Sandstone			180' 345'
Grey	Sandstone			345' 351'

Annular Space			Results of Well Yield Testing						
Depth Set at (m) From To		Type of Sealant Used (Material and Type)	Volume Placed (m ³)	After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify		Draw-Down		Recovery	
188'	188'	Neat cement	5.36	Not tested		Time (min)	Water Level (m/l)	Time (min)	Water Level (m/l)
188'	0'	Bentonite slurry	128			Static Level	15.5'		15.7'
				If pumping discontinued, give reason: X		1	15.8	1	15.5
				Pump intake set at (m) 300		2	15.8	2	15.5
							15.8		15.5

Method of Construction		Well Use	
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial
☐ Rotary (Conventional)	☐ Jetting	☒ Domestic	☐ Municipal
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning
☒ Air percussion		☐ Industrial	
☐ Other, specify		☐ Other, specify	

Construction Record - Casing				Status of Well	
Inside Diameter (cm)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm)	Depth (m)	From	To
6 1/4"	Steel	188"	+2'	188'	198'
6"	Open Hole			188'	351'

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

Water Details		Hole Diameter	
Water found at Depth 345' (m)	Kind of Water: ☐ Fresh ☒ Untested	Depth (m)	Diameter (cm/in)
	☐ Gas ☐ Other, specify	From To	
Water found at Depth 198' (m)	Kind of Water: ☐ Fresh ☐ Untested	0' 198'	9 3/4"
	☐ Gas ☐ Other, specify	198' 351'	6"
Water found at Depth 198' (m)	Kind of Water: ☐ Fresh ☐ Untested		
	☐ Gas ☐ Other, specify		

Well Contractor and Well Technician Information	
Business Name of Well Contractor Air Rock Drilling Co. Ltd.	Well Contractor's Licence No. 1119
Business Address (Street Number/Name) 6050 Parkway Road, Richmond Hill, ON	Municipality Richmond Hill

Province ON	Postal Code R4A 2Z0	Business E-mail Address air-rock@sympatico.ca
Bus. Telephone No. (inc. area code) 613-882-1170	Name of Well Technician (Last Name, First Name) Hanna, Jeremy	
Well Technician's Licence No. 13632	Signature of Technician and/or Contractor <i>[Signature]</i>	Date Submitted 2016/10/31

Map of Well Location

Please provide a map below following instructions on the back.

PARKWAY ROAD

#6045 BANK STREET

250'

400'

Comments:
3/4 HP - 15 GPM SET @ 100 FT

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes	2016 10 11	Audit No. 2237065
☐ No	2016 10 11	

Instructions for Completing Form

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

Well Owner's Information and Location of Well Information

[illegible]

RR#/Street Number/Name C.R. Wilson Hay 31		City/Town/Village City of Ottawa		Site/Compartment/Block/Tract etc. 13-14	
GPS Reading NAD 83	Zone 18	Easting 514 456634E	Northing 2386 5012386	Unit Make/Model A Reedy Macdon	Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify UTM

Log of Overburden and Bedrock Materials (see instructions)

[illegible][illegible][illegible]

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

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

Final Status of Well			
☒ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other)
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering	
☐ Test Hole	☐ Abandoned, poor quality	☐ Replacement well	

Well Contractor/Technician Information			
Name of Well Contractor Willes Bourgeois		Well Contractor's Licence No. 1414	
Business Address (street name, number, city, etc.) 54A 16th St			
Name of Well Technician (last name, first name) Alain Bourgeois		Well Technician's Licence No. 2710	
Signature of Technician/Contractor x [Signature]		Date Submitted YYYY MM DD 05 04 23	

Location of Well

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

Hand-drawn diagram showing the location of a well. A vertical line is labeled 'Highway' and '31'. A horizontal line intersects it, with '330 meters' written above it. To the right of the horizontal line is '0 well'. An arrow points north, labeled 'N'.

Audit No. z 21758	Date Well Completed YY 05 MM 04 DD 27
Was the well owner's information package delivered? ☐ Yes ☒ No	Date Delivered YYYY 05 MM 04 DD 27

Ministry Use Only				
Data Source			Contractor	
			1414	
Date Received	YYYY	MM	DD	Date of Inspection
				YYYY
				MM
				DD
Remarks			Well Record Number	
JAN 11 2006				

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Help Desk (Toll Free) at 1-888-396-9355.
- All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

Address of Well Location (County/District/Municipality) **Ottawa-Carleton** Township **Osgoode** Lot **6** Concession **5**
RR#/Street Number/Name **#7268 Parkway** City/Town/Village **Green** Site/Compartment/Block/Tract etc. **Plan 902 PL 73 74**
GPS Reading **8.3** NAD **18** Zone **456740** Easting **5012337** Northing **1106000** Unit Make/Model **Magellan** Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify _____

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth	
				From	To
	Sand & Boulders			0	8.69
	Limestone			8.69	40.54
	Sandstone			40.54	52.42
	White Sandstone			52.42	64.00

Hole Diameter			Construction Record				Test of Well Yield							
Depth	Metres		Inside diam centimetres	Material	Wall thickness centimetres	Depth		Draw Down		Recovery				
	From	To				From	To	Time min	Water Level Metres	Time min	Water Level Metres			
	0	64.00	15.23											
			Casing				Sublump							
			15.88	☒ Steel ☐ Fibreglass	.48	0	56.39	Pump intake set at (metres) 54.86						
				☐ Plastic ☐ Concrete				Pumping rate (litres/min) 91						
				☐ Galvanized				Duration of pumping 1 hrs + 0 min						
			Screen					Final water level end of pumping 9.98 metres						
				☐ Steel ☐ Fibreglass				Recommended pump type ☐ Shallow ☒ Deep						
				☐ Plastic ☐ Concrete				Recommended pump depth 04.56 metres						
				☐ Galvanized				Recommended pump rate (litres/min) 291						
			No Casing or Screen					If flowing give rate (litres/min) 9.25						
			☒ Open hole					If pumping discontinued, give reason.						
								60 9.98 60 3.26						

Water Record				
Water found at _____ metres	Kind of Water			
61.87	☒ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: NOT TESTED			
61.87	☐ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: NOT TESTED			
After test of well yield, water was Clear and sediment-free				
☐ Other, specify TESTED				
Chlorinated ☒ Yes ☐ No				

Plugging and Sealing Record			Annular space ☒ Abandonment ☐	
Depth set at - Metres	Material and type (bentonite slurry, neat cement slurry) etc.		Volume Placed (cubic metres)	
From	To			
55.78	52.73	Neat Cement Slurry	.1816	
52.73	0	Bentonite Slurry	1.47	
Method of Construction				
☐ Cable Tool	☐ Rotary (air)	☐ Diamond	☐ Digging	
☐ Rotary (conventional)	☒ Air percussion	☐ Jetting	☐ Other	
☐ Rotary (reverse)	☐ Boring	☐ Driving		
Water Use				
☒ Domestic	☐ Industrial	☐ Public Supply	☐ Other	
☐ Stock	☐ Commercial	☐ Not used		
☐ Irrigation	☐ Municipal	☐ Cooling & air conditioning		
Final Status of Well				
☐ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other)	
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering		
☒ Test Hole	☐ Abandoned, poor quality	☐ Replacement well		
Well Contractor/Technician Information				
Name of Well Contractor AIR ROCK DRILLING CO LTD		Well Contractor's Licence No. 1119		
Business Address (street name, number, city etc.) RR#1 RICHMOND ONT ROAD 270				
Name of Well Technician (last name, first name) MURCELL SHANNON		Well Technician's Licence No. 52122		
Signature of Technician/Contractor X		Date Submitted 2007 06 15		

Location of Well	
In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.	
Test well #8	
Audit No. Z 64733	Date Well Completed 2007 06 01
Was the well owner's information package delivered? ☒ Yes ☐ No	Date Delivered 2007 02 03
Ministry Use Only	
Data Source	Contractor 1119
Date Received JUN 28 2007	Date of Inspection
Remarks	Well Record Number



Ministry of
the Environment

Tag#: A135278

or Print Below)

7195953

DENTAL CLINIC

Regulation 903 Ontario water Resources Act

cord

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization OCC LTD	E-mail Address (*) METCALFE DENTAL CLINIC (*)	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name) 1886 Merivale Road, Suite 200		Municipality Ottawa	Province ON
		Postal Code K2G 1E6	Telephone No. (inc. area code)

Well Location

Address of Well Location (Street Number/Name) 7606 Village Centre Place		Township Osgoode	Lot 6	Concession 5
County/District/Municipality Ottawa-Carleton		City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates	Zone 18	Easting 456680	Northings 5012206	Municipal Plan and Sublot Number 4M-1398
				Other Block 66

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From To
	Sand & Gravel	Boulders		0' 37'
Grey	Limestone			37' 118'
Grey	Limestone	Sand stone mix		118' 171'
White	Sandstone			171' 288'
White	Sandstone			288' 358'
White	Sandstone			358' 364'

Annular Space			
Depth Set at (m/ft) From To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)	
198'	Neat cement	10.9	
188'	Bentonite slurry	58.8	

Method of Construction		Well Use	
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial
☐ Rotary (Conventional)	☐ Jetting	☒ Domestic	☐ Municipal
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning
☒ Air percussion		☐ Industrial	☐ Other, specify
☐ 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) From To	☒ Water Supply	
6 1/4"	Steel	.188"	+2' 198'	☐ Replacement Well	
6"	Open Hole		198' 305'	☐ Test Hole	
5 7/8"	Open Hole		305' 364'	☐ Recharge Well	
				☐ Dewatering Well	
				☐ Observation and/or Monitoring Hole	
				☐ Alteration (Construction)	
				☐ Abandoned, Insufficient Supply	
				☐ Abandoned, Poor Water Quality	
				☐ Abandoned, other, specify	
				☐ Other, specify	

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

Water Details		Hole Diameter	
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft) From To	Diameter (cm/in)
288' (m/ft) ☐ Gas ☐ Other, specify			
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested		
358' (m/ft) ☐ Gas ☐ Other, specify		0' 198'	93/4"
Water found at Depth	Kind of Water: ☐ Fresh ☐ Untested	198' 305'	6"
(m/ft) ☐ Gas ☐ Other, specify		305' 364'	5 7/8"

Well Contractor and Well Technician Information			
Business Name of Well Contractor Air Rock Drilling Co. Ltd.		Well Contractor's Licence No. 1119	
Business Address (Street Number/Name) 6659 Franktown Road, RR#1		Municipality Richmond	
Province ON	Postal Code K0A 2Z0	Business E-mail Address air-rock@sympatico.ca	
Bus. Telephone No. (inc. area code) 6138382170		Name of Well Technician (Last Name, First Name) Graham, Ryan	
Well Technician's Licence No. T3484	Signature of Technician and/or Contractor <i>[Signature]</i>		Date Submitted 2012 12 31

Results of Well Yield Testing					
After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify Not tested		Draw Down		Recovery	
		Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: 		Static Level	9.6		9.9
		1	9.8	1	9.6
Pump intake set at (m/ft) 300		2	9.9	2	9.6
Pumping rate (l/min / GPM) 20		3	9.9	3	9.6
Duration of pumping 1 hrs + 0 min		4	9.9	4	9.6
Final water level end of pumping (m/ft) 9.9"		5	9.9	5	9.6
If flowing give rate (l/min / GPM)		10	9.9	10	9.6
Recommended pump depth (m/ft) 100'		15	9.9	15	9.6
		20	9.9	20	9.6
Recommended pump rate (l/min / GPM) 20		25	9.9	25	9.6
Well production (l/min / GPM) 20		30	9.9	30	9.6
Disinfected? ☒ Yes ☐ No		40	9.9	40	9.6
		50	9.9	50	9.6
		60	9.9	60	9.6

Map of Well Location	
Please provide a map below following instructions on the back.	
#7606 Village Centre Place	

Comments: *Metcalfe Dental Clinic*	
Well owner's information package delivered ☒ Yes ☐ No	Date Package Delivered 2012 12 20 Date Work Completed 2012 12 13
Ministry Use Only Audit No. Z 144859 Received JAN 28 2013	



Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	City of Ottawa c/o D&G Landscaping		
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code
1341 Coker Street	Greely	ON	K4P 1A1

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
1400 Water's Edge Way	Osgoode	6	5
County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	
UTM Coordinates	Zone	Easting	Northings
NAD 83	18	456667	5012584
Municipal Plan and Sublot Number			Other
4M-1398			BLOCK 75

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)
	Sand	Gravel		0' 20'
Grey	Limestone			20' 157'
Grey & White	Sandstone			157' 260'
Grey & White	Sandstone			260' 275'
Grey & White	Sandstone			275' 282'
RFT # 02114-98872-T05				

Annular Space

Depth Set at (m)	Type of Sealant Used (Material and Type)	Volume Placed (m³)
198' 188'	Neat cement	10.9
188' 0'	Bentonite slurry	75.6

Method of Construction

Well Use

☐ 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		☐ Other, specify		

Construction Record - Casing

Status of Well

Inside Diameter (cm)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm)	Depth (m)	From	To
6 1/4"	Steel	.188"	+2'	198'	198'
6"	Open Hole			198'	282'

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

Construction Record - Screen

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

Water Details

Hole Diameter

Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	Depth (m)	From	To	Diameter (cm/in)
260' (m)	☐ Gas ☐ Other, specify	0'	198'	198'	9 3/4"
275' (m)	☐ Gas ☐ Other, specify	198'	282'	282'	6 1/4"

Well Contractor and Well Technician Information

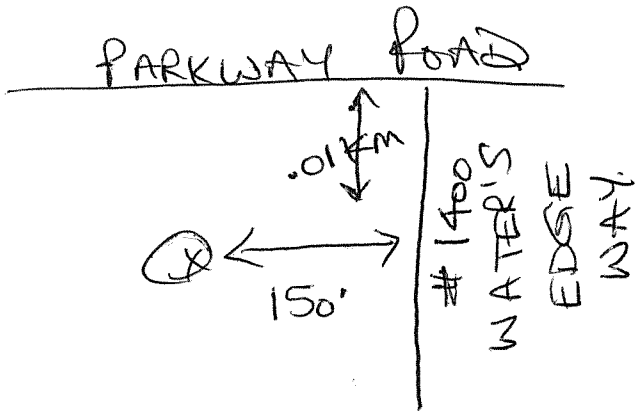
Business Name of Well Contractor	Well Contractor's Licence No.	
Air Rock Drilling Co. Ltd.	1119	
Business Address (Street Number/Name)	Municipality	
6659 Franktown Road, RR#1	Richmond	
Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	
6138382170	Hogan, Dan	
Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058		2015 01 30

Results of Well Yield Testing

After test of well yield, water was:	Draw Down	Recovery		
☐ Clear and sand free	Time (min)	Water Level (m)	Time (min)	Water Level (m)
☐ Other, specify Not tested				
If pumping discontinued, give reason:	Static Level	67.8"		67.8"
☒ Pump intake set at (m)	1	17.2	1	53.2
270	2	23.3	2	44
Pumping rate (l/min / GPM)	3	28.2	3	35.8
20	4	32.5	4	30.2
Duration of pumping	5	36.7	5	22.4
1 hrs + 0 min	10	50.5	10	6.9
Final water level end of pumping (m)	15	55.7	15	6.9
67.8"	20	61.4	20	6.9
If flowing give rate (l/min / GPM)	25	65.3	25	6.9
☒ Recommended pump depth (m)	30	67.6	30	6.9
125'	40	67.8	40	6.9
Recommended pump rate (l/min / GPM)	50	67.8	50	6.9
20	60	67.8"	60	6.9"
Well production (l/min / GPM)				
20				
Disinfected?				
☒ Yes ☐ No				

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

1 HP - 15 GPM SET @ 125 FT *

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	2015 01 26	Audit No: 2191349
	Date Work Completed	
	2015 01 12	

O W R C COPY

316/52



1507308

UTM 118Z 456306E

5R 5401121130N

The Ontario Water Resources Commission Act

Elev. 41R 0305

WATER WELL RECORD

Basin 25

Parleton

Township, Village, Town or City

County or District

5 Lot 6

Date completed

14 Sept 62

Address Metcalfe

Casing and Screen Record

Inside diameter of casing 5"

Total length of casing 22

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 5"

Pumping Test

Static level 2

Test-pumping rate 6 G.P.M.

Pumping level 6' 1/2 hr

Duration of test pumping

Water clear or cloudy at end of test clear

Recommended pumping rate 3 G.P.M.

with pump setting of 20 feet below ground surface

Well Log

Overburden and Bedrock Record

Sand

limestone

From
ft.To
ft.

0

21

21

27

Water Record

Depth(s) at
which water(s)
foundKind of water
(fresh, salty,
sulphur)

26

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

B. E. Sparks

Address Hemphill

Licence Number 700

Name of Driller or Borer

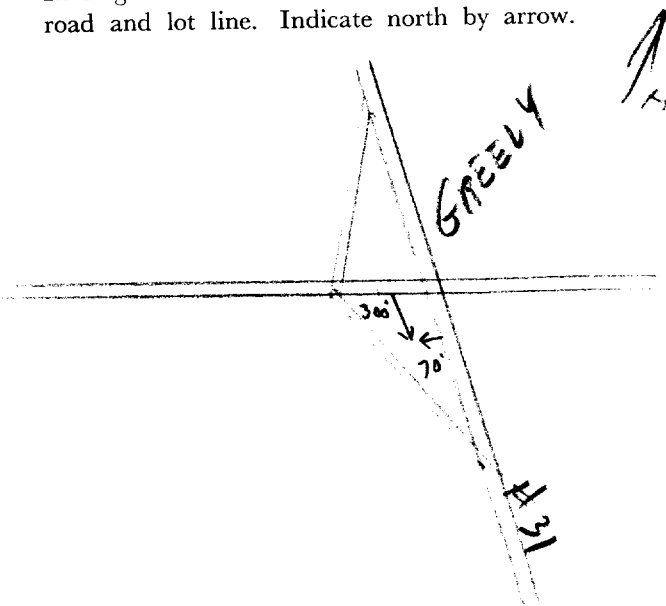
Address

Date Feb 6/63

(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.



LO

316/52



WATER RESOURCES

1507326

7328

ONTARIO WATER RESOURCES COMMISSION

UTM 1182 456810E

CON 5R 5101112019N The Ontario Water Resources Commission Act

Elev 42R 1225

WATER WELL RECORD

Basin 25 1 Caledon

Township, Village, Town or City 229904

County or District 5 Lot 7

Date completed 26 May 1965 (day month year)

ess R R 2 Maristick

Casing and Screen Record

Inside diameter of casing 4 inch
Total length of casing 42'
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 4"

Pumping Test

Static level 8
Test-pumping rate 10 G.P.M.
Pumping level 15
Duration of test pumping 30 min
Water clear or cloudy at end of test cloudy
Recommended pumping rate 5 G.P.M.
with pump setting of 25 feet below ground surface

Well Log

Overburden and Bedrock Record

25' sand	0	25
2' sand	25	35
1' gravel and sand	35	42

Water Record

From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
0	25	42	fresh
25	35		
35	42		

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

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

Drilling or Boring Firm Maurice Loyer

Address Casselman Ont.

Licence Number 1511

Name of Driller or Borer Maurice Loyer

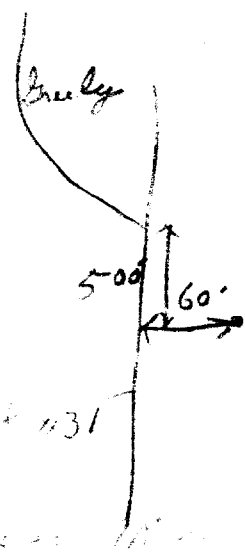
Address Casselman

Date 28 May 1965

Maurice Loyer (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.



18 456390 Con 1
4 1212020 Lot 6
5 03083
25



1509571

1509571
1968

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carleton Township, Village, Town or City Osgood
Con. 5 Lot 6 Date completed 21 Oct. 1968
(day month year)
Address Irvely Ont.

Casing and Screen Record

Inside diameter of casing 4 inch
Total length of casing 21
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 4 inch

Pumping Test

Static level 2
Test-pumping rate 10 G.P.M.
Pumping level 10
Duration of test pumping 30 min
Water clear or cloudy at end of test cloudy
Recommended pumping rate 5 G.P.M.
with pump setting of 18 feet below ground surface

Well Log

Overburden and Bedrock Record

dark sandy soil
Quick sand
black hard rock

From
ft.

To
ft.

0
3
21

3
21
26

Water Record

Depth(s) at
which water(s)
found

Kind of water
(fresh, salty,
sulphur)

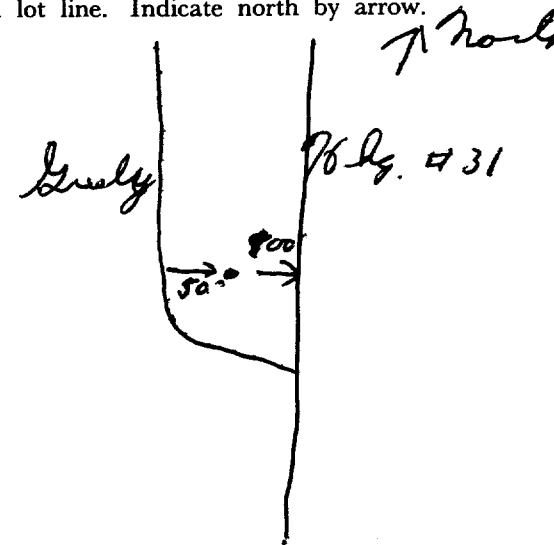
24

fresh

For what purpose(s) is the water to be used? new house
Is well on upland, in valley, or on hillside? valley
Drilling or Boring Firm Maurice Cayer
Address Carleton Place Ont.
Licence Number 2911
Name of Driller or Borer
Address
Date Oct 1968
Maurice Cayer
(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

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

1514944

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11

1514944

MUNICIPALITY 15009

CAN

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COUNTY OR DISTRICT
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE
CON., BLOCK, TRACT, SURVEY, ETC.
LOT
DATE COMPLETED
DAY 19 MO 08 YR 75
ELEVATION
BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
grey	sandy soil with stone			0	30
grey	limestone	Rock	hard	30	45

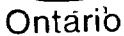
31 00302028112 004521573

41 WATER RECORD
42 CASING & OPEN HOLE RECORD
43 PLUGGING & SEALING RECORD

71 PUMPING TEST METHOD
PUMPING RATE
DURATION OF PUMPING
PUMPING TEST
WATER LEVELS DURING
PUMP INTAKE SET AT
WATER AT END OF TEST
RECOMMENDED PUMP TYPE
RECOMMENDED PUMP SETTING
GPM / FT. SPECIFIC CAPACITY

54 FINAL STATUS OF WELL
55-56 WATER USE
57 METHOD OF DRILLING
58-62 LOCATION OF WELL
63-68 DRILLERS REMARKS

CONTRACTOR
NAME OF WELL CONTRACTOR
ADDRESS
NAME OF DRILLER OR BORER
SIGNATURE OF CONTRACTOR
SUBMISSION DATE
DATA SOURCE
DATE OF INSPECTION
REMARKS
CONTRACTOR
DATE RECEIVED
INSPECTOR
P
WI



L.P.M.

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

1515934

WATER WELL RECOF

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1515934 -

MUNICIP.
15009

CON.
CON

05

COUNTY OR DISTRICT

Carleton

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE

Osnode

CON. BLOCK, TRACT, SURVEY, ETC

5

DATE COMPLETED _____

48-53

OWNER (SURNAME FIRST)

28-47

ADDRESS

6837 Notre Dame St. Orleans, Ontario

25.

R. Taillefer Constr. ~~REDACTED~~

U T M ZONE 18

EASTING
456660

NORTHING
5011900

RC.
4
25

ELEVATION
0295
26

26
31

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

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	

LOCATION OF WELL

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

PHILBOR ST.
~~PHILBOR ST.~~

9'

45'

LOT 12

PLAN m 161

DRILLERS REMARKS:

FINAL STATUS OF WELL 54 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL	5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 55-56 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER	5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 57 5	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION	6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR	NAME OF WELL CONTRACTOR	LICENCE NUMBER
	ADDRESS	
	NAME OF DRILLER OR BORER	LICENCE NUMBER
	SIGNATURE OF CONTRACTOR	SUBMISSION DATE

Capital Water Supply Ltd. 1550

Box 490 Stittsville, Ontario

W. Kavanagh

DATE 26 MO. 5 YR 77

OFFICE USE ONLY	DATA SOURCE	58	CONTRACTOR	59-62	DATE RECEIVED	63-68
	1		1558		070677	
	DATE OF INSPECTION		INSPECTOR			
			[Signature]			
	REMARKS					P 75
						WI



Ministry
of the
Environment

Ontario

The Ontario Water 1517146

WATER WELL RECORD

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11

1517146

MUNICIPALITY 15009

CON. CPN

95

COUNTY OR DISTRICT

Ottawa Carleton

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE

Osgoode

CON. BLOCK, TRACT, SURVEY, ETC.

5

LOT

005

ADDRESS

Box 253 Kemptville Ont.

DATE COMPLETED

DAY 11 MO 07 YR 99

21

436599

5012499

0296

4

26

4

26

4

26

4

26

4

26

4

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
				0	26
grey	gravel			26	102
1/	limestone			102	132
	sandstone				

31

0026

11

0102215

0132218

41

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☒ FRESH 3 ☐ SULPHUR
2	2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR
2	2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR
2	2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR
2	2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR
2	2 ☐ SALTY 4 ☐ MINERAL

51

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 ☒ STEEL	188	13-16
2	2 ☐ GALVANIZED		
3	3 ☐ CONCRETE		
4	4 ☐ OPEN HOLE		
17-18	1 ☐ STEEL		20-23
2	2 ☐ GALVANIZED		
3	3 ☐ CONCRETE		
4	4 ☐ OPEN HOLE		
24-25	1 ☐ STEEL		27-30
2	2 ☐ GALVANIZED		
3	3 ☐ CONCRETE		
4	4 ☐ OPEN HOLE		

SCREEN

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

71

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILEY	0008 GPM	15-16 HOURS 30 MINS
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING
19-21	22-24	15 MINUTES 24-26
0024 FEET	025 FEET	025 FEET 025 FEET
IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
	GPM	FEET
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
1 ☒ SHALLOW 2 ☐ DEEP	030 FEET	0008 GPM

FINAL STATUS OF WELL

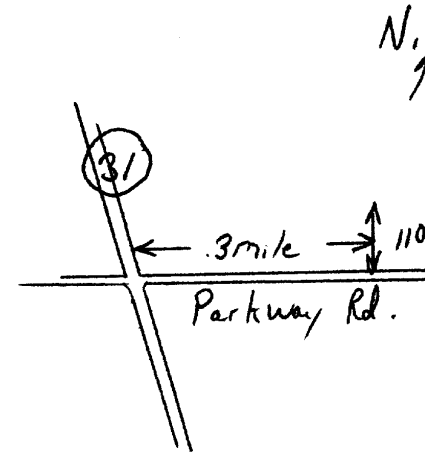
WATER USE

METHOD OF DRILLING

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

LOCATION OF WELL

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



DRILLERS REMARKS

NAME OF WELL CONTRACTOR	LICENCE NUMBER
R.R. Rock Drilling Co. Ltd.	1119
ADDRESS	
RR #2 Jasper Ont.	
NAME OF DRILLER OR BORE	LICENCE NUMBER
William Desautels	1119
SIGNATURE OF CONTRACTOR	SUBMISSION DATE
William Desautels	DAY 28 MO 9 YR 99

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	1119	051079
DATE OF INSPECTION	INSPECTOR	
REMARKS		

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506-4-77



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Environment
Ontario

The Ontario Water Resources Commission 1517580

WATER WELL RECORD

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11

1517580

MUNICIPALITY

15.008

COM.

CON

05

COUNTY OR DISTRICT

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE

CON., BLOCK, TRACT, SURVEY, ETC.

LOT

Carleton Place
Box 326, Richmond Ont. K1G 3H6
DATE COMPLETED 11 03 81
DAY 11 MO 03 YR 81
HOLE NO. 012297 RC 4 ELEVATION 0300 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	sand	gravel		0	8
grey	sand	boulders		8	15
grey	sand	gravel		15	35
grey	limestone			35	62

31 000822811 001522813 003522811 0062215
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0 037
17-18	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		20-23
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		27-30

SCREEN

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

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 METHOD

1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE 00/5 GPM

DURATION OF PUMPING 01 15-16 00 17-18

STATIC LEVEL 005 FEET

WATER LEVEL END OF PUMPING 025 FEET

WATER LEVELS DURING

15 MINUTES 025 FEET	30 MINUTES 025 FEET	45 MINUTES 025 FEET	60 MINUTES 025 FEET
---------------------	---------------------	---------------------	---------------------

IF FLOWING, GIVE RATE 38-41 GPM

PUMP INTAKE SET AT 025 FEET

WATER AT END OF TEST 025 FEET

RECOMMENDED PUMP TYPE 1 ☒ SHALLOW 2 ☐ DEEP

RECOMMENDED PUMP SETTING 025 FEET

RECOMMENDED PUMPING RATE 00/0 GPM

LOCATION OF WELL

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

40m ↑ ← to km Hwy 31

DRILLERS REMARKS

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 05

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

METHOD OF DRILLING 5

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 Henry Mains Well Drilling

LICENCE NUMBER 3644

ADDRESS Box 326, Richmond Ont

NAME OF DRILLER OR BORER Henry Mains

LICENCE NUMBER

SIGNATURE OF CONTRACTOR

SUBMISSION DATE 13 3 81

OFFICE USE ONLY

DATA SOURCE 1

CONTRACTOR 3644

DATE OF INSPECTION

INSPECTOR

REMARKS

210881



Ontario

Ministry
of the
Environment

The Ontario Water Resources Commission

WATER WE

1. PRINT ONLY IN SPACES PROVIDED
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11

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COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Parade	Good	Con. 5	005
DATE COMPLETED			25-27
DAY 15			MO 04
YEAR 83			
ELEVATION		BASIN CODE	
1239.9		26	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	Clay			0	6
	Hard pan			6	18
	Gravel			18	28
	Lime Stone			28	35

MOE
VF-18

31	0006 05	0018 14	0028 11	0035 15
32				

41 WATER RECORD	
WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☒ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
15-18	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
20-23	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
25-28	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
30-33	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	

61 CASING & OPEN HOLE RECORD			
INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 ☒ STEEL		FROM TO
2 ☐ GALVANIZED			
3 ☐ CONCRETE			
4 ☐ OPEN HOLE			
17-18	1 ☐ STEEL		20-23
2 ☐ GALVANIZED			
3 ☐ CONCRETE			
4 ☐ OPEN HOLE			
24-25	1 ☐ STEEL		27-30
2 ☐ GALVANIZED			
3 ☐ CONCRETE			
4 ☐ OPEN HOLE			

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	PUMPING RATE
1 ☐ PUMP 2 ☒ BAILER	0015 GPM
STATIC LEVEL	WATER LEVEL END OF PUMPING
19-21	22-24
003 FEET	020 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT
	5 FEET
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING
☒ SHALLOW ☐ DEEP	025 FEET
	RECOMMENDED PUMPING RATE
	0010 GPM

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

FINAL STATUS OF WELL	
1 ☒ WATER SUPPLY	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	LICENCE NUMBER
Donald Gauthier	2348
ADDRESS	
Crystal Court Box 147	
NAME OF DRILLER OR BORER	LICENCE NUMBER
SIGNATURE OF CONTRACTOR	SUBMISSION DATE
Donald Gauthier	DAY 14 MO 04 YR 83

OFFICE USE ONLY	
DATA SOURCE	CONTRACTOR
1	2348
DATE OF INSPECTION	INSPECTOR
REMARKS:	

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506-4-77 FORM 7



Regu 1536129

Well Record

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 • **All metre measurements shall be reported to 1/10th of a metre.**
 • Please print clearly in blue or black ink only.
- Ministry Use Only

Ministry Use Only											
MUN				CON						LOT	

C & P Nelson				City/Town/Village				73-14 Hwy 31			
RR#/Street Number/Name				City/Town/Village				Site/Compartment/Block/Tract etc.			
Hwy 31				C & P Realty				P. 1st. 902			
GPS Reading		NAD	Zone	Easting	Northing	Unit Make/Model		Mode		Operation:	
		8.3	18	456755E	561219	Macellon		Atm		☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify	

[illegible]

Hole Diameter			Construction Record				Test of Well Yield					
Depth	Metres	Diameter	Inside diam centimetres	Material	Wall thickness centimetres	Depth		Pumping test method	Draw Down		Recovery	
From	To	Centimetres				From	To		Time min	Water Level Metres	Time min	Water Level Metres
0	8.53	21.23						Pumping test method				
8.53	48.76	15.55						Pump intake set at - (metres)	Static Level	done by the		
								Pumping rate - (litres/min)	1	2		
								Duration of pumping	2	2		
								Final water level end of pumping	3	3		
								Recommended pump type	4			
								Recommended pump depth	5	5		
								Recommended pump rate	10	10		
								If flowing give rate -	15	15		
								(litres/min)	20	20		
								(litres/min)	25	25		
								If pumping discontinued, give reason.	30	30		
									40	40		
									50	50		
									60	60		

[illegible]

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

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

Final Status of Well			
☐ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other)
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering	
☒ Test Hole	☐ Abandoned, poor quality	☐ Replacement well	

Well Contractor/Technician Information							
Name of Well Contractor <i>Willis Bourgeois</i>	Well Contractor's Licence No. <i>1414</i>						
Business Address (street name, number, city etc.) <i>57A Bourgeois</i>							
Name of Well Technician (last name, first name) <i>SA Mc</i>	Well Technician's Licence No. <i>0-193</i>						
Signature of Technician/Contractor <i>Willis Bourgeois</i>	Date Submitted <table border="1"> <tr> <td>YY</td> <td>MM</td> <td>DD</td> </tr> <tr> <td><i>15</i></td> <td><i>05</i></td> <td><i>0</i></td> </tr> </table>	YY	MM	DD	<i>15</i>	<i>05</i>	<i>0</i>
YY	MM	DD					
<i>15</i>	<i>05</i>	<i>0</i>					

Location of Well			
In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.			
Audit No.	z 21762	Date Well Completed	YYYY MM DD 05 05 02
Was the well owner's information package delivered?	☐ Yes ☒ No	Date Delivered	YYYY MM DD

Ministry Use Only			
Data Source	Contractor		
Date Received	YYYY	MM	DD
JAN 11 2006			
Remarks	Well Record Number		

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Well Owner's Information and Location of Well Information

Ministry Use Only									
MUN						CON			LOT

RR#/Street Number/Name <i>Carleton Place Hwy 31</i>	City/Town/Village <i>City of Ottawa</i>	Site/Compartment/Block/Tract etc. <i>75-14 Plan 902</i>
GPS Reading <i>8.3</i>	NAD <i>1.8</i>	Zone <i>456692</i>
Easting <i>5012286</i>	Northing <i>5012286</i>	Unit Make/Model <i>Magellan</i>
Mode of Operation: ☐ Undifferentiated ☒ Averaged		☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Metres To
Brown	fill	boulders	Hard	0	2.74
grey	gravel	Sandy	Packed	2.74	7.92
grey	limestone		1/4 yard	7.92	36.57
white	Sandstone		Hard	36.57	40.23
grey	limestone		larger	40.23	54.86

Hole Diameter		
Depth From	Metres To	Diameter Centimetres
0	9.14	21.23
9.14	54.86	15.55

Water Record	
Water found at Metres	Kind of Water
53 m	☒ Fresh ☐ Sulphur
☐ Gas	☐ Salty ☐ Minerals
☐ Other:	

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

Chlorinated ☒ Yes ☐ No

Construction Record				
Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Metres To
15.55	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.49	50.60	9.14
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	Material	Slot No.	Depth From	Metres To
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
No Casing or Screen				
	☒ Open hole		9.14	54.86

Test of Well Yield				
Pumping test method	Draw Down Time min	Water Level Metres	Recovery Time min	Water Level Metres
Pump intake set at - (metres)		done		long
Pumping rate - (litres/min)				
Duration of pumping	2		2	
Final water level end of pumping	8		3	
Recommended pump type	4		4	
Recommended pump depth	5		5	
Recommended pump rate	10		10	
If flowing give rate - (litres/min)	15		15	
If pumping discontinued, give reason.	20		20	
	25		25	
	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record			
Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	9.14	Cement Preme grout	10 bags
Method of Construction			
☐ Cable Tool	☒ Rotary (air)	☐ Diamond	☐ Digging
☐ Rotary (conventional)	☐ Air percussion	☐ Jetting	☐ Other
☐ Rotary (reverse)	☐ Boring	☐ Drilling	
Water Use			
☒ Domestic	☐ Industrial	☐ Public Supply	☐ Other
☐ Stock	☐ Commercial	☐ Not used	
☐ Irrigation	☐ Municipal	☐ Cooling & air conditioning	
Final Status of Well			
☒ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other)
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering	
☐ Test Hole	☐ Abandoned, poor quality	☐ Replacement well	
Well Contractor/Technician Information			
Name of Well Contractor <i>Gilles Bourgeois</i>	Well Contractor's Licence No. <i>1414</i>		
Business Address (street name, number, city etc.) <i>57 A 16th ave</i>			
Name of Well Technician (last name, first name) <i>S. A. me</i>	Well Technician's Licence No. <i>193</i>		
Signature of Technician/Contractor <i>X. The Bourgeois</i>	Date Submitted <i>05 04 25</i>		

Location of Well	
In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.	
Audit No. <i>211760</i>	Date Well Completed <i>05 04 25</i>
Was the well owner's information package delivered? ☐ Yes ☒ No	Date Delivered <i>05 04 25</i>
Ministry Use Only	
Data Source	Contractor <i>1414</i>
Date Received <i>JAN 11 2006</i>	Date of Inspection
Remarks	Well Record Number

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Ministry Use Only

Address of Well Location (County/District/Municipality) Ottawa-Carleton Township Osborne Lot 6 Concession 5
RR#/Street Number/Name 7268 Parkway Road City/Town/Village Greely Site/Compartment/Block/Tract etc. Plan 902 11-73+74
GPS Reading NAD Zone Easting Northing Unit Make/Model Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Metres To
	Sand Gravel			0	7.92
	Limestone			7.92	38.71
	Sandy Limestone			38.71	46.94
	White Sandstone			46.94	60.96

Hole Diameter Depth Metres Diameter Centimetres From To 0 60.96 15.23	Construction Record Inside diam centimetres Material Wall thickness centimetres Depth Metres From To Casing 15.88 ☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized 1.48 -1.4 54.86 Screen Outside diam ☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized Slot No. No Casing or Screen ☒ Open hole 54.86 60.96	Test of Well Yield Pumping test method Sub pump Pump intake set at (metres) 54.86 Pumping rate (litres/min) 91 Duration of pumping 1 hrs + 0 min Final water level end of pumping 1.58 metres Recommended pump type ☒ Shallow ☐ Deep Recommended pump depth 54.86 metres Recommended pump rate (litres/min) 91 If flowing give rate (litres/min) 91 If pumping discontinued, give reason. Draw Down Time min Water Level Metres Recovery Time min Water Level Metres 1 1.17 1 1.32 2 1.20 2 1.22 3 1.22 3 1.18 4 1.23 4 1.16 5 1.24 5 1.14 10 1.30 10 1.11 15 1.35 15 0.96 20 1.40 20 0.90 25 1.44 25 30 1.47 30 40 1.51 40 50 1.55 50 60 1.58 60
---	--	---

Plugging and Sealing Record Depth set at - Metres From To Material and type (bentonite slurry, neat cement slurry) etc. Volume Placed (cubic metres) 54.86 Bentonite Slurry 3.923	☒ Annular space ☐ Abandonment
Method of Construction ☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging ☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other ☐ Rotary (reverse) ☐ Boring ☐ Driving	
Water Use ☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other ☐ Stock ☐ Commercial ☐ Not used ☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning	
Final Status of Well ☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other) ☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering ☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well	
Well Contractor/Technician Information Name of Well Contractor AIR ROCK DRILLING LTD 1119 Business Address (street name, number, city etc.) RR#1 RICHMOND ONT K0A2Z0 Name of Well Technician (last name, first name) PURCELL SHANNON Signature of Technician/Contractor X [Signature] Date Submitted YYYY MM DD 2007 10/12/07	Well Contractor's Licence No. 2122 Well Technician's Licence No. 2122

Location of Well In diagram below show distances of well from road, lot line, and building. Indicate north by arrow. 7268 Parkway Road -3km -3km Sole Road	Ministry Use Only Data Source Contractor Date Received FEB 12 2007 MM DD Date of Inspection YYYY MM DD Remarks Well Record Number
Audit No. Z 55552 Date Well Completed 2006 11 24 Was the well owner's information package delivered? ☒ Yes ☐ No Date Delivered 2006 11 29	

Well Tag Number (number below)

A 052445

A052445

Re: 7045727

page ____ of ____

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Address of Well Location (County/District/Municipality)

Uttawa-Carleton

Township

Osgoode

Lot

6

Concession

5

RR#/Street Number/Name

*7268 Parkway Road

City/Town/Village

Greely

Site/Compartment/Block/Tract etc.

Plan 902 P/L 73+74

GPS Reading

NAD

Zone

18

Easting

456894

Northing

5012637

Unit Make/Model

Mogellon

Mode of Operation:

☐ Undifferentiated

☒ Averaged

☐ Differentiated, specify _____

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth	
				From	Metres To
	Sandy Clay			0	8.53
	Sand, Gravel, lime stone			8.53	40.54
	Gray Sandstone			40.54	73.15

Hole Diameter

Depth	Metres	Diameter
From	To	Centimetres
0	73.15	15.23

Water Record

Water found at _____ Metres

Kind of Water

☐ Fresh ☐ Sulphur
☐ Gas ☐ Salty ☐ Minerals
☐ Other: _____

☐ Fresh ☐ Sulphur
☐ Gas ☐ Salty ☐ Minerals
☐ Other: _____

☐ m ☐ Fresh ☐ Sulphur
☐ Gas ☐ Salty ☐ Minerals
☐ Other: _____

After test of well yield, water was

☐ Clear and sediment free
☒ Other, specify: **Cloudy NOT TESTED**

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth		
			From	To	
Casing					
15.88	☐ Steel ☐ Fibreglass	.48	0	58.82	
	☐ Plastic ☐ Concrete				
	☐ Galvanized				
	☐ Steel ☐ Fibreglass				
	☐ Plastic ☐ Concrete				
	☐ Galvanized				
	☐ Steel ☐ Fibreglass				
	☐ Plastic ☐ Concrete				
	☐ Galvanized				
	☐ Steel ☐ Fibreglass				
	☐ Plastic ☐ Concrete				
	☐ Galvanized				
Screen					
Outside diam	☐ Steel ☐ Fibreglass	Slot No.			
	☐ Plastic ☐ Concrete				
	☐ Galvanized				
No Casing or Screen					
☒ Open hole			58.21	73.15	

Test of Well Yield

Pumping test method	Draw Down		Recovery	
	Time min	Water Level Metres	Time min	Water Level Metres
Sub Pump		Static Level		
		1.00		20.64
Pump intake set at (metres)				
60.76				
Pumping rate (litres/min)	1	3.12	1	17.62
45.72				
Duration of pumping	2	4.44	2	14.80
L hrs + 0 min				
Final water level end of pumping (metres)	3	3.53	3	13.00
20.64				
Recommended pump type	4	6.50	4	11.33
☐ Shallow ☒ Deep				
Recommended pump depth (metres)	5	7.30	5	9.83
60.76				
Recommended pump rate (litres/min)	10	10.30	10	5.27
45.72				
If flowing give rate - (litres/min)	15	11.57	15	2.15
	20	14.00	20	1.23
	25	15.78	25	1.11
If pumping discontinued, give reason.	30	16.76	30	1.11
	40	18.42	40	
	50	19.65	50	
	60	20.64	60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
From	To	
58.21	55.17	Neat Cement Slurry - 1.816
55.17	0	Bentonite Slurry 1.84

Method of Construction

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

Water Use

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

Final Status of Well

☐ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☒ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor

Air Rock Drilling Co Ltd

Well Contractor's Licence No.

1119

Business Address (street name, number, city etc.)

RR#1 RICHMOND ONT K0A2Z0

Name of Well Technician (last name, first name)

TURCELL SHANNON

Well Technician's Licence No.

T2122

Signature of Technician/Contractor

X [Signature]

Date Submitted

2007 06 15

Location of Well

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

Audit No.

Z 64734

Date Well Completed

2007 02 04

Was the well owner's information package delivered?

☒ Yes ☐ No

Date Delivered

2007 02 06

Ministry Use Only

Data Source

Contractor

Date Received

YYYY MM DD

JUN 28 2007

Date of Inspection

YYYY MM DD

Remarks

Well Record Number

1119

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- | | |
|--|--------------------------|
| | Ministry Use Only |
|--|--------------------------|

Well Owner's Information and Location of Well Information

[illegible]

1476 Meadow Drive				Osgoode		Greely		Site/Compartment/Block/Tract etc.	
GPS Reading				Unit Make/Model		Mode of Operation:			
NAD	Zone	Easting	Northing	Garmin		☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify _____			
8.3	18	456577	51012177						

Log of Overburden and Bedrock Materials (see instructions)

[illegible]

Hole Diameter		
Depth	Metres	Diameter
From	To	Centimetres

Water Record	
Water found at _____ Metres	Kind of Water
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: _____
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: _____
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: _____

After test of well yield, water was

☐ Clear and sediment free

☐ Other, specify _____

Chlorinated	☐ Yes	☐ No
-------------	------------------------------	-----------------------------

Construction Record				
Inside diam centimetres	Material	Wall thickness centimetres	Depth	Metres
			From	To
Casing				
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

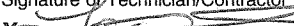
Test of Well Yield				
Pumping test method	Draw Down		Recovery	
	Time min	Water Level Metres	Time min	Water Level Metres
Pump intake set at - (metres)	Static Level			
Pumping rate - (litres/min)	1		1	
Duration of pumping _____hrs +_____ min	2		2	
Final water level end of pumping _____metres	3		3	
Recommended pump type, ☐ Shallow ☐ Deep	4		4	
Recommended pump depth. _____metres	5		5	
Recommended pump rate. (litres/min)	10		10	
	15		15	
If flowing give rate - (litres/min)	20		20	
	25		25	
If pumping discontinued, give reason.	30		30	
	40		40	
	50		50	
	60		60	

Plugging and Sealing Record			☒ Annular space	☐ Abandonment
Depth set at - Metres		Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)	
From	To			
213	0	Bentonite Chips	0.097	

Method of Construction			
☐ Cable Tool	☐ Rotary (air)	☐ Diamond	☐ Digging
☐ Rotary (conventional)	☐ Air percussion	☐ Jetting	☐ Other
☐ Rotary (reverse)	☐ Boring	☐ Driving	_____

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

Final Status of Well			
☒ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other) _____
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering	
☐ Test Hole	☐ Abandoned, poor quality	☐ Replacement well	

Well Contractor/Technician Information	
Name of Well Contractor <i>Splash Well Drilling</i>	Well Contractor's Licence No. <i>4877</i>
Business Address (street name, number, city etc.) <i>PO BOX 1083, Prescott</i>	
Name of Well Technician (last name, first name) <i>Ferguson, Todd</i>	Well Technician's Licence No. <i>7478</i>
Signature of Technician/Contractor 	Date Submitted <i>2007</i> <i>07</i> <i>00</i> yyyy MM DD

Location of Well

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

The diagram illustrates the location of a well within a property. A horizontal line at the top represents Meadow Drive. A vertical line, labeled Daisy Drive, intersects it. A horizontal line with arrows at both ends represents the lot line, with a distance of 24.38 feet marked between the lot line and the Daisy Drive. A vertical line with arrows at both ends represents the distance from the lot line to the well, marked as 10.67 feet. A horizontal line with arrows at both ends represents the distance from the well to the building, marked as 7.6 feet. The building is represented by a rectangle labeled House. An arrow points upwards, indicating North.

Audit No. Z 72526	Date Well Completed 2007 10 06
Was the well owner's information package delivered? ☒ Yes ☐ No	Date Delivered 2007 10 12

Ministry Use Only			
Data Source	Contractor 14877		
Date Received	YYYY	MM	DD
AUG 23 2007			
Remarks	Well Record Number		

Ministry of
the Environment

Well

A 093613

(Below)

7143672

Regul.

Page of

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name: VILLA Last Name / Organization: HOMES E-mail Address: ☐ Well Constructed by Well Owner

Mailing Address (Street Number/Name): #25-174 Colonnade Road Municipality: Nepean District K0E 7J5 Province: Postal Code: Telephone No. (inc. area code):

Well Location

Address of Well Location (Street Number/Name): #7313 Blue Water Cres Township: Osgoode Lot: 6 Concession: S

County/District/Municipality: Ottawa - Carleton City/Town/Village: Greely Province: Ontario Postal Code: Other:

UTM Coordinates: Zone: 18 Easting: 456961 Northing: 5012262 Municipal Plan and Sublot Number: PLAN 4M-1398 S/L 28

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)
	Sand, Gravel + Boulders			0' - 29 1/2'
	limestone			29 1/2' - 112'
	Gray limestone + Sand stone Mix			112' - 172'
	White Sand stone			172' - 220'

(Plan 902 P/L 73+74)

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
198' 188'	Neat Cement Slurry	4.68
188' 0'	Neat Bentonite Slurry	168.

Method of Construction		Well Use	
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial
☐ Rotary (Conventional)	☐ Jetting	☒ Domestic	☐ Municipal
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning
☒ Air percussion		☐ Industrial	
☐ Other, specify		☐ 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)	
6"	Steel	.188"	198' + 2'	198'
6"	Open hole		198'	220'

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

Construction Record - Screen			Status of Well	
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): 207'	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft): 0' - 220'	Diameter (cm/in): 6"
Water found at Depth (m/ft): 211'	Kind of Water: ☐ Fresh ☒ Untested		
Water found at Depth (m/ft):	Kind of Water: ☐ Fresh ☐ Untested		

Well Contractor and Well Technician Information			
Business Name of Well Contractor: AIR ROCK DRILLING CO LTD	Well Contractor's Licence No.: 1119	Business Address (Street Number/Name): RR# 1	Municipality: RICHMOND
Province: ONT	Postal Code: K0A220	Business E-mail Address:	
Bus. Telephone No. (inc. area code): 613 8382170	Name of Well Technician (Last Name, First Name): PURCELL SHANNAN	Well Technician's Licence No.: T2122	Signature of Technician and/or Contractor: [Signature] Date Submitted: 20100329

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☒ Clear and sand free	☐ Other, specify	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level	Recovery
Pump intake set at (m/ft): 200'		1 8'9"	1 3'7"
Pumping rate (l/min / GPM): 20		2 9'3"	2 3'1"
Duration of pumping: 1 hrs + 0 min		3 9'7"	3 2'7"
Final water level end of pumping (m/ft): 10' 8"		4 10'	4
If flowing give rate (l/min / GPM):		5 10'1"	5
Recommended pump depth (m/ft): 140'		10 10'2"	10
Recommended pump rate (l/min / GPM): 20		15 10'3"	15
Well production (l/min / GPM): 20		20 10'4"	20
Disinfected? ☒ Yes ☐ No		25 10'5"	25
		30 10'6"	30
		40 10'6 1/2"	40
		50 10'7"	50
		60 10'8"	60

Map of Well Location	
Please provide a map below following instructions on the back.	
Comments:	
Well owner's Information package delivered: ☒ Yes ☐ No	Date Package Delivered: 20100226
Date Work Completed: 20100219	Ministry Use Only
	Audit No.: Z108246
	Received: APR 22 2010

Well Location

Address of Well Location (Street Number/Name) 7203 Parkway Rd.		Township Osgoode (city of Ottawa)	Lot Part 5	Concession 5
County/District/Municipality Ottawa-Corleton		City/Town/Village Greely / city of Ottawa	Province Ontario	Postal Code K4P1K6
UTM Coordinates NAD 83	Zone 18	Easting 456336	Northings 5012543	Municipal Plan and Sublot Number

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 Gray	Sand silt	Sand	wet	0	1.82
				1.82	3.04
Six Monitoring Well INSTALLED on this site. They all share Similar features					

Annular Space		
Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)
0	1.21	Bentonite + flushcover w/cent
1.21	3.04	#3 Sand

Method of Construction	Well Use
☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☒ Boring ☐ Air percussion ☐ Other, specify	☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☒ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ 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) From	To
5.08	Plastic	5/16	0	1.52
☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify				

Construction Record - Screen			Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
5.08	Plastic	0.10	1.52	3.04
☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify				

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft) From	Diameter (cm/in)
2.13	☐ Gas ☐ Other, specify	0	15.24
	☐ Fresh ☐ Untested	3.04	
	☐ Gas ☐ Other, specify		
	☐ Fresh ☐ Untested		
	☐ Gas ☐ Other, specify		

Business Name of Well Contractor G.E.T. Drilling LTD		Well Contractor's Licence No. 7085
Business Address (Street Number/Name) 278 Drive-in Rd		Municipality Napanee
Province ON	Postal Code K7R3Y1	Business E-mail Address getdrilling@mycable.ca
Bus. Telephone No. (inc. area code) 6133544767	Name of Well Technician (Last Name, First Name) Harris, Tim	
Well Technician's Licence No. 2251	Signature of Technician and/or Contractor	Date Submitted 20100613

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☐ Clear and sand free ☐ Other, specify NOT TESTED		Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: monitoring well		Static Level	
Pump intake set at (m/ft)		1	
Pumping rate (l/min / GPM)		2	
Duration of pumping hrs + min		3	
Final water level end of pumping (m/ft)		4	
If flowing give rate (l/min / GPM)		5	
Recommended pump depth (m/ft)		10	
Recommended pump rate (l/min / GPM)		15	
Well production (l/min / GPM)		20	
Disinfected?		25	
☐ Yes ☐ No		30	
		40	
		50	
		60	

Map of Well Location

Please provide a map below following instructions on the back.

See Attach For MAP

GPS	Easting	Northings
m.w. #1	456312	5012620
#2	456293	5012609
#3	456295	5012546
#5	456296	5012537
#6	456297	5012529

Comments: All six monitoring well share similar features	
Well owner's information package delivered ☐ Yes ☒ No	Date Package Delivered Y Y Y Y M M D D 20100613
Date Work Completed 20100613	Ministry Use Only Audit No. Z097417 AUG 25 2010 Received

Measurements recorded in: ☒ Metric ☐ Imperial

Page 1 of 2

Well Owner's Information

First Name City of Ottawa	Last Name / Organization C/O [Redacted]	E-mail Address	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name) 110 5th Floor Laurier Ave W	Municipality Ottawa	Province ON	Postal Code K1P1S1
Telephone No. (inc. area code)			

Well Location

Address of Well Location (Street Number/Name) 7203 Parkway Rd	Township	Lot	Concession
County/District/Municipality	City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates NAD 83 18 456 449 501 2565	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
Brn	Sand	Silt	Soft, dry	0	1.22
Gry	Silt	Clay	Soft, moist	1.22	3.66
Gry	Gravel	Sand	Hard, wet	3.66	5.18

Annular Space		
Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)
0	3.35	Benseal
3.35	5.18	Sand

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

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) From	To	
5.20	PVC	.390	0	3.66	☐ Water Supply
					☐ Replacement Well
					☒ Test Hole
					☐ Recharge Well
					☐ Dewatering Well
					☒ Observation and/or Monitoring Hole
					☐ Alteration (Construction)
					☐ Abandoned, Insufficient Supply
					☐ Abandoned, Poor Water Quality
					☐ Abandoned, other, specify
					☐ Other, specify

Construction Record - Screen				Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To	
6.03	PVC	10	3.66	5.18	☐ Water Supply
					☐ Replacement Well
					☒ Test Hole
					☐ Recharge Well
					☐ Dewatering Well
					☒ Observation and/or Monitoring Hole
					☐ Alteration (Construction)
					☐ Abandoned, Insufficient Supply
					☐ Abandoned, Poor Water Quality
					☐ Abandoned, other, specify
					☐ Other, specify

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify	Depth (m/ft) From	To
		0	5.18

Business Name of Well Contractor Strata Soil Sampling Inc		Well Contractor's Licence No. 72411	
Business Address (Street Number/Name) 147-2 West Beaver Creek Road		Municipality Richmond Hill	
Province Ontario	Postal Code L4B1C6	Business E-mail Address wrecords@stratasoil.com	
Bus. Telephone No. (inc. area code) 905-764-9304		Name of Well Technician (Last Name, First Name) Mait, Mike	
Well Technician's Licence No. 3448		Date Submitted 20101010	
Signature of Technician and/or Contractor <i>[Signature]</i>			

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☐ Clear and sand free		Time (min)	Water Level (m/ft)
☐ Other, specify		Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level	
Pump intake set at (m/ft)		1	1
Pumping rate (l/min / GPM)		2	2
Duration of pumping hrs + min		3	3
Final water level end of pumping (m/ft)		4	4
If flowing give rate (l/min / GPM)		5	5
Recommended pump depth (m/ft)		10	10
Recommended pump rate (l/min / GPM)		15	15
Well production (l/min / GPM)		20	20
Disinfected?		25	25
☐ Yes ☐ No		30	30
		40	40
		50	50
		60	60

Map of Well Location

Please provide a map below following instructions on the back.

Comments:

Well owner's information package delivered ☐ Yes ☐ No	Date Package Delivered Y Y Y Y M M D D 20100916	Date Work Completed 20100916
Ministry Use Only Audit No. 113198 NOV 04 2010 Received		

Address of Well Location (Street Number/Name) 7203 Parkway Rd		Township	Lot	Concession
County/District/Municipality		City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates	Zone	Easting	North	Municipal Plan and Sublot Number
NAD 83	18	456290	5012588	

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
BRN	Sand		Soft, dry	0 3.1
Gry	Sand	Silt	Soft, wet	3.1 8.53
Gry	Gravel		hard, saturated	8.53 11.28

Annular Space		
Depth Set at (m/ft) From To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0 .31	Concrete Flashmound	
.31 9.45	Benseal	
9.45 11.28	Sand	

Method of Construction	Well Use
☐ Cable Tool ☒ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, specify <u>Direct Push</u>	☐ Diamond ☐ Jetting ☐ Driving ☐ Digging ☐ Public ☐ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ 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) From To		
5.20	PVC	.39	0 9.75		

Construction Record - Screen				Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From To		
6.03	PVC	10	9.75 11.28		

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify _____	Depth (m/ft) From To	Diameter (cm/in)
		0 11.28	10.92

Well Contractor and Well Technician Information			
Business Name of Well Contractor Strata Soil Sampling Inc		Well Contractor's Licence No. 7241	
Business Address (Street Number/Name) 147-2 West Beaver Creek Road Richmond Hill		Municipality	
Province Ontario	Postal Code L4B1C6	Business E-mail Address Wrecords@stratasoil.com	
Bus. Telephone No. (inc. area code) 905-764-9304		Name of Well Technician (Last Name, First Name) Muir, Mike	
Well Technician's Licence No. 3448		Signature of Technician and/or Contractor <i>[Signature]</i>	
Date Submitted 2010/10/10			

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☐ Clear and sand free ☐ Other, specify _____		Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level	
Pump intake set at (m/ft)		1	1
Pumping rate (l/min / GPM)		2	2
Duration of pumping hrs + min		3	3
Final water level end of pumping (m/ft)		4	4
If flowing give rate (l/min / GPM)		5	5
Recommended pump depth (m/ft)		10	10
Recommended pump rate (l/min / GPM)		15	15
Well production (l/min / GPM)		20	20
Disinfected?		25	25
☐ Yes ☐ No		30	30
		40	40
		50	50
		60	60

Map of Well Location	
Please provide a map below following instructions on the back.	
Comments:	
Well owner's information package delivered	Date Package Delivered
☐ Yes ☐ No	Y Y Y Y M M D D
Date Work Completed	20100906
Ministry Use Only	
Audit No. z113199	
Received	



Ontario

Ministry of
the Environment

Well Tag No. (Place sticker and print below)

A105538

7154647

Record

regulation and Ontario water resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Location

Address of Well Location (Street Number/Name)		Township	Lot	Concession
#7300 Blue Water Crescent		OSgood	6	5
County/District/Municipality		City/Town/Village	Province	Postal Code
Ottawa - Carleton		Greenly	Ontario	
UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number
NAD 83	18	456832	5012723	Plan # 4M-1398 8(L#1)

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)
	Brown Clay, boulders & Fill			0' 8'
	Sand, Gravel & boulders			8' 30 1/2'
	Gray limestone			30 1/2' 144'
	White Sandstone			144' 240'

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
198' 188'	Neat Cement Slurry	9.36
188' 0'	Neat Bentonite Slurry	109.2

Method of Construction		Well Use	
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial
☐ Rotary (Conventional)	☐ Jetting	☒ Domestic	☐ Municipal
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning
☒ Air percussion		☐ Industrial	
☐ Other, specify		☐ 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)	
6"	Steel	.188"	198'	☒ Water Supply
5 15/16"	Open hole		198' 240'	☐ Replacement Well

Construction Record - Screen			Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
				☐ Test Hole
				☐ Recharge Well
				☐ Dewatering Well
				☐ Observation and/or Monitoring Hole
				☐ Alteration (Construction)
				☐ Abandoned, Insufficient Supply
				☐ Abandoned, Poor Water Quality
				☐ Abandoned, other, specify
				☐ Other, specify

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft)	Diameter (cm/in)
205'	☐ Gas ☐ Other, specify	0' 198'	6"
231'	☐ Gas ☐ Other, specify	198' 240'	5 15/16"

Well Contractor and Well Technician Information		
Business Name of Well Contractor		Well Contractor's Licence No.
AIR LOCK DRILLING CO LTD		11119
Business Address (Street Number/Name)		Municipality
RR#1		RICHMOND
Province	Postal Code	Business E-mail Address
ONT	K0A 2Z0	
Bus. Telephone No. (inc. area code)		Name of Well Technician (Last Name, First Name)
613 888 2170		GRAHAM RYAN
Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3484	[Signature]	2010/10/29

Results of Well Yield Testing

After test of well yield, water was:		Draw Down		Recovery	
☐ Clear and sand free	☐ Other, specify	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
☒ TESTED		Static Level	2'5"		36'3"
If pumping discontinued, give reason:		1	9'8"	1	20'
Pump intake set at (m/ft)		2	12'8"	2	12'8"
Pumping rate (l/min / GPM)		3	16'9"	3	7'9"
Duration of pumping		4	19'6"	4	3'9"
1 hrs + 0 min		5	21'5"	5	2'
Final water level end of pumping (m/ft)		10	28'	10	1'5"
If flowing give rate (l/min / GPM)		15	31'2"	15	
Recommended pump depth (m/ft)		20	32'9"	20	
Recommended pump rate (l/min / GPM)		25	33'7"	25	
Well production (l/min / GPM)		30	34'2"	30	
Disinfected?		40	35'	40	
☒ Yes ☐ No		50	35'7"	50	
		60	36'3"	60	

Map of Well Location

Please provide a map below following instructions on the back.

Parkway Road

150' 50'

#7300 Blue Water Crescent

Comments:

Well owner's information	Date Package Delivered	Ministry Use Only
package delivered	2010/10/12	Audit No.
☒ Yes ☐ No	Date Work Completed	z110750
	2010/10/06	NOV 17 2010



Ontario

Ministry of
the Environment

Well ID:

Below

A 096041

7156876

ord

Regulation of Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name: Parkway Road Church (Kollard's Associates) Last Name / Organization: E-mail Address: ☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name): 7275 Parkway Road Municipality: Greely Province: Ontario Postal Code: K4P 1N5 Telephone No. (inc. area code):

Well Location

Address of Well Location (Street Number/Name): 7275 Parkway Road Township: Osgoode Concession: See below
County/District/Municipality: Ottawa-Carleton City/Town/Village: Greely Province: Ontario Postal Code: _____
UTM Coordinates: Zone: 18 Easting: 456731 Northing: 15012725 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)
	Sand, Gravel & boulders			0' 24'
	Gray lime stone			24' 116'
	Gray Sandstone & Limestone Mix			116' 146'
	White Sandstone			146' 240'

* Plan 902 P/L 32 Cons P/L 5 RPSR-3174 Part 1, 4R8871 Pt 1

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
198' 188'	Neat Cement Slurry	7.8
188' 0'	Neat Bentonite Slurry	235.2

Method of Construction		Well Use	
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial
☐ Rotary (Conventional)	☐ Jetting	☒ Domestic	☐ Municipal
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning
☒ Air percussion		☐ Industrial	
☐ Other, specify _____		☐ 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)	
6"	Steel	188"	198'	☒ Water Supply
6 1/8"	Open hole		198' 240'	☐ Replacement Well

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

Construction Record - Screen			Status of Well	
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: ☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify _____	Depth (m/ft)	Diameter (cm/in)
24' (m/ft)		0' 198'	6"
		198' 240'	6 1/8"

Well Contractor and Well Technician Information			
Business Name of Well Contractor: AIR ROCK DRILLING LTD	Well Contractor's Licence No.: 111191	Business Address (Street Number/Name): RR#1	Municipality: RICHMOND
Province: ONT	Postal Code: K0A 2Z0	Business E-mail Address:	
Bus. Telephone No. (inc. area code): 613 838 2170	Name of Well Technician (Last Name, First Name): GRAHAM RYAN	Well Technician's Licence No.: T13484	Date Submitted: 2010/11/30

Results of Well Yield Testing			
After test of well yield, water was: ☐ Clear and sand free ☒ Other, specify: <u>TESTED</u>		Draw Down	
If pumping discontinued, give reason: _____		Time (min)	Water Level (m/ft)
Pump intake set at (m/ft): 220'		Static Level: 3' 6"	Recovery: 6' 1"
Pumping rate (l/min / GPM): 20		1 5' 5"	1 4'
Duration of pumping: 1 hrs + 0 min		2 5' 6"	2 3' 6"
Final water level end of pumping (m/ft): 6' 1"		3 5' 7"	3
If flowing give rate (l/min / GPM): _____		4 5' 8"	4
Recommended pump depth (m/ft): 100'		5 5' 9"	5
Recommended pump rate (l/min / GPM): 20		10	10
Well production (l/min / GPM): 20+		15	15
Disinfected? ☒ Yes ☐ No		20	20

Map of Well Location	
Please provide a map below following instructions on the back.	
Comments:	
Well owner's information package delivered: ☒ Yes ☐ No	Date Package Delivered: 2010/10/26 Date Work Completed: 2010/10/22
Ministry Use Only Audit No.: 2110826 DEC 29 2010 Received	

Measurements recorded in: ☐ Metric ☒ Imperial

A105542

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner	
	Omega Homes c/o 7184841 Canada Inc			
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
4515 Ramsawille Road	Gloucester	ON	K1G 3N4	

Well Location

Address of Well Location (Street Number/Name)				Township		Lot		Concession	
1448 Water's Edge Way				Osgoode		6		5	
County/District/Municipality				City/Town/Village				Province	
Ottawa-Carleton				Greely				Ontario	
UTM Coordinates		Zone		Easting		Northing		Municipal Plan and Sublot Number	
NAD		8 3		18 456879		5012466		4M-1398	
								Other	
								S/L 3	

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)	
				From	To
Grey	Sand			0'	8'
	Clay			8'	20'
	Sand & Gravel	✓	Boulders	20'	31'
Grey	Limestone			31'	92'
Grey & White	Sandstone	✓	Grey Limestone Mix	92'	155'
White	Sandstone			155'	208'
White	Sandstone			208'	220'

Annular Space

Depth Set at (m ^{ft})		Type of Sealant Used (Material and Type)	Volume Placed (m ³ (ft ³))
From	To		
198'	188'	Neat Cement Slurry	9.36
188'	0'	Neat Bentonite Slurry	105

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 _____		☐ Other, specify _____		

Well Use

☐ Commercial ☐ Not used
☐ Municipal ☐ Dewatering
☐ Test Hole ☐ Monitoring
☐ Cooling & Air Conditioning

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Inefficient, Closed
			From	To	
6"	Steel	188"	+2'	198'	
6"	Openhole		198'	220'	

Status of Well

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

☐ Other, *specify*

Construction Record - Screen

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

☐ Abandoned, Poor Water Quality

☐ Abandoned, other, specify _____

☐ Other, specify _____

Water Details

Water found at Depth 208 (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☒ Untested ☐ Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0'	220'	6"
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____			

Hole Diameter

Depth (m/ft)		Diameter (cm/in)
From	To	
0'	220'	6"

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119
Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

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

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138832170	Graham, Ryan

Well Technician's Licence No. T3484	Signature of Technician and/or Contractor 	Date Submitted 2011 09 30 Y Y Y Y M M D D
---	--	---

Results of Well Yield Testing

After test of well at well, water was:		Draw Down		Recovery	
☐ Clear and sand free ☐ Other, specify Not tested		Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: X		Static Level			
Pump intake set at (m/ft) 200'		1		1	
Pumping rate (l/min / GPM) 20		2		2	
Duration of pumping 1 hrs + 0 min		3		3	
Final water level end of pumping (m/ft) 21' 3"		4		4	
If flowing give rate (l/min / GPM)		5		5	
Recommended pump depth (m/ft) 100' (3/4 HP 15gpm)		10		10	
Recommended pump rate (l/min / GPM) 20		15		15	
Well production (l/min / GPM) 20		20		20	
Disinfected?		25		25	
☒ Yes ☐ No		30		30	
		40		40	
		50		50	
		60		60	

Map of Well Location

Please provide a map below following instructions on the back.

Hand-drawn map showing the location of the property. Parkway Road is at the top. A vertical line represents the property boundary. To the left of the boundary, a double-headed arrow indicates a distance of 205' from the boundary to a point marked with a circled 'X'. To the right of the boundary, a curved line represents Bluewater Cres. The property address #1448 Waters Edge Way is written on the right side.

Comments:

3/4HP-159PM@100'

Well owner's information package delivered	Date Package Delivered
☒ Yes	Y Y Y M M D D 2011 09 20
☐ No	Date Work Completed
	Y Y Y Y M M D D 2011 09 16

Ministry Use Only

Audit No. **Z137165**



Ministry of
the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

A105310

Well (see instructions on the back of this form)

A105310

7171884

Regulation 903 Ontario Water Resources Act

Page of

Address of Well Location (Street Number/Name) 1476 Water's Edge Way		Township Osgoode	Lot 6	Concession 5
County/District/Municipality Ottawa-Carleton		City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates NAD 83	Zone 18	Easting 456995	Northings 5012313	Municipal Plan and Sublot Number 4M-1398
Other S/L 10				

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m)
Grey	Clay			From To
	Sand + Gravel +	Boulders		0' 6'
Grey	Limestone			6' 24'
Grey	Sandstone	Limestone	Mix	24' 144'
White	Sandstone			144' 168'
White	Sandstone			168' 206'
White	Sandstone			206' 211'
White	Sandstone			211' 220'

Annular Space		
Depth Set at (m)	Type of Sealant Used (Material and Type)	Volume Placed (m³)
From To		
188' 188'	Neat cement Slurry	9.36
188' 0'	Bentonite slurry	71.4

Method of Construction		Well Use	
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial
☐ Rotary (Conventional)	☐ Jetting	☒ Domestic	☐ Municipal
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning
☒ Air percussion		☐ Industrial	
☐ Other, specify		☐ Other, specify	

Construction Record - Casing				Status of Well	
Inside Diameter (cm)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm)	Depth (m)	From	To
6"	Steel	.188"	+2'	198'	198'
6 1/8"	Open Hole			198'	220'

Construction Record - Screen				Status of Well	
Outside Diameter (cm)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m)	From	To

Water Details				Hole Diameter	
Water found at Depth (m)	Kind of Water: ☐ Fresh ☒ Untested	Depth (m)	Diameter (cm)	From	To
208' (m)	☐ Gas ☒ Other, specify	0' 198'	6"		
211' (m)	☐ Gas ☒ Other, specify	198' 220'	6 1/8"		

Well Contractor and Well Technician Information			
Business Name of Well Contractor Air Rock Drilling Co. Ltd.		Well Contractor's Licence No. 1119	
Business Address (Street Number/Name) 6659 Frankton Road, RR#1		Municipality Richmond	
Province ON	Postal Code K0A 2Z0	Business E-mail Address air-rock@sympatico.ca	
Bus. Telephone No. (inc. area code) 6138382170		Name of Well Technician (Last Name, First Name) Graham, Ryan	
Well Technician's Licence No. T3484		Date Submitted 2011 09 30	

Results of Well Yield Testing				
After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify Not tested	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: X	Static Level	11.8'		29'
Pump intake set at (m/ft) 210	1	20.7	1	23.8
Pumping rate (l/min / GPM) 20	2	23.1	2	19.1
Duration of pumping 1 hrs + 0 min	3	24.8	3	14.7
Final water level end of pumping (m/ft) 29	4	26.1	4	12.5
If flowing give rate (l/min / GPM) X	5	26.8	5	11.8
Recommended pump depth (m/ft) 140'	10	28.1	10	11.8
Recommended pump rate (l/min / GPM) 20	15	28.7	15	11.8
Well production (l/min / GPM) 20	20	28.9	20	11.5
Disinfected? ☒ Yes ☐ No	25	29	25	11.8
	30	29	30	11.8
	40	29	40	11.8
	50	29	50	11.8
	60	29'	60	11.8'

Map of Well Location

Please provide a map below following instructions on the back.

Parkway Road

3KM

#1476 Water's Edge Way.

95'

Comments: Phase II	
Well owner's information package delivered ☒ Yes ☐ No	Date Package Delivered 2011 09 02
Date Work Completed 2011 08 25	
Ministry Use Only Audit No. z128628 Received 17 2011	

Ministry of
the Environment

We

A113160

(int Below)

7178611

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization Picasso Homes	E-mail Address	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name) Box 15	Municipality Greely	Province On	Postal Code K4P 1N7

Well Location

Address of Well Location (Street Number/Name) 1464 Water's Edge Way	Township Osgoode	Lot 6	Concession 5
County/District/Municipality Ottawa-Carleton	City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates Zone Easting Northing NAD 83 18 456956 5012361	Municipal Plan and Sublot Number 4M-1398	Other S/L 7	

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)
	Sand			From To
				0' 4'
Grey	Clay			4' 20'
	Gravel	Boulders		20' 27'
Grey	Limestone			27' 132'
Grey	Limestone	Sand stone		132' 169'
White	Sandstone			169' 209'
White	Sandstone			209' 214'
White	Sandstone			214' 220'

Annular Space		
Depth Set at (m)	Type of Sealant Used (Material and Type)	Volume Placed (m ³)
From To		
198' 188'	Neat cement slurry	10.9
188' 0'	Bentonite slurry	67.2

Method of Construction	Well Use
☐ 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			Status of Well
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)
			From To
6"	Steel	.188"	+2' 198'
5 15/16"	Open Hole		198' 220'

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

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

☐ Other, specify

Water Details		Hole Diameter	
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft)	Diameter (cm/in)
209' (m/ft) ☐ Gas ☐ Other, specify		From To	
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	0' 198'	8"
214' (m/ft) ☐ Gas ☐ Other, specify		198' 220'	5 15/16"
Water found at Depth	Kind of Water: ☐ Fresh ☐ Untested		
(m/ft) ☐ Gas ☐ Other, specify			

Business Name of Well Contractor Air Rock Drilling Co. Ltd.	Well Contractor's Licence No. 1119
Business Address (Street Number/Name) 6659 Franktown Road, RR#1	Municipality Richmond

Province ON	Postal Code K0A 2Z0	Business E-mail Address air-rock@sympatico.ca
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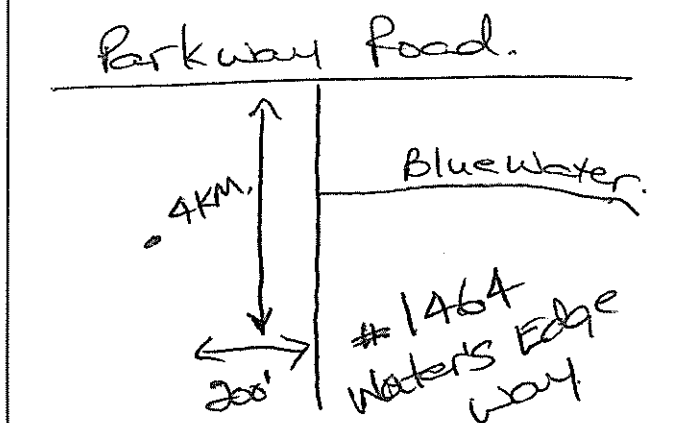
Bus. Telephone No. (inc. area code) 6138382170	Name of Well Technician (Last Name, First Name) Graham, Ryan
--	--

Well Technician's Licence No. T3484	Signature of Technician and/or Contractor 	Date Submitted 2012 03 30
---	---	-------------------------------------

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☐ Clear and sand free		Time (min)	Water Level (m/ft)
☐ Other, specify Not tested		Static Level	
If pumping discontinued, give reason:		1	10.8
Pump intake set at (m)		2	16.7
200		3	18.9
Pumping rate (l/min / GPM)		4	20.5
20		5	22.1
Duration of pumping		10	26.3
1 hrs + 0 min		15	28.4
Final water level end of pumping (m/ft)		20	29.2
31.2"		25	29.5
If flowing give rate (l/min / GPM)		30	30.2
Recommended pump depth (m)		40	30.6
100' (3/4HP - 15hp)		50	30.8
Recommended pump rate (l/min / GPM)		60	31.2"
20			2.4"
Well production (l/min / GPM)			
20			
Disinfected?			
☒ Yes ☐ No			

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered ☒ Yes ☐ No	Date Package Delivered 2012 03 16	Ministry Use Only Audit No. z128500
	Date Work Completed 2012 03 14	Received MAR 29 2012



Ontario

Ministry of
the Environment

Tag#: A128035

7181168

Well (see instructions on the back of this form) (Below)

A128035

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner	
BULAT	HOMES			
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
11 Gifford Street	Nepean Ont	KOE	7S3	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession		
#1456 Water's Edge Way	Osgoode	6	5		
County/District/Municipality	City/Town/Village	Province	Postal Code		
Ottawa-Carleton	Greenby	Ontario			
UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	456899	5012432	PLAN 4M-1398	SL#5

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)
	Grey Sandy Clay			0' 18'
	Sand & Gravel & Boulders			18' 31'
	Grey limestone			31' 118'
	Grey limestone & Sandstone mix			118' 164'
	White Sandstone			164' 260'

Annular Space			Volume Placed (m ³ /ft ³)	
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)		
198' 188'	Neat Cement Grout	10.92		
188' 0'	Portland Cement Grout	155.4		

Method of Construction		Well Use		
☐ 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		☐ 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)	
6"	Steel	0.188"	198'	198'
5 7/8"	Open hole		198'	260'

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

Construction Record - Screen			Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			198'	260'

Water Details		Hole Diameter	
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft)	Diameter (cm/in)
209' (m/ft)	☐ Gas ☐ Other, specify	0' 198'	6"
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	198' 260'	5 7/8"
251' (m/ft)	☐ Gas ☐ Other, specify		
Water found at Depth	Kind of Water: ☐ Fresh ☐ Untested		
(m/ft)	☐ Gas ☐ Other, specify		

Well Contractor and Well Technician Information			
Business Name of Well Contractor	Well Contractor's Licence No.		
AIR ROCK DRILLING LTD	11119		
Business Address (Street Number/Name)	Municipality		
RR#1	Richmond		
Province	Postal Code	Business E-mail Address	
ONT	K0A 2Z0		
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)		
6113 8382170	GRADAM RYAN		
Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted	
T3484	[Signature]	20120430	

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☐ Clear and sand free	☒ Other, specify	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level	Recovery
X		8'4"	75'1"
Pump intake set at (m/ft)		1	59.1
240'		2	22.3
Pumping rate (l/min / GPM)		3	8'4"
20		4	
Duration of pumping		5	
hrs + 0 min		10	
Final water level end of pumping (m/ft)		15	
75'1"		20	
If flowing give rate (l/min / GPM)		25	
X		30	
Recommended pump depth (m/ft)		40	
100' (3/4" - 1.5")		50	
Recommended pump rate (l/min / GPM)		60	
20			
Well production (l/min / GPM)			
20			
Disinfected?			
Yes ☒ No ☐			

Map of Well Location	
Please provide a map below following instructions on the back.	
Comments:	

Well owner's information package delivered	Date Package Delivered	Ministry Use Only	
☒ Yes	20120426	Audit No.	z119710
☐ No	20120419	Date Work Completed	MAY 18 2012

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Address of Well Location (Street Number/Name) 1480 Waters Edge Way				Township Osgoode		Lot 6		Concession 5	
County/District/Municipality Ottawa-Carleton				City/Town/Village Greely				Province Ontario	
UTM Coordinates		Zone	Easting	Northing		Municipal Plan and Sublot Number			Other
NAD		8	3	18	457007	5012284		4M-1398	S/L 11

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)	Depth (ft)
	Sand & Gravel	Boulders		0	27
Grey	Limestone			27	98
Grey	Limestone	Sandstone Mix		98	166
White	Sandstone			166	211
White	Sandstone			211	220

Annular Space			
Depth Set at (m)	Type of Sealant Used (Material and Type)	Volume Placed (m³)	Volume Placed (ft³)
198	Neat cement	10.9	
188	Bentonite slurry	92.4	

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

Construction Record - Casing				Status of Well	
Inside Diameter (cm)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m)	From	To
61/4	Steel	.188"	+2'	198'	
57/8	Open Hole		198'	220'	

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

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☒ Untested	Depth (m/ft)	Diameter (cm/in)
211	☐ Gas ☒ Other, specify _____	0' 198'	9 3/4"
	☐ Gas ☐ Other, specify _____	198' 220'	5 7/8"
	☐ Gas ☐ Other, specify _____		

Business Name of Well Contractor Air Rock Drilling Co. Ltd.		Well Contractor's Licence No. 1119	
Business Address (Street Number/Name) 6659 Franktown Road, RR#1		Municipality Richmond	
Province ON	Postal Code K0A 2Z0	Business E-mail Address air-rock@sympatico.ca	
Bus. Telephone No. (inc. area code) 6138382170		Name of Well Technician (Last Name, First Name) Graham, Ryan	
Well Technician's Licence No. T3484	Signature of Technician and/or Contractor <i>[Signature]</i>	Date Submitted 2012 08 31	

Results of Well Yield Testing			
After test of well yield, water was:		Draw Down	
☐ Clear and sand free ☐ Other, specify Not tested		Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level	
X		1	16.6
Pump intake set at (m/ft)		2	17.2
200		3	17.4
Pumping rate (l/min / GPM)		4	17.6
20		5	17.8
Duration of pumping		10	17.9
1 hrs + 0 min		15	18
Final water level end of pumping (m/ft)		20	18
18.2"		25	18
If flowing give rate (l/min / GPM)		30	18.1
X		40	18.1
Recommended pump depth (m/ft)		50	18.2
100		60	18.2"
Recommended pump rate (l/min / GPM)			
20			
Well production (l/min / GPM)			
20			
Disinfected?			
☒ Yes ☐ No			

Map of Well Location

Please provide a map below following instructions on the back.

Comments:
3/4 HP - 15 GPM SET @ 100 FT

Well owner's information package delivered ☒ Yes ☐ No	Date Package Delivered 2012 08 16	Ministry Use Only Audit No. Z144703 SEP 22 2012
Date Work Completed 2012 08 14		

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization Picasso Homes	E-mail Address	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name) Box 15		Municipality Greely	Province On
		Postal Code K4P 1N7	Telephone No. (inc. area code)

Well Location

Address of Well Location (Street Number/Name) 1468 Waters Edge Way		Township Osgoode	Lot 6	Concession 5
County/District/Municipality Ottawa-Carleton		City/Town/Village Greely	Province Ontario	Postal Code
UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number
NAD	8	3	18	456959
			5012372	4M-1398
				Other S/L 8

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m ^{ft}) From To
	Sand & Gravel	Boulders		0 ' 28'
Grey	Limestone			28 ' 108'
Grey	Limestone & Sandstone	Mix		108 ' 165'
White	Sandstone			165 ' 203'
White	Sandstone			203 ' 212'
White	Sandstone			212 ' 220'

Annular Space			
Depth Set at (m ^{ft}) From To	Type of Sealant Used (Material and Type)	Volume Placed (m ^{ft} ³)	
198 ' 188 '	Neat cement	10.9	
188 ' 0 '	Bentonite slurry	79.8	

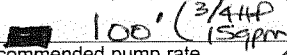
Method of Construction	Well Use
☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☒ Air percussion ☐ Other, specify _____	☐ Public ☒ Domestic ☐ Livestock ☐ Irrigation ☐ Industrial ☐ Other, specify _____
☐ Diamond ☐ Jetting ☐ Driving ☐ Digging	☐ Commercial ☐ Municipal ☐ Test Hole ☐ Cooling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

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}) From To		
6 1/4"	Steel	.188"	+2 '	198 '	☒ Water Supply
6 1/8"	Open Hole		198 '	220'	☐ Replacement Well
					☐ Test Hole
					☐ Recharge Well
					☐ Dewatering Well
					☐ Observation and/or Monitoring Hole
					☐ Alteration (Construction)
					☐ Abandoned, Insufficient Supply
					☐ Abandoned, Poor Water Quality
					☐ Abandoned, other, specify _____
					☐ Other, specify _____

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

Water Details		Hole Diameter	
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	Depth (m ^{ft}) From To	Diameter (cm ⁱⁿ)
203 (m ^{ft})	☐ Gas ☒ Other, specify _____	0 ' 198'	9 3/4"
Water found at Depth	Kind of Water: ☐ Fresh ☒ Untested	198 ' 220	6 1/8"
212 (m ^{ft})	☐ Gas ☒ Other, specify _____		
Water found at Depth	Kind of Water: ☐ Fresh ☐ Untested		
(m ^{ft})	☐ Gas ☐ Other, specify _____		

Business Name of Well Contractor Air Rock Drilling Co. Ltd.		Well Contractor's Licence No. 1119
Business Address (Street Number/Name) 6659 Franktown Road, RR#1		Municipality Richmond
Province ON	Postal Code K0A 2Z0	Business E-mail Address air-rock@sympatico.ca
Bus.Telephone No. (inc. area code) 6138382170	Name of Well Technician (Last Name, First Name) Graham, Ryan	
Well Technician's Licence No. T3484	Signature of Technician and/or Contractor 	Date Submitted 2012 08 28

Results of Well Yield Testing				
After test of well yield, water was: ☐ Clear and sand free ☐ Other, <i>specify</i> Not tested	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:  Pump intake set at (m/ft) 210 Pumping rate (l/min / GPM) 20 Duration of pumping 1 hrs + 0 min Final water level end of pumping (m/ft) 15.7" If flowing give rate (l/min / GPM)  Recommended pump depth (m/ft)  Recommended pump rate (l/min / GPM) 20 Well production (l/min / GPM) 20 Disinfected? ☒ Yes ☐ No <td>Static Level</td> <td>12.8"</td> <td></td> <td>15.7"</td>	Static Level	12.8"		15.7"
	1	15.1	1	12.8
	2	15.3	2	12.8
	3	15.4	3	12.8
	4	15.4	4	12.8
	5	15.5	5	12.8
	10	15.6	10	12.8
	15	15.6	15	12.8
	20	15.6	20	12.8
	25	15.6	25	12.8
	30	15.7	30	12.8
	40	15.7	40	12.8
50	15.7	50	12.8	
60	15.7"	60	12.8"	

Map of Well Location

Please provide a map below following instructions on the back.

Comments:
3/4HP-159pm @ 100'

Well owner's information package delivered	Date Package Delivered 2012 09 04	Ministry Use Only Audit No. 2144723
☒ Yes ☐ No	Date Work Completed 2012 08 29	
Received 24 2012		

Appendix 2

- **Laboratory Certificates of Analysis - Groundwater**

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 11050
Invoice to: Paterson Group

Report Number: 1618670
Date Submitted: 2016-10-19
Date Reported: 2016-10-21
Project: PH 3207
COC #: 56562

Page 1 of 2

Dear Russell Chown:

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:

Krista Quantrill
2016.10.21
10:58:25 -04'00'

APPROVAL:

Krista Quantrill
Laboratory Supervisor, Microbiology

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at <http://www.cala.ca/scopes/2602.pdf>.

Exova (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Exova recommends consulting the official provincial or federal guideline as required.



Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 11050
Invoice to: Paterson Group

Report Number: 1618670
Date Submitted: 2016-10-19
Date Reported: 2016-10-21
Project: PH 3207
COC #: 56562

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Heterotrophic Plate Count	0	ct/1mL	1265590 Water	1265592 Water
Others	Escherichia Coli	0	ct/100mL	2016-10-18 TW2-WS1	2016-10-19 Dental Clinic
	Faecal Coliforms	0	ct/100mL		
	Faecal Streptococcus	0	ct/100mL		
	Total Coliforms	0	ct/100mL		

Guideline = ODWSOG

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

* = Guideline Exceedence

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. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

Page 1 of 8

Dear Russell Chown:

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:

Shyla Monette
2016.10.27
15:52:19 -04'00'

APPROVAL:

Shyla Monette
Team Leader, Inorganics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at <http://www.cala.ca/scopes/2602.pdf>.

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Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Exova recommends consulting the official provincial or federal guideline as required.

Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

Group	Analyte	MRL	Units	Guideline	1265610 Water	1265611 Water	1265614 Water
					2016-10-18 TW2-WS1	2016-10-19 TW2-WS2	2016-10-19 Dental Clinic
General Chemistry	Hardness as CaCO ₃	1	mg/L	OG-100	298*	296*	281*
	Ion Balance	0.01			0.98	0.97	0.98
	TDS (COND - CALC)	1	mg/L	AO-500	604*	606*	593*
	Alkalinity as CaCO ₃	5	mg/L	OG-500	222	223	211
	Cl	1	mg/L	AO-250	126	127	122
	Colour	2	TCU	AO-5	<2	<2	<2
	Conductivity	5	uS/cm		929	932	912
	DOC	0.5	mg/L	AO-5	1.3	1.2	1.5
	F	0.10	mg/L	MAC-1.5	0.32	0.28	0.32
	N-NO ₂	0.10	mg/L	MAC-1.0	<0.10	<0.10	<0.10
	N-NO ₃	0.10	mg/L	MAC-10.0	<0.10	<0.10	<0.10
	pH	1.00		6.5-8.5	7.89	8.00	7.99
	SO ₄	1	mg/L	AO-500	81	82	88
	Turbidity	0.1	NTU	AO-5.0	2.6	2.1	1.9
	Hg	0.0001	mg/L	MAC-0.001		<0.0001	
Metals	Ag	0.0001	mg/L			<0.0001	
	Al	0.01	mg/L	OG-0.1		<0.01	
	As	0.001	mg/L	IMAC-0.025		<0.001	
	B	0.01	mg/L	IMAC-5.0		0.14	
	Ba	0.01	mg/L	MAC-1.0		0.08	
	Be	0.0005	mg/L			<0.0005	
	Ca	1	mg/L		70	70	63
	Cd	0.0001	mg/L	MAC-0.005		<0.0001	
	Cr	0.001	mg/L	MAC-0.05		<0.001	
	Cu	0.001	mg/L	AO-1.0		<0.001	
	Fe	0.03	mg/L	AO-0.3	0.21	0.20	0.21

Guideline = ODWSOG

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).

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

*** = Guideline Exceedence**

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. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1265610 Water 2016-10-18 TW2-WS1		1265611 Water 2016-10-19 TW2-WS2		1265614 Water 2016-10-19 Dental Clinic	
						7	7	7	7	7	7
Metals	K	1	mg/L			30	30	30	30	30	30
	Mg	1	mg/L			0.03	0.03	0.03	0.03	0.03	0.03
	Mn	0.01	mg/L	AO-0.05							
	Mo	0.005	mg/L				0.070				
	Na	2	mg/L	AO-200		76	76	76	76	81	81
	Ni	0.005	mg/L				<0.005				
	Pb	0.001	mg/L	MAC-0.010			<0.001				
	Sb	0.0005	mg/L	IMAC-0.006			0.0006				
	Se	0.001	mg/L	MAC-0.01			<0.001				
	Sr	0.001	mg/L				4.56				
	Tl	0.0001	mg/L				<0.0001				
	U	0.001	mg/L	MAC-0.02			<0.001				
	Zn	0.01	mg/L	AO-5.0			<0.01				
Nutrients	Organic Nitrogen	0.08	mg/L	OG-0.15			<0.08				
	Total Kjeldahl Nitrogen	0.1	mg/L			0.1	0.1	0.1	0.1	0.1	0.1
Phenols	Phenols	0.001	mg/L			<0.001	<0.001	<0.001	0.004		
	N-NH3	0.01	mg/L			0.12	0.13	0.13	0.15		
	PO4	0.6	mg/L				<0.6				
	S2-	0.02	mg/L	AO-0.05		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 316300 Analysis/Extraction Date 2016-10-20 Analyst AET			
Method C SM2130B			
Turbidity	<0.1 NTU	100	70-130
Run No 316322 Analysis/Extraction Date 2016-10-20 Analyst SKH			
Method M SM3120B-3500C			
Calcium	<1 mg/L	101	90-110
Potassium	<1 mg/L	101	87-113
Magnesium	<1 mg/L	100	76-124
Sodium	<2 mg/L	101	82-118
Run No 316348 Analysis/Extraction Date 2016-10-20 Analyst K A			
Method EPA 200.8			
Silver	<0.0001 mg/L	102	94-106
Aluminum	<0.01 mg/L	98	89-111
Arsenic	<0.001 mg/L	102	93-106
Boron (total)	<0.01 mg/L	105	88-112
Barium	<0.01 mg/L	103	91-109
Beryllium	<0.0005 mg/L	96	93-107
Cadmium	<0.0001 mg/L	104	93-107

Guideline = ODWSOG
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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chromium Total	<0.001 mg/L	98	94-106
Copper	<0.001 mg/L	97	93-106
Iron	<0.03 mg/L	100	92-107
Manganese	<0.01 mg/L	103	94-106
Molybdenum	<0.005 mg/L	101	94-106
Nickel	<0.005 mg/L	97	94-106
Lead	<0.001 mg/L	104	70-130
Antimony	<0.0005 mg/L	100	80-120
Selenium	<0.001 mg/L	102	91-108
Strontium	<0.001 mg/L	100	89-110
Thallium	<0.0001 mg/L	102	95-105
Uranium	<0.001 mg/L	101	94-106
Zinc	<0.01 mg/L	101	94-106
Run No 316365	Analysis/Extraction Date 2016-10-20	Analyst NP	
Method C SM4500-NO3-F			
N-NO2	<0.10 mg/L	100	80-120
N-NO3	<0.10 mg/L	93	80-120
Run No 316380	Analysis/Extraction Date 2016-10-20	Analyst C N	

Guideline = ODWSOG

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method M SM3112B-3500B			
Mercury	<0.0001 mg/L	103	76-123
Run No 316443	Analysis/Extraction Date 2016-10-21	Analyst AET	
Method C SM4500-H+B			
Alkalinity (CaCO ₃)	<5 mg/L	104	90-110
Conductivity	<5 uS/cm	100	90-110
F	<0.10 mg/L	105	90-110
pH	5.83	100	90-110
Run No 316445	Analysis/Extraction Date 2016-10-24	Analyst AET	
Method C SM2120C			
Colour	<2 TCU	100	90-110
Run No 316462	Analysis/Extraction Date 2016-10-21	Analyst NP	
Method SM 4110			
SO ₄	<1 mg/L	104	90-110
Run No 316574	Analysis/Extraction Date 2016-10-24	Analyst NP	
Method SM 4110			
Chloride	<1 mg/L	103	90-110
Run No 316581	Analysis/Extraction Date 2016-10-25	Analyst AET	
Method C SM5310C			

Guideline = ODWSOG

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

QC Summary

Analyte	Blank	QC % Rec	QC Limits
DOC	<0.5 mg/L	96	84-116
Run No 316592 Analysis/Extraction Date 2016-10-25 Analyst AET			
Method SUBCONTRACT P-INORG			
N-NH3	<0.01 mg/L	98	
Phenols	<0.001 mg/L	104	69-132
S2-	<0.02 mg/L	98	
Tannin & Lignin	<0.1 mg/L	90	
Total Kjeldahl Nitrogen	<0.1 mg/L	96	81-126
Run No 316661 Analysis/Extraction Date 2016-10-26 Analyst SCM			
Method C Ion Balance			
Ion Balance			
Method C SM2340B			
Hardness as CaCO3			
Method C SM2540			
TDS (COND - CALC)			
Run No 316662 Analysis/Extraction Date 2016-10-26 Analyst SCM			
Method C SM4500-Norg-C			
Organic Nitrogen			
Run No 316738 Analysis/Extraction Date 2016-10-27 Analyst R K			

Guideline = ODWSOG

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

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Client: Paterson Group
154 Colonnade Rd South
Nepean, ON
K2E 7T7
Attention: Mr. Russell Chown
PO#: 160179
Invoice to: Paterson Group

Report Number: 1618678
Date Submitted: 2016-10-19
Date Reported: 2016-10-27
Project: PH3207
COC #: 56562

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Method SUBCONTRACT P			
PO4			

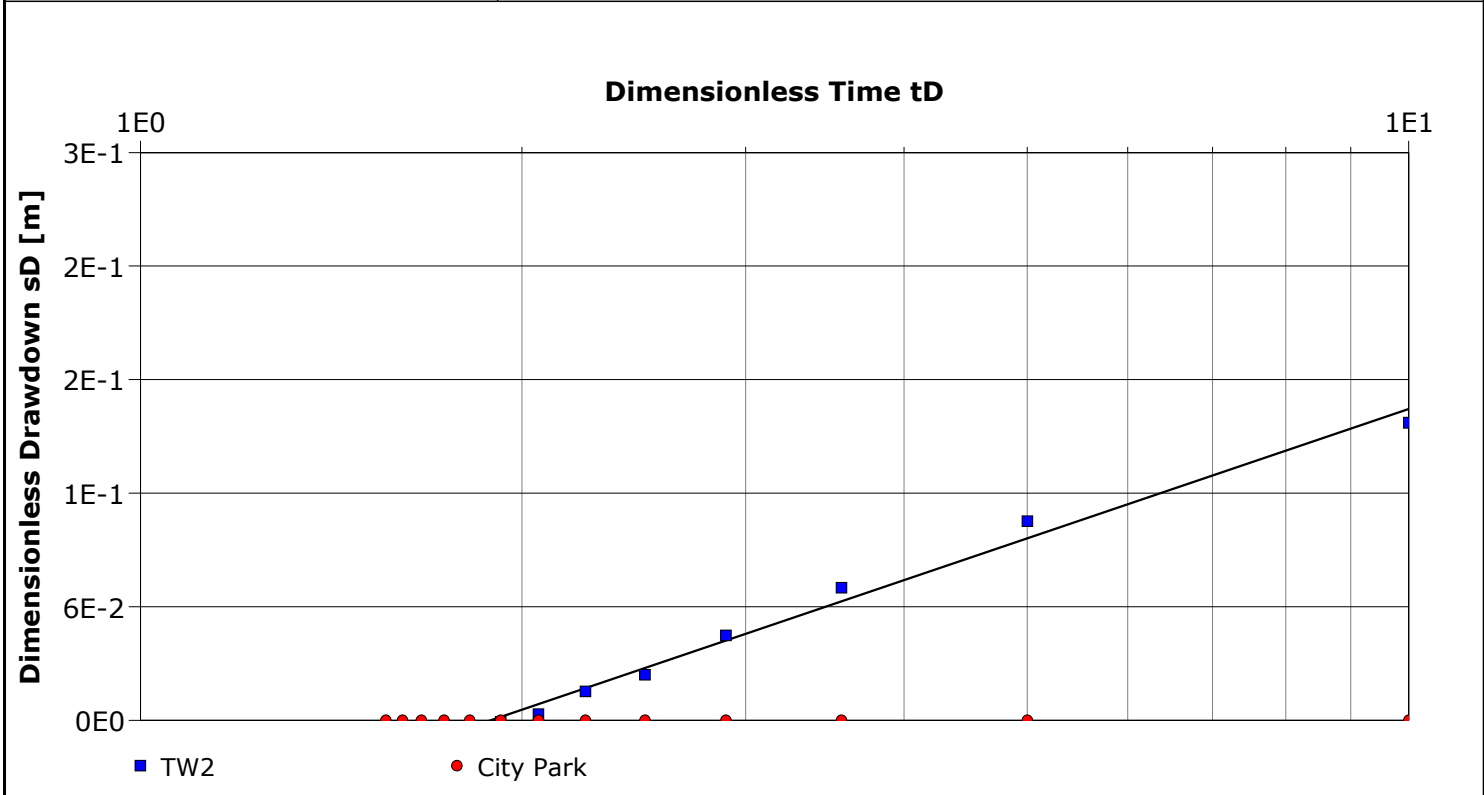
Guideline = ODWSOG
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

*** = Guideline Exceedence**
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

Appendix 3

- **Aquifer Analysis**
- **Langlier Saturation Index Calculation**
- **Offsite Well Owner Interview**

Paterson Group Hydrogeology 154 Colonnade Road South Ottawa, ON, K2E 7J5		Pumping Test Analysis Report	
		Project: 6045 Bank St (with OBS)	
		Number: PH3207	
		Client: Greely Family Farm Inc./Maverick Dev. Corp.	
Location: 6045 Bank Street, Ottawa, ON		Pumping Test: Pumping Test 2 (6hr)	Pumping Well: TW2
Test Conducted by: RLC			Test Date: 19/10/2016
Analysis Performed by: RLC		Theis RECOVERY	Analysis Date: 24/10/2016
Aquifer Thickness:		Discharge: variable, average rate 100 [l/s]	



Calculation using THEIS & JACOB			
Observation Well	Transmissivity	Radial Distance to PW	
	[m ² /d]	[m]	
TW2	6.96 × 10 ³	0.07	
City Park	8.64 × 10 ¹	185.0	
Average	3.52 × 10 ³		

**Paterson Group
Hydrogeology
154 Colonnade Road South
Ottawa, ON, K2E 7J5**

Pumping Test Analysis Report

Project: 6045 Bank St (with OBS)

Number: PH3207

Client: Greely Family Farm Inc./Maverick Dev. Corp.

Location: 6045 Bank Street, Ottawa, ON

Pumping Test: Pumping Test 2 (6hr)

Pumping Well: TW2

Test Conducted by: RLC

Test Date: 19/10/2016

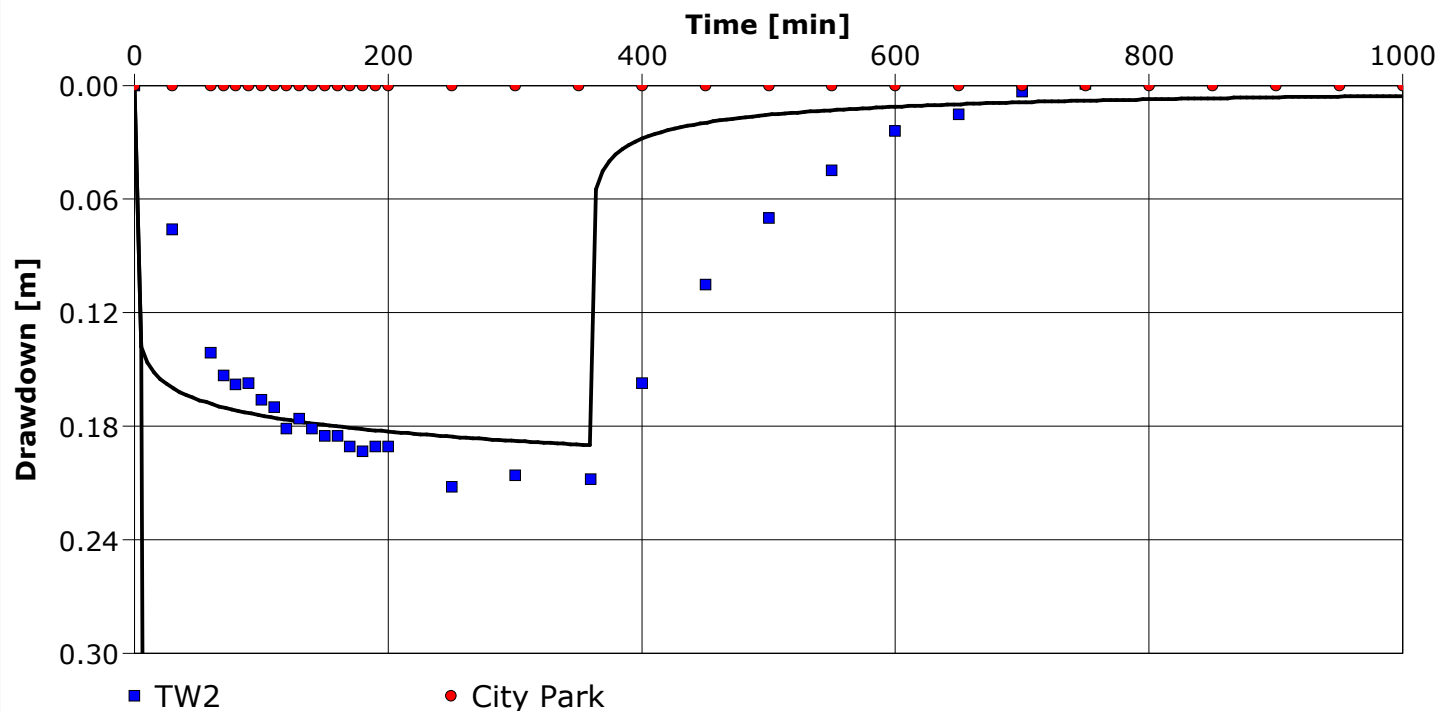
Analysis Performed by:

Theis (best fit)

Analysis Date: 24/10/2016

Aquifer Thickness:

Discharge: variable, average rate 100 [l/s]

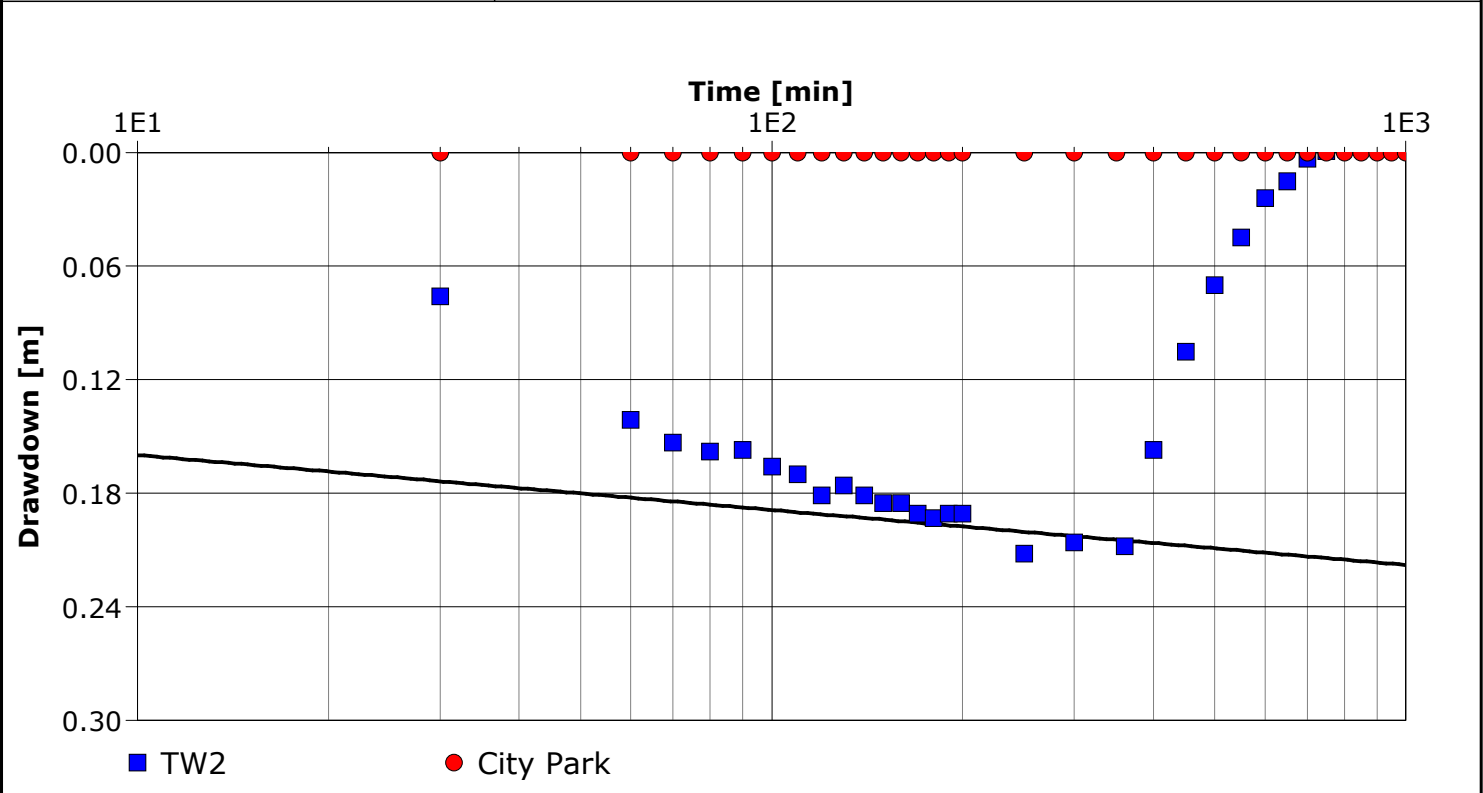


Calculation using Theis

Observation Well	Transmissivity [m ² /d]	Storage coefficient	Radial Distance to PW [m]	
TW2	5.63 × 10 ⁴		0.07	
City Park	8.64 × 10 ¹	1.00 × 10 ⁻⁴	185.0	
Average	2.82 × 10 ⁴	1.00 × 10 ⁻⁴		

Paterson Group Hydrogeology 154 Colonnade Road South Ottawa, ON, K2E 7J5	Pumping Test Analysis Report	
	Project: 6045 Bank St (with OBS)	
	Number: PH3207	
	Client: Greely Family Farm Inc./Maverick Dev. Corp.	

Location: 6045 Bank Street, Ottawa, ON	Pumping Test: Pumping Test 2 (6hr)	Pumping Well: TW2
Test Conducted by: RLC		Test Date: 19/10/2016
Analysis Performed by:	Theis (semi log)	Analysis Date: 31/10/2016
Aquifer Thickness:	Discharge: variable, average rate 100 [l/s]	



Calculation using Theis				
Observation Well	Transmissivity [m ² /d]	Storage coefficient	Radial Distance to PW [m]	
TW2	1.96 × 10 ⁴		0.07	
City Park	8.64 × 10 ¹	1.00 × 10 ⁻⁴	185.0	
Average	9.86 × 10 ³	1.00 × 10 ⁻⁴		

**Paterson Group
Hydrogeology
154 Colonnade Road South
Ottawa, ON, K2E 7J5**

Pumping Test Analysis Report

Project: 6045 Bank St (with OBS)

Number: PH3207

Client: Greely Family Farm Inc./Maverick Dev. Corp.

Location: 6045 Bank Street, Ottawa, ON

Pumping Test: Pumping Test 2 (6hr)

Pumping Well: TW2

Test Conducted by: RLC

Test Date: 19/10/2016

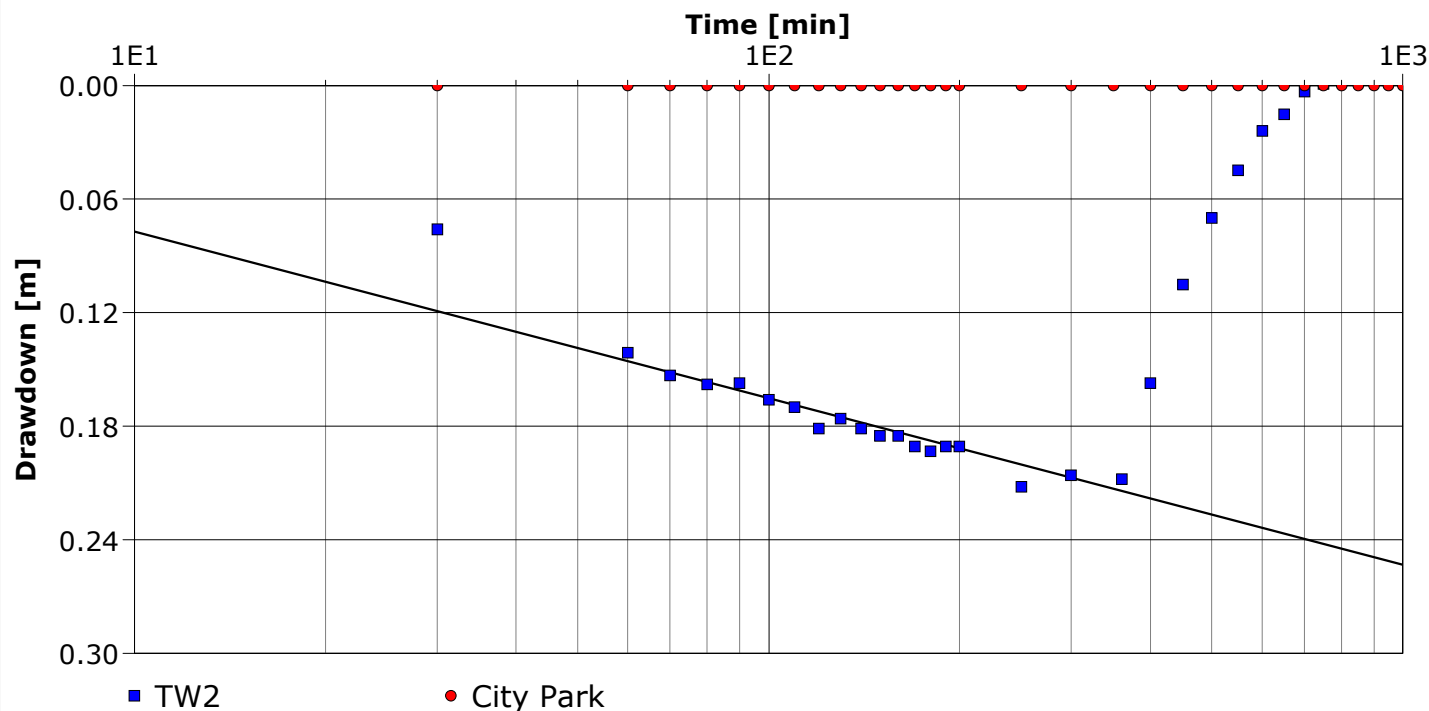
Analysis Performed by:

Cooper and Jacob

Analysis Date: 31/10/2016

Aquifer Thickness:

Discharge: variable, average rate 100 [l/s]



Calculation using COOPER & JACOB

Observation Well	Transmissivity [m ² /d]	Storage coefficient	Radial Distance to PW [m]	
TW2	1.30 × 10 ⁴		0.07	
City Park	1.80 × 10 ⁴	1.09 × 10 ⁻³	185.0	
Average	1.55 × 10 ⁴	1.09 × 10 ⁻³		

Paterson Group Hydrogeology 154 Colonnade Road South Ottawa, ON, K2E 7J5				Pumping Test Analysis Report			
				Project: 6045 Bank St (with OBS)			
				Number: PH3207			
				Client: Greely Family Farm Inc./Maverick Dev. Corp.			
Location: 6045 Bank Street, Ottawa, ON			Pumping Test: Pumping Test 2 (6hr)		Pumping Well: TW2		
Test Conducted by: RLC					Test Date: 19/10/2016		
Aquifer Thickness: NAN m			Discharge: variable, average rate 100 [l/s]				
	Analysis Name	Analysis Performed by	Analysis Date	Method name	Well	T [m²/d]	S
1	Theis RECOVERY	RLC	24/10/2016	Theis Recovery	TW2	6.96 × 10 ³	
2	Theis RECOVERY	RLC	24/10/2016	Theis Recovery	City Park	8.64 × 10 ¹	
3	Theis (best fit)		24/10/2016	Theis	TW2	5.63 × 10 ⁴	
4	Theis (best fit)		24/10/2016	Theis	City Park	8.64 × 10 ¹	1.00 × 10 ⁻⁴
5	Theis (semi log)		31/10/2016	Theis	TW2	1.96 × 10 ⁴	
6	Theis (semi log)		31/10/2016	Theis	City Park	8.64 × 10 ¹	1.00 × 10 ⁻⁴
7	Cooper and Jacob		31/10/2016	Cooper & Jacob I	TW2	1.30 × 10 ⁴	
8	Cooper and Jacob		31/10/2016	Cooper & Jacob I	City Park	1.80 × 10 ⁴	1.09 × 10 ⁻³
Average						1.43 × 10 ⁴	4.29 × 10 ⁻⁴

patersongroup
 6045 Bank St, Greely
 PH3207

Langlier Saturation Index (LSI) Calculation

(Langlier, 1936)

$$LSI = pH - pHs$$

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

Where:

$$A = (\text{Log10 [TDS]} - 1) / 10$$

$$B = -13.12 \times \text{Log10} (oC + 273) + 34.55$$

$$C = \text{Log10} [Ca^{2+} \text{ as } CaCO_3] - 0.4$$

$$D = \text{Log10} [\text{alkalinity as } CaCO_3]$$

TW1	inputs		
pH	8	A	0.18
TDS	606	B	2.38
Hardness	298	C	2.07
Alkalinity	223	D	2.35
Temp.	10.1		
		pHs =	7.44
		LSI =	0.6
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).		

Address: 7606 VILLAGE CENTRE PLACE Project Number: PH3207
 Name of Property Owner: DR CHEV. HARRIS
 Date of Inspection: 19/00T/16 Owner telephone No: 613-821-1257
 Paterson Rep: RLC

Well Details

Is well casing exposed above ground surface ? Y / N Length of stickup: _____
 Does owner have a copy of the 'water well record' ? Y / N ? Try to obtain a copy or get details (take a photo)
 How old is the well ? 2 yrs In what year was the house built ? 2 yrs ago
 Depth of well ? ? Depth of well casing ? ?
 Who drilled the well ? ARR Rock. check well cap for driller ID

Water Quality

Taste ? ?
 Odour ? None
 Colour ? none
 Hardness ? not noticeable
 History of bacteria testing ? No - ?
 Any other water quality related comments or issues ? None

Water treatment details: ? Softener.

SAMPLING DETAILS: SAMPLE TAKEN

Copy of results to well owner ? YES (get contact details / email address) metcalfefamilydental@rogers.com
 Temp 15.6°C pH 8.03 Cond 893µS TDS 623mg/L

Water Quantity

Size of pump in well ? ? Type of pump ? _____
 Pumping rate ? ?
 Depth of pump in well ? ? has owner ever seen it layed out on surface ? _____
 Any water quantity related comments or issues ? _____
 Has the well ever run dry ? No.

Septic System

draw location on sketch

Class 4 ? Tertiary treatment ?

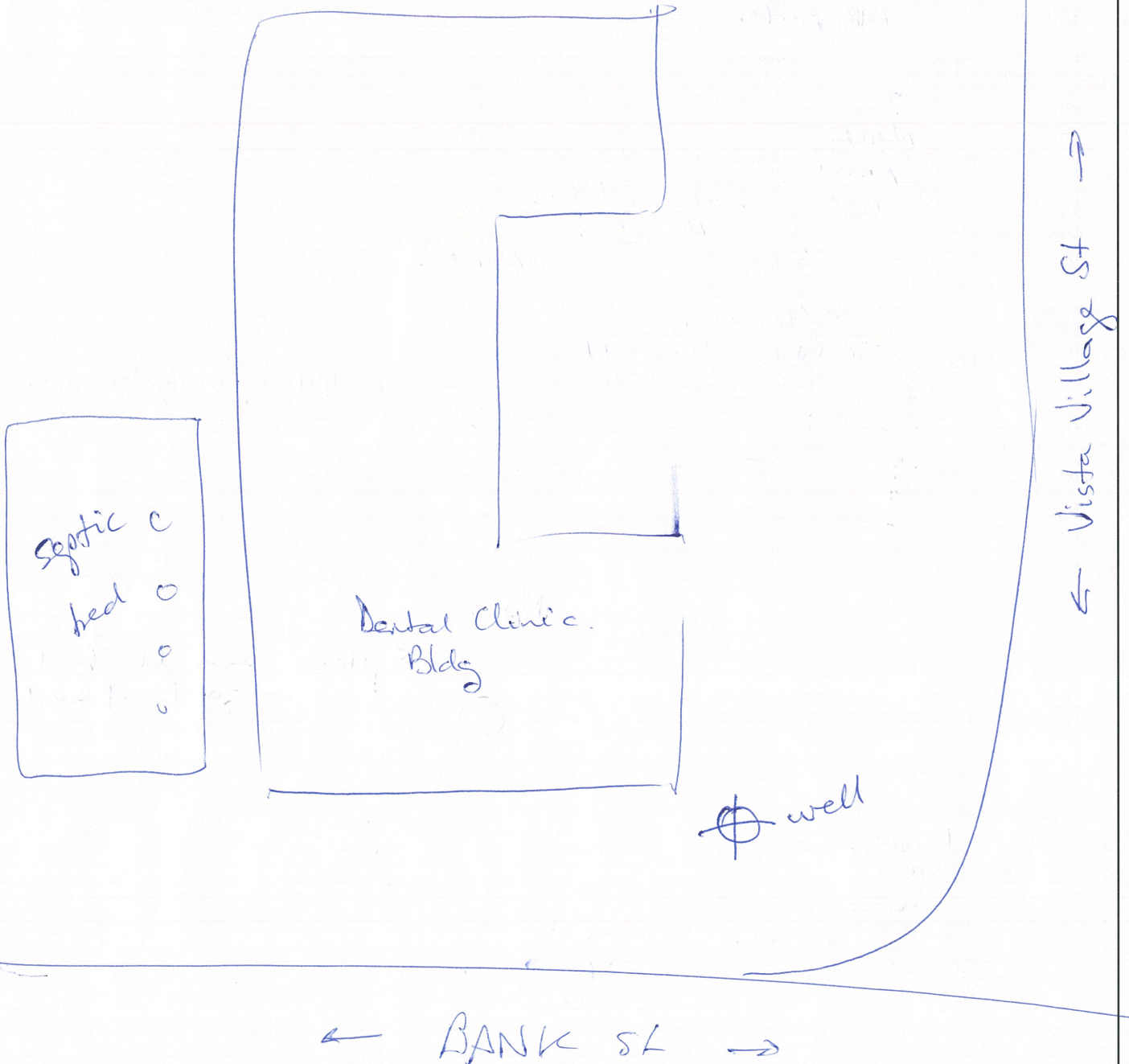
Have there been any problems with the septic system ? Y / N System was blocked - got fixed

Environmental Concerns

Surface water ? Lake.
 Septic System ? yes
 Land use ? commercial
 Neighbouring properties ? road. vacant
 Potential sources of contamination (onsite and offsite) ? none.

Please sketch the site layout showing well location and location of septic system - on reverse side of this sheet

draw site layout / show north arrow and approx scale / show well location / show 'septic system location / gradients



All dimensions in metres (m) unless otherwise noted

Appendix 4

- **Preliminary Site Development Plan**