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Civil • Geotechnical •
Structural • Environmental •
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REPORT ON

HYDROGEOLOGICAL STUDY
PROPOSED COACH HOUSE
130 BURKE STREET
RIDEAU JOCK WARD
RICHMOND, ONTARIO

Submitted to:

Scott Cummings
130 Burke Street
Richmond, Ontario
K0A 2Z0

DATE July 19, 2024

DISTRIBUTION

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240502

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July 19, 2024 240502

Scott Cummings
130 Burke Street
Richmond, Ontario
K0A 2Z0

RE: HYDROGEOLOGICAL STUDY
PROPOSED COACH HOUSE
130 BURKE STREET
RIDEAU JOCK WARD
RICHMOND, ONTARIO

Kollaard Associates Inc. was retained by Scott Cummings to undertake a hydrogeological study for proposed coach house with frontage on Burke Street in Richmond, Ontario (Key Plan, Figure 1).

It is understood that a coach house has been constructed on the existing 0.14 hectare (~0.35) property. It is the intention of the owner that the existing well is to be shared between the coach house and the existing dwelling. It is understood the existing dwelling and the proposed coach house will be connected to municipal sanitary sewer. It is understood that the coach house is located south of the existing dwelling.

Kollaard Associates Inc. carried out a six hour pumping test on the existing well at the site and obtained a water samples that were tested for the subdivision list of parameters to confirm that water quantity and quality are acceptable to service the existing and proposed residential development. Water levels in the well on the neighbouring property (128 Burke Street) were observed to measure interference.

This report consists of an evaluation of the water quality and quantity of the existing well at the subject site, and an assessment of the sewage system impact, to ensure that the water quality and quantity of the existing well is acceptable using the following documents; Ministry of the Environment, Conservation and Parks (MECP) Guideline D-5-5 and the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG). The scope of work carried out for this assessment was prepared in consideration of the City of Ottawa document “Terms of Reference Scoped Hydrogeological Study for Coach Houses”.

HYDROGEOLOGICAL STUDY

Background

A bedrock geology map for the site area indicates the bedrock at the site consists of bedded, very fine- to medium-grained dolostone; with local thin glauconitic shale beds, and interbeds of quartz sandstone and shaly dolostone of the Beekmantown Group.

The surficial geology map indicates that the subject property is located within an area of clay and silt associated with offshore marine deposits. The well records for area wells indicate that the soil thickness overlying bedrock ranges from 2.7 to 10.4 metres, consisting of clay, and/or sand and gravel.

A review of topographical information from the City of Ottawa online mapping indicates that the general topography for the area slopes from the north-northwest to the south-southeast generally towards the Jock River. The shallow groundwater flow direction is expected to closely follow topography.

The well that was used for this assessment is an existing drilled well on the property. At the time of the field investigation, the well was observed to consist of a 6 inch drilled, cased well and the wellhead was observed to be above grade. Based on these observations, the existing well is considered to be in compliance with Ontario Well Regulation 903. The well record is provided for the well on subject property in Attachment A. The well record indicates that there are about 3.4 metres of sandy clay overburden. The well depth is 61.0 metres, consisting of limestone bedrock. The well casing length is 6.1 metres. The well yield test indicated that the well testing rate was 75.7 litres per minute. The water level drawdown was 3.9 metres in response to that rate after 1 hour of pumping. The specific capacity of the well from this test is 19.4 litres per minute per metre of drawdown. Based on the well record, the recommended pumping rate was indicated to be 75.7 litres per minute.

The well record for the test well and the area well records and locations map are provided herein as Attachment A.

Area Well Records

A review of sixteen area well records was carried out. Most of the wells encountered water at a depth of about 10 to 30 metres, encountering limestone. Three deeper wells encountered water in limestone and sandstone at depths of 38, 45, and 55 metres. The well records indicate clay and sand and/or gravel with an overburden thickness of 2.7 to 10.4 metres with an average soil thickness of 4.5 metres overlying bedrock. The area wells are indicated to have between 3.7 to 10.4 metres of casing.

The well depths for the sixteen area wells are indicated to be between 10 and 61 metres, encountering limestone in all wells.

Well No.	Soil Depth (m)	Well Depth (m)	Drawdown (m)	Available Drawdown (m)	Yield Test	
					Test rate (L/min)	Spec. Cap. (m^2/day)
1509117	1.53	14.64	1.22	-	15.8	18.6
1509207	3.66	13.42	0.00	-	18.9	-
1509726	2.14	18.61	3.05	5.19	37.9	17.9

1509984	1.53	18.30	3.97	9.76	37.9	13.7
1510285	2.00	18.61	3.97	6.10	37.9	13.7
1513381	1.37	14.64	6.10	7.63	18.9	4.5
1514852	2.44	22.88	7.32	7.32	15.1	3.0
1515512	1.03	22.27	7.93	10.98	56.8	10.3
1515513	0.89	29.89	3.05	7.63	37.9	17.9
1517707	0.76	10.68	6.41	4.88	34.1	7.7
1517895	0.62	16.17	12.81	8.24	15.1	1.7
A207744	0.34	30.50	3.26	21.75	75.7	33.4
A305145	**0.20**	**61.00**	**3.90**	**38.40**	**75.7**	**27.9**

Based on the information from area well records, the specific capacities for area wells are in the range of 1.7 to 39.7 m^2/day for wells drilled between 10.7 and 61 metres deep. Transmissivity values are classified based on the amount of yield for water supply users. One classification (Kransy, Vol. 31, No. 2 – 1993 Ground Water) classifies specific capacity ranges between 1 and 100 m^2/day as low to intermediate transmissivity, which is sufficient for groundwater supply for private consumption and local water supply

The pumping rates used for most of the existing wells were between 15.1 and 151.4 litres per minute. The well record provided for the well at 130 Burke Street indicates it was drilled in 2020. The specific capacity of that well based on a one hour yield test is 19.4 litres per minute per metre, at a flow rate of 75.7 litres per minute. The well for the subject site is similar depth to the area wells receiving from the limestone. As well, it has a similar production rate as the existing area wells.

Available drawdown in the offsite wells, using their recommended pump depths and the static water level reported on the well records, indicates that available drawdown in the area wells is between 4.9 and 38.4 metres. There is sufficient available drawdown in existing wells, such that the addition of a coach house is not expected to affect water supply in offsite wells.

Water Quantity

A pumping test was carried out on May 30, 2024, at the existing well that services the dwelling at 130 Burke Street.

The testing consisted of a 6 hour duration pumping test. During the pumping test, water level measurements were made on a regular basis to monitor the drawdown of the water level in the well in response to pumping and water levels were monitored at one minute intervals using a pressure transducer (water level logger). Hourly field water quality readings were recorded for the water temperature, pH, total dissolved solids (conductivity). Turbidity was not measured in the field due to an equipment malfunction. After the pump was shut off, the recovery of the water level in the well was measured until about 95% recovery of static water level had been achieved or for 24 hours.

The well was pumped for about 360 minutes at a pumping rate of about 35 litres per minute. Over the course of the pumping test, the water level in the well dropped some 1.13 metres in response to that rate. The manual measurements indicated that the water level recovered about 83% of initial water level in some 20 minutes.

The pumping test drawdown and recovery data and plots for TW1 are provided as Attachment B. The drawdown and recovery data provided were measured with reference to the top of the well casing at the test well location.

The pumping test data for the test well was analyzed using the method of Cooper and Jacob (1946). Although the assumptions on which these equations are based are not strictly met, this method provides a reasonable estimate of the aquifer transmissivity.
Transmissivity was calculated using the following relationship:

$$T = \frac{2.3Q}{4\pi ds}$$

where Q is the pump rate, m^3/day
ds is the change in drawdown over one time log cycle, m
T is the transmissivity, m^2/day

Based on the pumping test drawdown data, the transmissivity of the aquifer is estimated to be about 57.4 m^2/day. Based on the recovery data, the transmissivity of the aquifer is estimated to be about 114.8 m^2/day. The aquifer parameters, such as transmissivity, can be determined more accurately by using a higher flow rate and a longer duration to establish hydraulic boundaries for the aquifer. The pumping rate and duration that were used were sufficient to confirm that the well yield is sufficient for the proposed use.

Based on the data obtained during the six hour pumping test, it can be concluded that the well is capable of sustaining a short term yield of at least 35 litres per minute. During the course of the six hour pumping period about 3 percent of the available drawdown in the test well was utilized, based on the recommended pump depth of 42.7 metres, and the static water level recorded the day of the pumping test. The specific capacity of the well based on the pumping rate used is 29.7 litres per minute per metre of drawdown.

The expected water demand for the site was calculated using the total expected residential occupancy. It is understood that the main (existing) house has four bedrooms and that the coach house contains two bedrooms. It is presumed that the occupancy will consist of five people in the main house and up to three people in the coach house (assuming number of bedrooms plus one for each dwelling). The peak water demand (obtained from MECP D-5-5) is taken as 3.75 litres per person per minute, equivalent to 30 litres per minute. This peak demand rate is assumed to occur for a period of two hours each day. The pump rate used for the test was above this minimum test rate.

The typical residential peak demand rate is 30 litres per minute for an eight person household (3 coach house, 5 single family dwelling). It is considered that the pumping rate used was sufficient to meet peak residential demands.

Based on the above noted assessment of the test well and what is known about the aquifer from adjacent wells, it is considered the test well will provide sufficient water for domestic use for a residential dwelling and coach house.

Observation Well – 128 Burke St

During the 6 hour pumping test, water level measurements were made on a regular basis to monitor the drawdown of the water level in an observation well located at 128 Burke Street in response to the pump test. The observation well is located some 25 metres northeast of the test well and water

levels were monitored at five minute intervals using a pressure transducer (water level logger). Over the course of the pumping test, the water level in the observation well dropped some 0.04 metres. Transmissivity of the aquifer using the observation data from 128 Burke Street was calculated to be 114.8 m^2/day. The observation well drawdown and recovery data and plots are provided as Attachment C.

The owner indicated that they have a water softener, and have not tested the water for a number of years for bacteria. They indicated that they use the water when cooking. They have lived at the property for ten years and have not had any water shortages. The property is also serviced by municipal sanitary system.

Water Quality

During the pumping test, hourly field readings of pH, temperature and total dissolved solids (conductivity) were recorded. Turbidity and chlorine residuals were not measured in the field due to an equipment malfunction. However, as the well is in regular use and no chlorine was administered to the well ahead of the field work, it is considered that free chlorine was absent prior to the pumping test. Despite no field turbidity readings, the laboratory results indicate that turbidity was between 1.6 and 2.25 NTU (less than 5 NTU).

The results of the chemical, physical and bacteriological analyses of the water samples obtained from the test well are provided in Attachment D. A summary of the water quality measured in the field are provided as Table I, Water Quality Measurements for Test Well.

Groundwater samples were prepared/preserved in the field using appropriate techniques. The water samples were submitted to Eurofins Environmental Laboratory in Ottawa, Ontario, for the chemical, physical and bacteriological analyses listed in the MECP guideline entitled Procedure D-5-5, Technical Guideline for Private Wells: Water Supply Assessment, August 1996 and trace metals identified in the City of Ottawa Hydrogeological and Terrain Analysis Guidelines. The samples that were submitted for metals testing were field filtered using 0.45 micron filter prior to placement in preserved sample bottles.

The water quality as determined from the results of the analyses is favourable. The water meets all the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) health and aesthetic parameters tested for at the test well except for hardness and TDS. Sodium is above the 20 mg/L medical advisory level for those on sodium restricted diets but is well within the aesthetic objective of 200 mg/L. The untreated sodium level of the test well is 74 mg/L.

Hardness

The water is considered to be somewhat hard by water treatment standards. Water with hardness above 80 to 100 milligrams per litre as $CaC0_3$ is often softened for domestic use. The hardness at the well is 371 to 376 milligrams per litre. Hardness level above 200 mg/L is considered poor but tolerable. Treatment using ion exchange water softeners is effective to reduce hardness.

Water softening by conventional sodium ion exchange may introduce relatively high concentrations of sodium into the drinking water, which may contribute a significant percentage to the daily sodium intake for a consumer on a sodium restricted diet. Where ion exchange water softeners are used, a separate unsoftened water supply could be used for drinking and culinary purposes.

Total Dissolved Solids

The Total dissolved solids (TDS) have an aesthetic objective (AO) of 500 mg/L. The TDS levels encountered at the test well are about 624 mg/L after three and six hours, respectively. The MOE D-5-5 Guideline comments that corrosion or encrustation of metal fixtures or appliances; taste; turbidity are all possible effects of TDS. Where TDS levels exceed 500 mg/L, written rationale that corrosion, encrustation or taste problems will not occur should be provided.

The Technical Support Document for the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG) states the following with regards to TDS:

The term total dissolved solids (TDS) refers mainly to the inorganic substances dissolved in water. The principal constituents of TDS are chloride, sulphates, calcium, magnesium and bicarbonates. The effects of TDS on drinking water depend on the levels of the individual components. Excessive hardness, taste, mineral deposition or corrosion are common properties of highly mineralized water. The palatability of drinking water with a TDS level less than 500 mg/L is generally considered to be good.

Depending on which parameters are elevated, TDS exceedances can include hardness, taste, mineral deposition or corrosion. In this case, the water samples had high hardness and alkalinity. Sodium, chloride, and sulphates (all of which are known to affect taste) are all present at very low levels and are unlikely to significantly affect the taste of the water. The Ryznar Stability Index (RSI) and Langelier Saturation Index (LSI) were calculated for both water samples. The RSI values for the water samples were 6.43 and 6.44 for the three and six hour samples, respectively. The LSI values for the water samples were 0.72 and 0.70 for the three and six hour samples, respectively. RSI values less than 6 indicate that the scale potential increases and values greater than 7 indicate that a calcium carbonate formation does not lead to a protective corrosion inhibiting film. In this case, the water has borderline scale forming and is not corrosive. Positive values for LSI indicate that scale can form and calcium carbonate precipitation may occur, while values close to zero indicate borderline scale potential. In this case, the LSI values are positive but also close to zero, indicating borderline scale potential. Combined with the RSI values, it is likely that the water is not corrosive and may be slightly scale forming. Hardness generally increases the mineral deposition. Based on the above noted information, it is considered that treatment to reduce hardness will reduce the potential for scale forming as it affects TDS. As the TDS levels are due to elevated hardness, rather than from other parameters which are known to contribute to taste (sulphates, sodium, chlorides), the palatability of drinking water is considered to be good. Provided that treatment to reduce hardness is provided, encrustation problems will not occur.

Sodium

The sodium level in the untreated water at the test well ranges between 73 to 74 mg/L which is above the medical advisory level for those on sodium restricted diets of 20 mg/L. Where sodium exceeds 20 mg/L, the MOE has historically indicated that the local Medical Officer of Health be informed so that patients on restricted diets may be informed.

Trace Metals

All trace metals were detected within the MAC or IMAC.

Bacteriological Quality

The total coliforms, E.coli were absent from both water samples (0 counts/100mL).

CONCLUSIONS AND RECOMMENDATIONS

The following water treatment is recommended for the proposed coach house:

- The water is considered to be hard by water treatment standards, 371 to 376 milligrams per litre. Treatment using ion exchange water softeners is effective to reduce hardness.
- Where ion exchange water softeners are used, a separate unsoftened water supply could be used for drinking and culinary purposes.
- Sodium level is 73 mg/L, which is above the 20 mg/l medical advisory limit but well within the aesthetic objective of 200 mg/L. When sodium levels exceed 20 mg/l, the local Medical Officer of Health should be informed so that the information can be relayed to local physicians.
- The total dissolved solids exceed the aesthetic objective of 500 mg/l. The elevated TDS is due to high hardness, which contributes calcium, magnesium and bicarbonates to the TDS levels. The elevated TDS and hardness are reduced through the water softening which will reduce potential for scale formation.

Based on the above noted site conditions, Kollaard Associates Inc. considers that the water supply is adequate to provide for the existing dwelling and the existing coach house. The amount of interference between the well and the existing wells is acceptable.

We trust this letter provides sufficient information for your purposes. If you have any questions concerning this letter, please do not hesitate to contact our office.

Yours truly,

Kollaard Associates Inc.

Isaac Bacon, P.Eng.

Colleen Vermeersch, P. Eng.

Attachments:

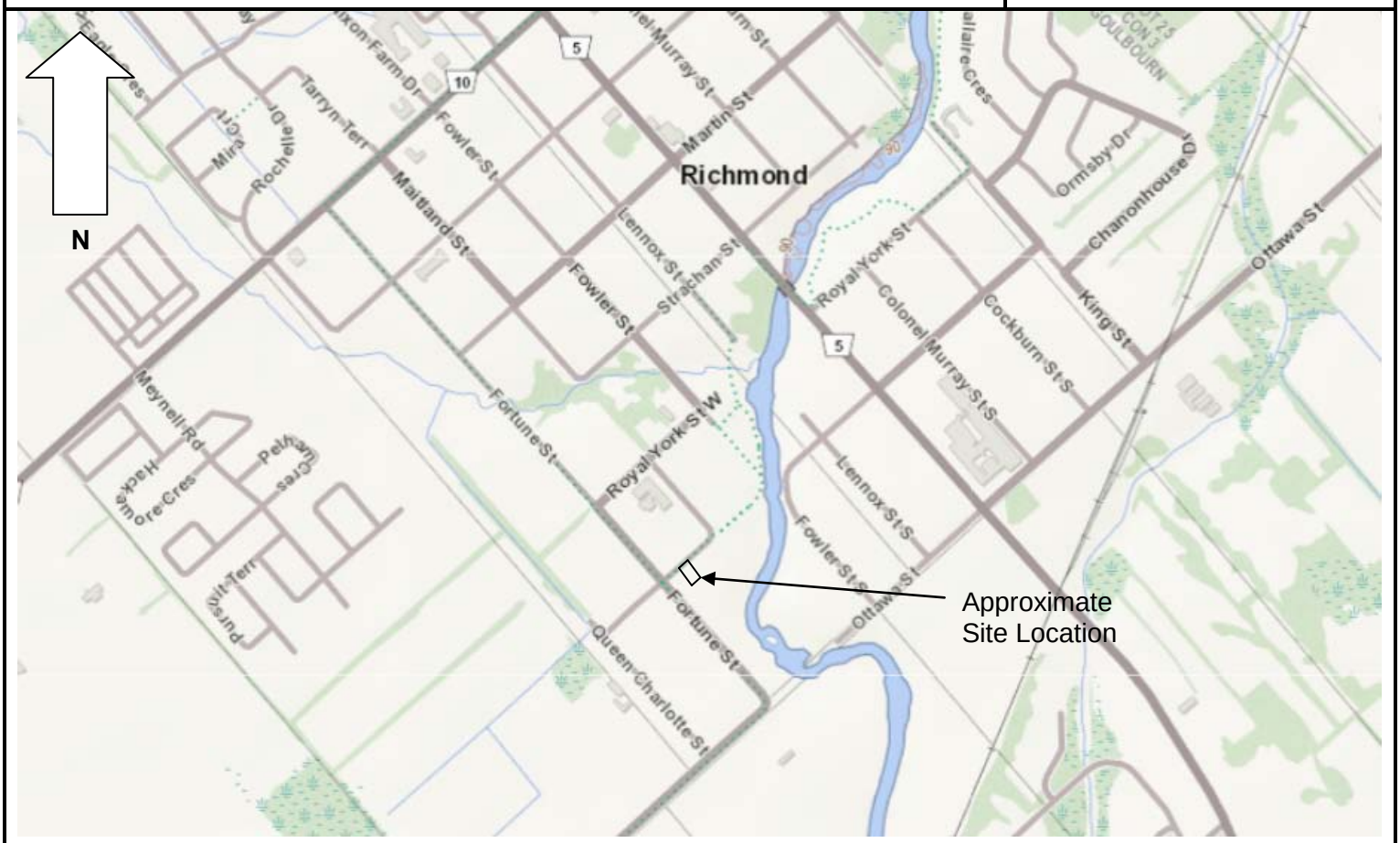
	Table I	Summary of Hourly Field Water Quality
	Figure 1	Key Plan
	Attachment A	Well Records for TW1 and Area Well Records
	Attachment B	TW1-Pumping Test Data
	Attachment C	Observation Well Data
	Attachment D	TW1-Laboratory Water Testing Results and TDS Calculations

TABLE I

FIELD WATER QUALITY MEASUREMENTS
FOR TEST WELL 1

Time Since Pumping Test Started (min)	**Turbidity** (NTU)	**Temperature** (^{0}C)	**pH**	**Conductivity** (µS)	**Total Dissolved Solids** (ppm)	**Free Chlorine** (ppm)
60	Not measured	11.9	7.31	688	346	Not measured
120	Not measured	16.5	6.86	690	351	-
180	Not measured	15	6.83	677	330	Not measured
240	Not measured	15.7	6.98	615	328	-
300	Not measured	15.9	7.2	643	325	-
360	Not measured	19	7.72	698	340	Not measured

KEY PLAN	FIGURE 1



NOT TO SCALE

Kollaard Associates
Engineers

Project No. 240502

Date May 2024

ATTACHMENT A

WELL RECORDS FOR TW1
AND
MECP AREA WELL RECORDS

TW1

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#:A305145 (Print Below)

A305145

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

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

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
2639 Pollock Road	Richmond	ON	K0A 2Z0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
130 Burke Street	Goulbourn	X	X

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

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	434408	5003727		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand	Clay		0'	11'
Grey	Limestone			11'	163'
Grey & White	Limestone			163'	180'
Grey & White	Limestone			180'	200'

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
20'	0'	Neat cement	6.24

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	20'
6"	Open Hole		20'	200'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	Hole Diameter Depth To	Hole Diameter (cm/in)
180 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	0'	20'	6 3/4"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	20'	200'	6"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 180

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 26.9'

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

Recommended pump depth (m/ft): 140'

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

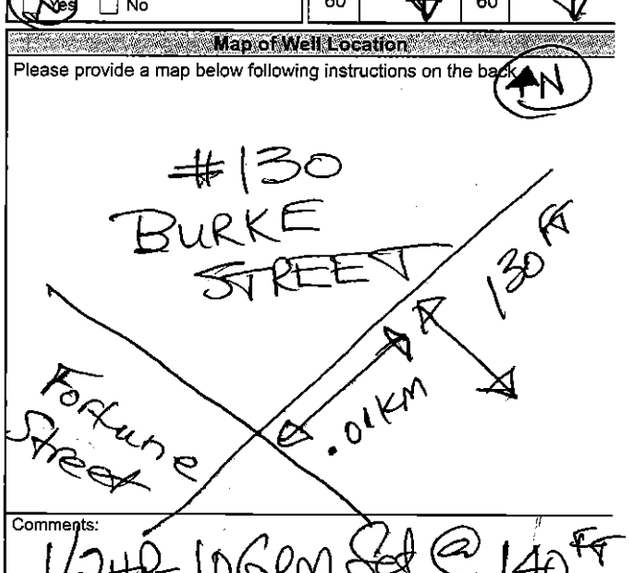
Well production (l/min/GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	14'1"		26'9"
1	20.4	1	16.8
2	23.1	2	14.1
3	24.5	3	14.1
4	24.9	4	14.1
5	25.3	5	14.1
10	26.5	10	14.1
15	26.7	15	14.1
20	26.8	20	14.1
25	26.8	25	14.1
30	26.9	30	14.1
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1/2hr 10GPM Set @ 140 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	7881

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

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

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

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
[redacted] T4033		2020 08 30

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2020 09 09	Audit No. Z344055
	Date Work Completed 2020 09 08	Received SEP 30 2020

REGIONAL WELLS MAP	APPENDIX A

NOT TO SCALE

Kollaard Associates
Engineers

Project No. 240502

Date June 2024

Summary of Well Record Information

Well No	Soil Depth m	Soil Desc.	Bedrock desc.	Casing Depth m	Total Depth m	Water Desc.	Yield Test			
							Test rate L/min	Static Level m	Specific Capacity L/min*m	Spec. Cap. m^2/day
1509117	3.66	Clay	Limestone	3.66	14.64	Fresh	15.8	1.83	12.9	18.6
1509207	10.37	Clay	Limestone	10.37	13.42	Fresh	18.9	-	-	-
1509726	4.58	Sandy clay	Limestone	6.10	18.61	Fresh	37.9	5.49	12.4	17.9
1509984	4.88	Hardpan & boulders	Limestone	6.10	18.30	Fresh	37.9	2.44	9.5	13.7
1510285	5.19	Clay & sand	Limestone	6.10	18.61	Fresh	37.9	3.05	9.5	13.7
1513381	3.66	Sand & clay	Limestone	6.71	14.64	Fresh	18.9	4.58	3.1	4.5
1514852	4.58	Clay	Limestone	6.41	22.88	Fresh	15.1	1.83	2.1	3.0
1515320	3.05	Clay & stone	Limestone and Quartz	7.63	38.13	Fresh	30.3	4.58	2.8	4.1
1515370	0.00	Well Extension	Limestone	7.63	44.84	Fresh	151.4	0.61	27.6	39.7
1515512	4.58	Sand & gravel	Limestone	7.63	22.27	Fresh	56.8	1.22	7.2	10.3
1515513	4.58	Sand & gravel	Limestone	7.63	29.89	Fresh	37.9	3.05	12.4	17.9
1517707	2.75	Clay	Limestone	5.49	10.68	Fresh	34.1	2.75	5.3	7.7
1517895	4.88	Clay	Limestone	6.41	16.17	Fresh	15.1	2.44	1.2	1.7
A187032	4.27	Clay & sand	Limestone and Sandstone	6.10	54.60	Untested	56.8	1.68	2.7	3.9
A207744	3.66	andy clay with grav	Limestone	6.10	30.50	Untested	75.7	2.65	23.2	33.4
A305145	**3.36**	**Sandy clay**	**Limestone**	**6.10**	**61.00**	**Untested**	**75.7**	**4.30**	**19.4**	**27.9**

316/4f. "A"

3 4 3 8 0 E

3 5 2 10 N

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

Drilling Firm.....

Address.....

Name of Driller.....

Date.....

ONTARIO

The Well Drillers Act

Department of Mines, Province of Ontario

RECEIVED
JUN 19 1953
GEOLOGICAL BRANCH
DEPARTMENT of MINES

15 No 9117

FORM 5

Well Record

[redacted], Village, ~~Town or City~~ Richmond

(Town or City)

Richmond Ont.

Date Completed 11 (day) Jan. (month) 53 (year) Cost of Well (excluding pump)

Pipe and Casing Record

Casing diameter(s) 4 inch

Length(s) of casing(s) 12 ft.

Type of screen N.O. screen

Length of screen

Distance from top of screen to ground level

Is well a gravel-wall type?

Pumping Test

Date Jan. 11 1953

Static level 6

Pumping level 10 feet

Pumping rate 250 per hour

Duration of test half hour

Distance from cylinder or bowls to ground level

Water Record

Kind (fresh or mineral) fresh

Quality (hard, soft, contains iron, sulphur, etc.) soft

Appearance (clear, cloudy, coloured) clear

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

How far is well from possible source of contamination? 40 yds.

What is the source of contamination? septic tank

Enclose a copy of any mineral analysis that has been made of water

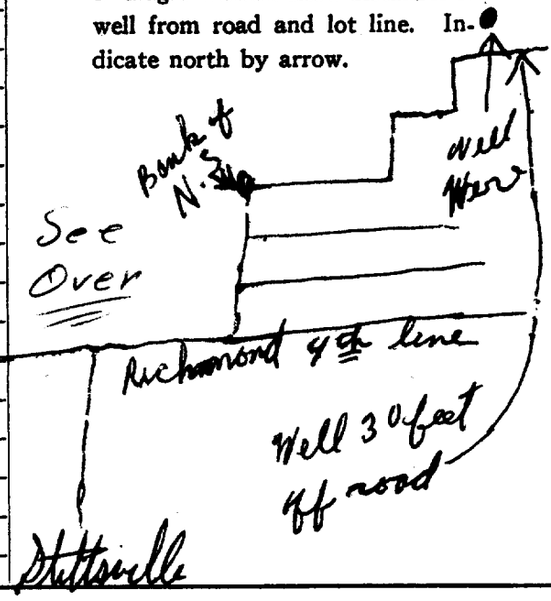
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
40	fresh	42

Well Log

Overburden and Bedrock Record	From	To
	0 ft.	....ft.
12 feet of blue Clay	0	12
36 feet " grey limestone	12	48

Location of Well

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



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

Drilling Firm T. B. Sparks

Address Stittsville Ont.

Name of Driller Clayton Sparks Address Stittsville Ont.

Date Jan. 11 1953 Licence Number 396

C. H. Sparks
Signature of Licensee

FORM 5

31G/4f. 'A'

UTM 18 Z 413441 E 5 R 5010315310 N

Elev. 4 R 0310

Basin 25

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

15 No. 9207

GROUND WATER BRANCH JAN 1 1960 RESOURCES COMMISSION

County or District Carleton Township, Village, Town or City Richmond

Con. — Lot — Date completed 21 (day) Oct (month) 59 (year)

[redacted] ress 2 Maitland St Richmond

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 34'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 4"

Pumping Test

Static level Flowing

Test-pumping rate 5 G.P.M.

Pumping level Top

Duration of test pumping 1 Hr

Water clear or cloudy at end of test Clear

Recommended pumping rate 5 G.P.M.

with pumping level of Top

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Clay	0	34			
Limestone	34	44	44	44	Fresh

Water Record

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

House

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

Drilling Firm J Meagher

Address Ottawa

Licence Number

Name of Driller Same

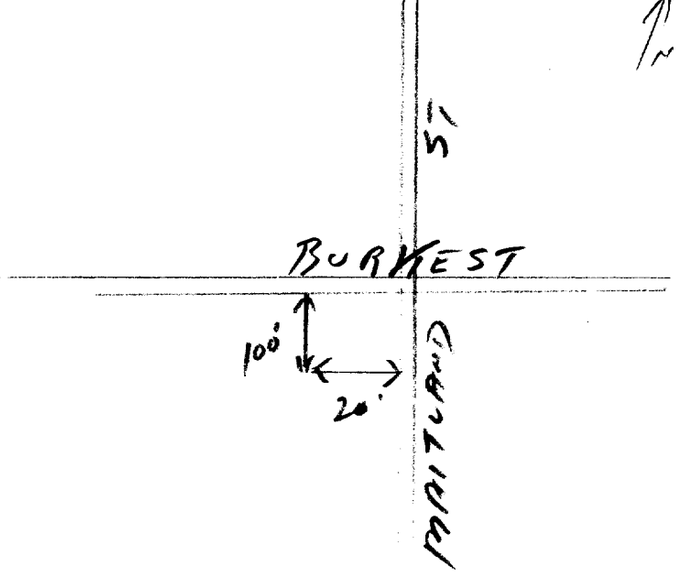
Address

Date Jan 11/59

(Signature of Licensed Drilling Contractor)

Location of Well

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



Form 5

UTM 18 · 434325
14 · 5034115

Elev. 4 · 0308

Basin 25

CODED

Water management in Ontario

1509726

3 9

B

JAN 8 1969

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District: Carleton
Township, Village, Town or City: Richmond
Con.: III Lot: 23
Date completed: 18 (day) Nov (month) 1968 (year)
Owner (print in block letters): Julia Construction Ltd
Address: Richmond Ont.

Casing and Screen Record

Inside diameter of casing	5"
Total length of casing	20'
Type of screen	
Length of screen	
Depth to top of screen	
Diameter of finished hole	5"

Pumping Test

Static level	18
Test-pumping rate	10 G.P.M.
Pumping level	28
Duration of test pumping	1 hr
Water clear or cloudy at end of test	
Recommended pumping rate	5 G.P.M.
with pump setting of	35' feet below ground surface

Well Log / **Water Record**

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
sandy clay with boulders	0	15'	60	fresh
limestone	15	61		

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

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

Drilling or Boring Firm: Capital Water Supply Ltd

Address: 14 Ashford Dr Ottawa 6

Licence Number: 2851

Name of Driller or Borer: B Acres

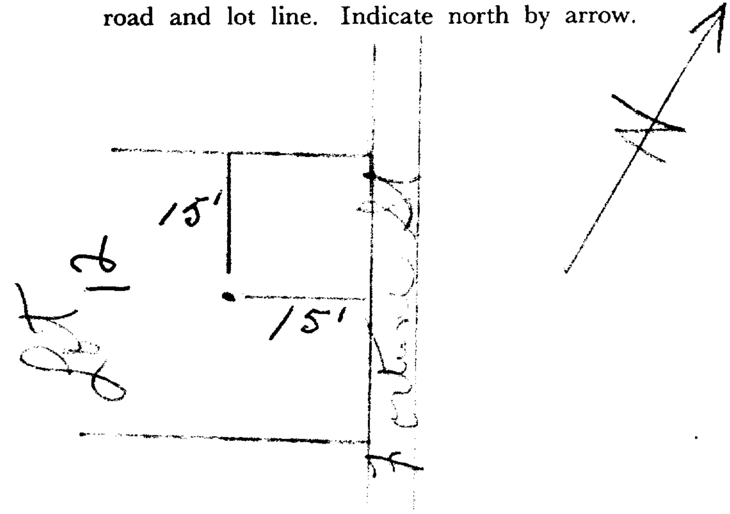
Address:

Date: Nov 18 1968

Walter Kavanagh
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7

OWRC COPY

Tp. 18 434320 CODED 1509984
4 5703430
Rv. 4 0308
Con 25

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carleton
Township, Village, Town or City Richmond
Con NE Lot 23
Date completed 14 (day) Jan (month) 1969 (year)
[redacted] ress 3716 Richmond Rd.

Casing and Screen Record

Inside diameter of casing 5"
Total length of casing 20'
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 5"

Pumping Test

Static level 8'
Test-pumping rate 10 G.P.M.
Pumping level 25
Duration of test pumping 1 hr
Water clear or cloudy at end of test
Recommended pumping rate 5 G.P.M.
with pump setting of 40 feet below ground surface

Well Log

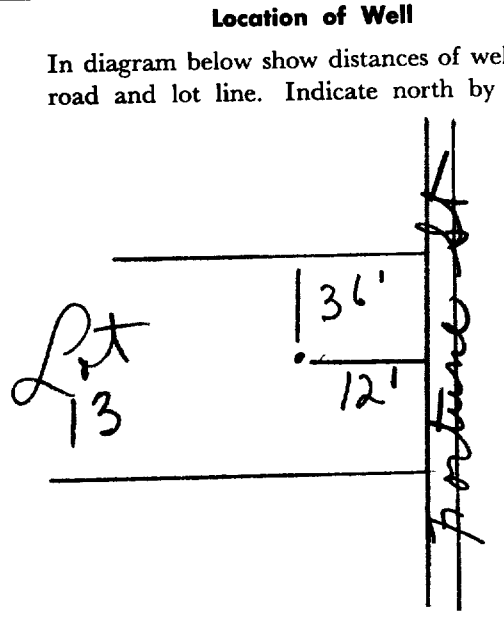
Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
hardpan & boulders	0'	16'	58'	fresh
limestone	16'	60'		

For what purpose(s) is the water to be used?
new house
Is well on upland, in valley, or on hillside?
Drilling or Boring Firm Capital Water Supply Ltd.
Address 14 Ashford Dr Attawa 6
Licence Number 3216
Name of Driller or Borer H Mains
Address
Date Jan 14 1968
Walter Kavanagh
(Signature of Licensed Drilling or Boring Contractor)

Form 7
OWRC COPY

Location of Well

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



The Ontario Water Resources Commission Act

WATER WELL RECORD

Water management in Ontario

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

11 | 1510285 | MUNICIP. 15701 | CON.

COUNTY OR DISTRICT: Carl | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Richmond | CON., BLOCK, TRACT, SURVEY, ETC. | LOT

OWNER (SURNAME FIRST): Julia Constr Ltd | ADDRESS: Richmond Ont. | DATE COMPLETED: DAY 21 MO 07 YR 69

21 | UTM ZONE 18 | EASTING 434350 | NORTHING 5023490 | RC. | ELEVATION 03110 | RC. | BASIN CODE 25

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
brown	clay	sand	gritty	0'	10'
grey	hardpan		hard	10'	17'
grey	limestone		hard	17'	61'

31 | 08/06/1969 | 08/17/1969 | 08/21/1969

32

41 WATER RECORD

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

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	20
5"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		20'	61'
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0061
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

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

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
010 FEET	023 FEET		FEET	FEET	FEET	FEET

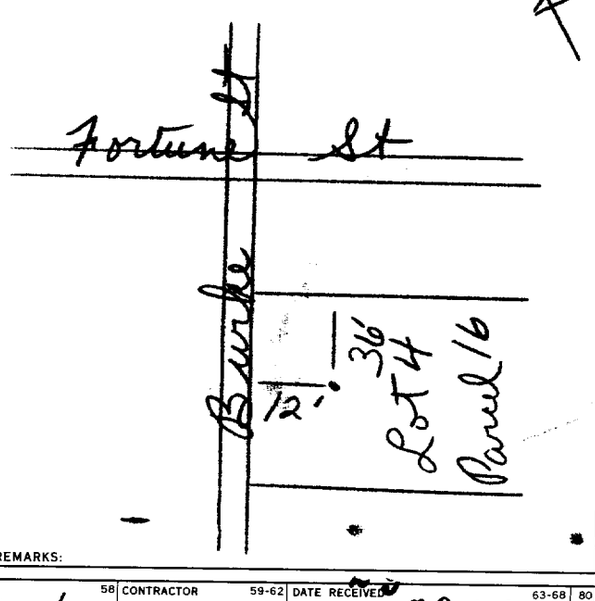
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: 030 FEET | RECOMMENDED PUMPING RATE: 0005 GPM.

50-53 --000-8 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL

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

WATER USE

55-56 | 01 | 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply | LICENCE NUMBER: 3216

ADDRESS: 14 Ashford Dr Ottawa

NAME OF DRILLER OR BORER: D Scott | LICENCE NUMBER

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

OWRC COPY

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1503 | DATE RECEIVED 63-68: 301069

DATE OF INSPECTION | INSPECTOR: Chilly PIP

REMARKS:

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario

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

11 | 1513381 | MUNICIP. 1520 | CON.

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

[redacted] 79 FORTUNE
125, Manotick Ontario.

DATE COMPLETED: DAY 25 MO. 05 YR. 73

RC.	ELEVATION	RC.	BASIN CODE	II	III	IV
03557	4	306	4	26		

MAR 17, 1975 248

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	sand		loose	0	2
dark	clay		packed	2	12
dark	limestone		medium	12	48

31 | 0001628 | 0012 05 | 0048 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0035	1 ☒ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
0044	1 ☒ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
0048	1 ☒ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR / 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL / 2 ☐ GALVANIZED / 3 ☐ CONCRETE / 4 ☒ OPEN HOLE	188	0	0022
5 - 14			22	48
06	4 ☒ OPEN HOLE		22	0048

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS	MINS
1 ☒ PUMP 2 ☐ BAILER	0008	04	00

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
015 FEET	035 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	035 FEET	035 FEET	035 FEET	035 FEET

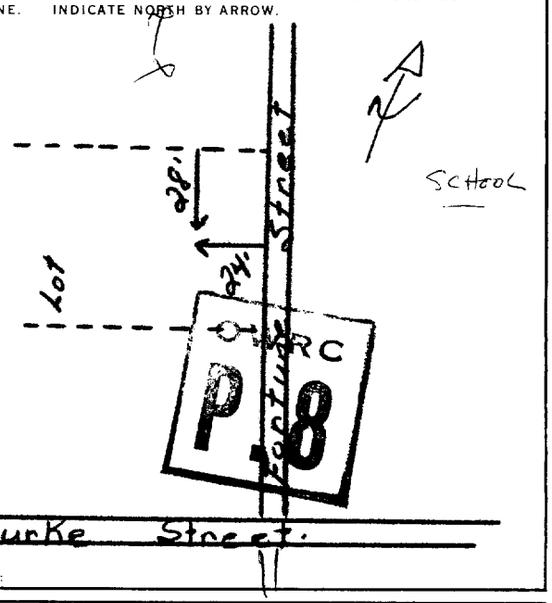
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☒ SHALLOW ☐ DEEP	040 FEET	0005 GPM

000.4

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL

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

WATER USE 01

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

METHOD OF DRILLING

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

CONTRACTOR

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

ADDRESS: Box 490, Stittsville, Ontario.

NAME OF DRILLER OR BORER: Lenny Dryman | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh | SUBMISSION DATE: DAY 28 MO. 5 YR. 73

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1558 | DATE RECEIVED 130873

DATE OF INSPECTION | INSPECTOR K

REMARKS: P-R

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

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

11 | 1514852 | MUNICIP. 15701 | CON.

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Richmond | CON., BLOCK, TRACT, SURVEY, ETC.: Fortune St. 98 | LOT: [redacted]

[redacted] Richmond Ont. | DATE COMPLETED: DAY 13 MO. 06 YR. 75

HING | RC. | ELEVATION | RC. | BASIN CODE | II | III | IV

5003450 | 4 | 310 | 4 | 26 | AUG 04, 1977 | 303

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	clay			0	15
grey	limestone			15	75

31 | 00015205 | 00075215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0072	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	21 0021
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER | PUMPING RATE: 0004 GPM | DURATION OF PUMPING: 01 HOURS 00 MINS

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

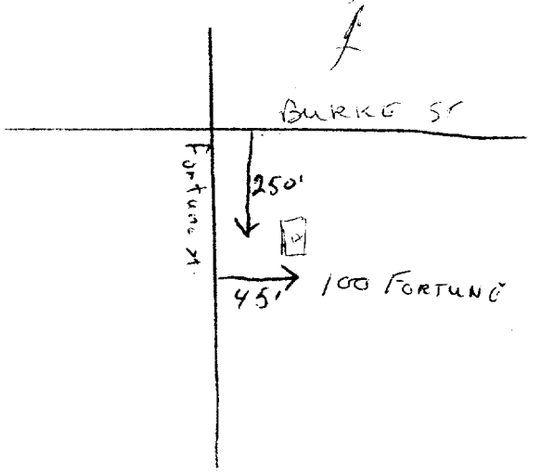
IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: 030 FEET | RECOMMENDED PUMPING RATE: 0003 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 3403

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



DRILLERS REMARKS:

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

WATER USE 55-56: 01 — 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 57: 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: Harry Mains Well Drilling | LICENCE NUMBER: 3644

ADDRESS: Box 326, Richmond Ont.

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

SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY 14 MO. 6 YR. 75

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 3644 | DATE RECEIVED 63-68: 150875 | 80

DATE OF INSPECTION: 24 Aug 75 | INSPECTOR: P.K. Dayton

REMARKS: P | WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario

31 G/4F

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

11 — 1515320 — MUNICIP 15701 — CON.

COUNTY OR DISTRICT: Carleton

TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Richmond

CON., BLOCK, TRACT, SURVEY, ETC.: Burke St

LOT: ~~25~~ III

OWNER (SURNAME FIRST): [redacted] Richmond

DATE COMPLETED: DAY 27 MO 04 YR 76

RING | RC. | ELEVATION | RC | BASIN CODE | II | III | IV

003441 | 4 | 308 | 4 | 26 | JUN 28, 1977 | 300

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	clay	stone		0	10
grey	limestone			10	122
white	quartz			122	125

31 — 0010205/12 — 012212/5 — 012/5146

22

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0124	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0025
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0008 GPM

DURATION OF PUMPING: 0 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
015 FEET	050 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	050 FEET	050 FEET	050 FEET	050 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: FEET

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

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

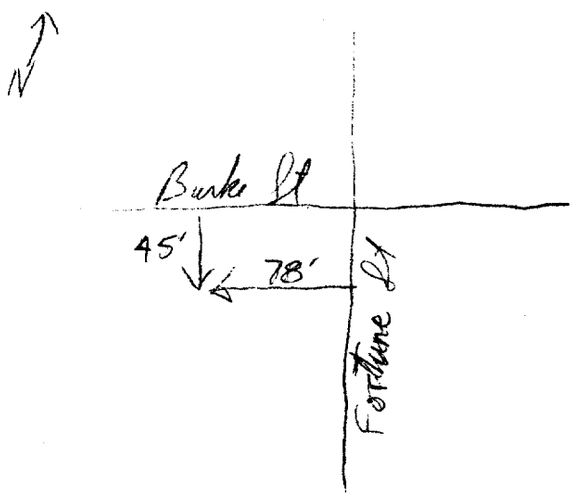
RECOMMENDED PUMP SETTING: 050 FEET

RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 3403

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



DRILLERS REMARKS:

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

WATER USE 55-56: 01 — 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 57: 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: Harry Mains Well Drilling — LICENCE NUMBER: 3654

ADDRESS: Box 326, Richmond Ont

NAME OF DRILLER OR BORER — LICENCE NUMBER

SIGNATURE OF CONTRACTOR

SUBMISSION DATE: DAY 29 MO 4 YR 76

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 3644 — DATE RECEIVED 63-68: 060576

DATE OF INSPECTION: June 16/1976 — INSPECTOR: DE Pentney

REMARKS:

P Del

WI

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FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

31/5/46

Ontario

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

11 | 1515370 | MUNICIP 15701 | CON. CON 03

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Richmond	023	023 15

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Walter Hardkye Constr.	Richmond, Ontario	DAY 12 MO 05 YR 76

21 | UTM ZONE 18 | EASTING 434299 | NORTHING 5003499 | RC 4 | ELEVATION 0310 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
		previously drilled		0	115
grey	limestone			115	147

31 | 0115 24 | 0147 25

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0065	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0113	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0140	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

OUTSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	188	0	0025
06			25	~~115~~
06 5	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒		115	0115 ~~147~~
05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0147

SCREEN

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

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS	MINS
1 ☐ PUMP 2 ☒ BAILER	0040	01	00

STATIC LEVEL FEET	WATER LEVEL END OF PUMPING FEET	WATER LEVELS DURING 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
002	020	FEET	020	020	020	020

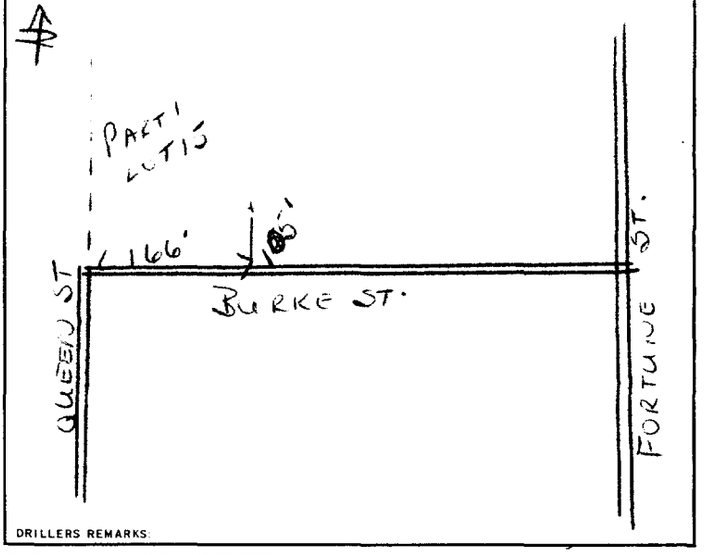
IF FLOWING, GIVE RATE GPM	PUMP INTAKE SET AT FEET	WATER AT END OF TEST 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM
☒ SHALLOW ☐ DEEP	030	0005

50-53 ——•—— GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

54 FINAL STATUS OF WELL 1

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

55-56 WATER USE 01

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

57 METHOD OF DRILLING 1

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

CONTRACTOR

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

ADDRESS: Box 490 Stittsville, Ontario

NAME OF DRILLER OR BORER: M. Kavanagh | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh | SUBMISSION DATE: DAY ~~13~~ MO. ~~5~~ YR ~~76~~

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1558 | DATE RECEIVED 63-68: 090676 | 80

DATE OF INSPECTION: Aug 18/76 | INSPECTOR: [illegible]

REMARKS: [redacted]

P 097

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

31G/4F

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11 | 1515512 | MUNICIP. 15704 | CON. CON | 03

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Goulburn (Richmond)	East Fortune 3	022 part 2 22

[redacted] Biscayne Cres. Ottawa, Ontario

DATE COMPLETED: DAY 12 MO 07 YR 76

[redacted] 003420 4 | ELEVATION 0308 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	sand	gravel	loose	0	15
grey	limestone		broken	15	23
grey	limestone		~~23~~	23	73

31 | 0015628 1177 | 0023215 71 | 0073215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0070	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4 06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0025
5 7/8	4 ☒ OPEN HOLE		25	73
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0073
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN (FEET)

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0015 GPM.	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
004 FEET	030 FEET	030 FEET	030 FEET	030 FEET	030 FEET

WATER LEVELS DURING: ☒ PUMPING ☐ RECOVERY

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

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 040 FEET | RECOMMENDED PUMPING RATE: 0005 GPM

50-53 ———·— GPM./FT. SPECIFIC CAPACITY

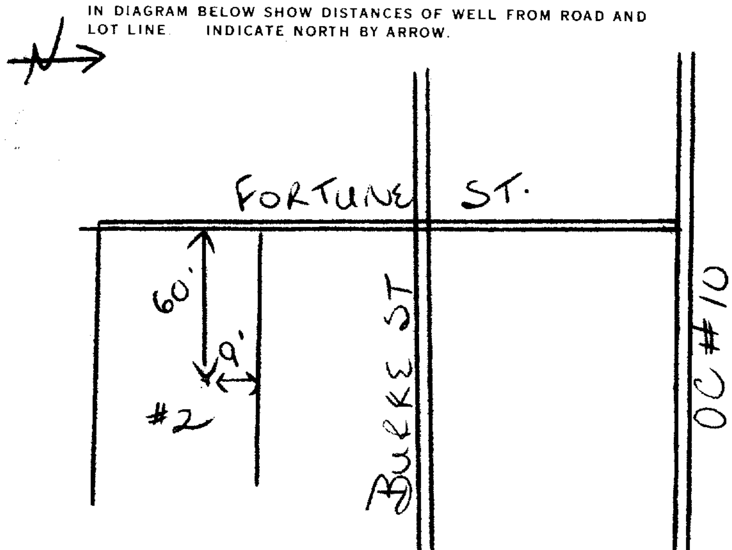
FINAL STATUS OF WELL 1: 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

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

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

LOCATION OF WELL

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



DRILLERS REMARKS:

CONTRACTOR

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

ADDRESS: Box 490 Stittsville Ontario

NAME OF DRILLER OR BORER: D. McDougall | LICENCE NUMBER:

Box490 Stittsville, Ontario

SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 13 MO. 7 YR. 76

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 1558 | DATE RECEIVED: 090876

DATE OF INSPECTION: 17/6/77 | INSPECTOR: [signature]

REMARKS: | P ✓ | WI

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The Ontario Water Resources Act

WATER WELL RECORD

31G/4f

Ontario

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11 | 1515513 | MUNICIP 15704 | CON. CON | 03

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Goulburn (Richmond)
CON. BLOCK, TRACT, SURVEY, ETC.: East Fortune 3
[redacted] 7 Biscayne Cres, Ottawa, Ontario
DATE COMPLETED: DAY 12 MO 07 YR 76
UTM: 003370 4 | ELEVATION: 0308 | SRC: 4 | UTM CODE: 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	sand & gravel			0	13
grey	limestone		broken	13	22
grey	limestone			22	98

31: 0013628 | 00222157 | 0098215
32:

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0095	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	188	0	0025
06			25	98
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0098
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

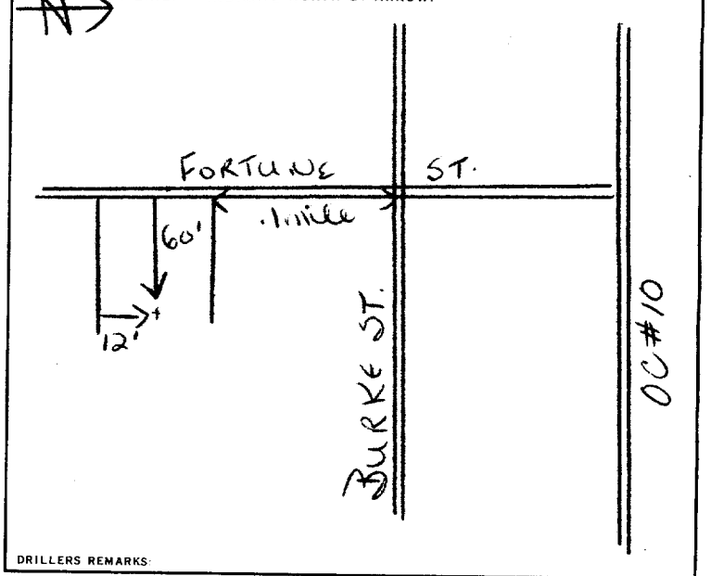
PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER
PUMPING RATE: 0010 GPM
DURATION OF PUMPING: 01 HOURS 00 MINS
WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
010 FEET	025 FEET	025 FEET	025 FEET	025 FEET	025 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 035 FEET
RECOMMENDED PUMPING RATE: 0005 GPM
GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

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



DRILLERS REMARKS:

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

WATER USE 55-56: 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: Capital Water Supply Ltd. | LICENCE NUMBER: 1558
ADDRESS: Box 4[illegible] Stittsville, Ontario
NAME OF DRILLER OR BORER: D. [illegible] | LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 13 MO 7 YR 76

DWO 3.9

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1558 | DATE RECEIVED 090876
DATE OF INSPECTION 17/6/77 | INSPECTOR KM PQ
REMARKS:
P ✓
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FORM 7 MOE 07-091

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Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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11 1517707 MUNICIP. 1570 | CON. CON | 03

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Goulbourn	3	023 025 22

[redacted] Burke St., Richmond, Ont.

DATE COMPLETED: DAY 24 MO 04 YR 81

UTM ZONE 18 | 0034 99 | RC 4 | ELEVATION 0310 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Blue	Clay			0	9
	Broken Rock			9	11
	Hard Limestone			11	35

31 9999995 | 0011 | 1271 | 0035 | 1573

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0025	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	.188	0	0018
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0009 GPM	00 HOURS 30 MINS

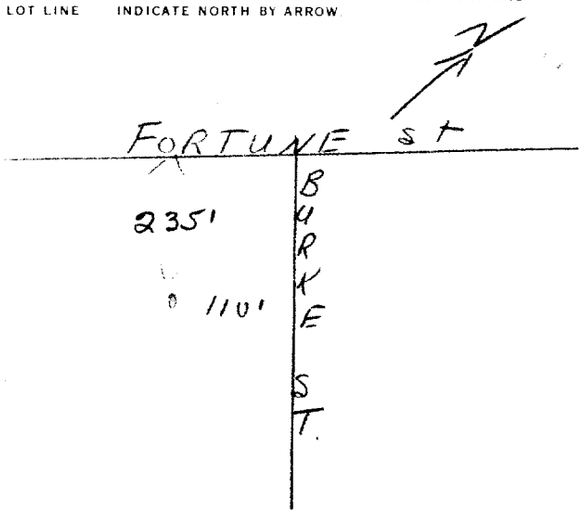
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
009 FEET	030 FEET		FEET	009 FEET	009 FEET	009 FEET

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

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☒ SHALLOW ☐ DEEP	025 FEET	0005 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

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

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

METHOD OF DRILLING 4
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: McLean Water Supply Ltd. — LICENCE NUMBER: 3504

ADDRESS: 1532 Raven Ave. Ottawa, Ont.

NAME OF DRILLER OR BORER: A. Scharf — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: A. Scharf — SUBMISSION DATE: DAY 24 MO 4 YR 81

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 3504 | DATE RECEIVED 11 02 82

DATE OF INSPECTION | INSPECTOR

REMARKS

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Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

31G4f

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11 1517895

MUNICIP 5701 CON. CON 03

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Goulbourn	Fortune Street	023 Pt 023 18

[redacted] 6 Burke St., Richmond. Ont.

DATE COMPLETED 48-53: DAY 12 MO 03 YR 82

UTM ZONE 18 | EASTING 0349.9 | RC 4 | NORTHING 0310 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Blue	Clay			0	16
	Limestone			16	53

31 0016305 0053 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0024	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0053	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0021
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

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

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☒ PUMP 2 ☐ BAILER	0004 GPM	00 HOURS 30 MINS

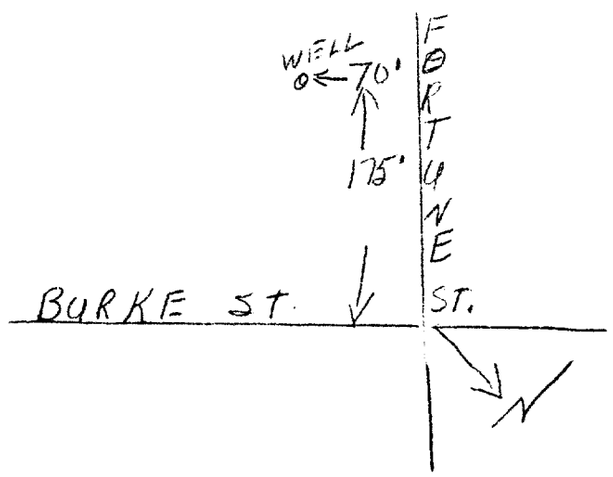
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☒ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
008 FEET	050 FEET		008 FEET	008 FEET	008 FEET	008 FEET

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

RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
035 FEET	0004 GPM

LOCATION OF WELL

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



DRILLERS REMARKS:

FINAL STATUS OF WELL 1

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

WATER USE 01

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

METHOD OF DRILLING 4

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: McLean Water Supply Ltd. LICENCE NUMBER: 3504

ADDRESS: 1532 Raven Ave., Ottawa. Ont.

NAME OF DRILLER OR BORER: A. Scharf LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: A. Scharf SUBMISSION DATE: DAY 12 MO. 3 YR. 82

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 3504 | DATE RECEIVED 10 09 82

DATE OF INSPECTION | INSPECTOR

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ontario Ministry of the Environment

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

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☒ Imperial

[redacted]

Address of Well Location (Street Number/Name): #122 Burke Street | Township: Goulbourn | Lot | Concession

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

UTM Coordinates: NAD 83 | Zone 18 | Easting 434444 | Northing 5003776 | Municipal Plan and Sublot Number: PLAN D-18 | Other: Unit 39

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	4" Drilled well Abandonment			0	42'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
42	0	Holeplug	

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To

Construction Record - Screen

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

Status of Well

☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☒ Abandoned, other, *specify* NOT USEABLE ☐ Other, *specify*

Water Details

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

Hole Diameter

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

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min / GPM)

Well production (l/min / GPM)

Disinfected? ☒ Yes ☐ No

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

Map of Well Location

Please provide a map below following instructions on the back.

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR Rock Drilling Gold | Well Contractor's Licence No.: 1119

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)*: 6138382170 | Name of Well Technician (Last Name, First Name): Desaulniers Ken

Well Technician's Licence No.: TA | Signature of Technician and/or Contractor | Date Submitted: 2008 08 01

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

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

Date Work Completed: 20080722

Ministry Use Only

Audit No. Z 80764

AUG 14 2008

Received

0506E (12/2007)

Ministry's Copy

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☒ Imperial

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

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

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

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
2639 Pollock Road	Richmond Ont		K0A2Z0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#130 BURKE STREET	GOULBOURN	X	X

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

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	434407	5003721		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	6" Drilled Well Abandonment			0'	33'

*New 6" Drilled well - Sept 8, 2020
TAG A305145 - Audit Z344055

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
33'	4'	3/8 Hole Plug	10 Bags
4'	0'	Backfill	

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To

Construction Record - Screen

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

Status of Well

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

Water Details

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

Hole Diameter

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

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at (m/ft)

Pumping rate (l/min / GPM)

Duration of pumping ____ hrs + ____ min

Final water level end of pumping (m/ft)

If flowing give rate (l/min/GPM)

Recommended pump depth (m/ft)

Recommended pump rate (l/min/GPM)

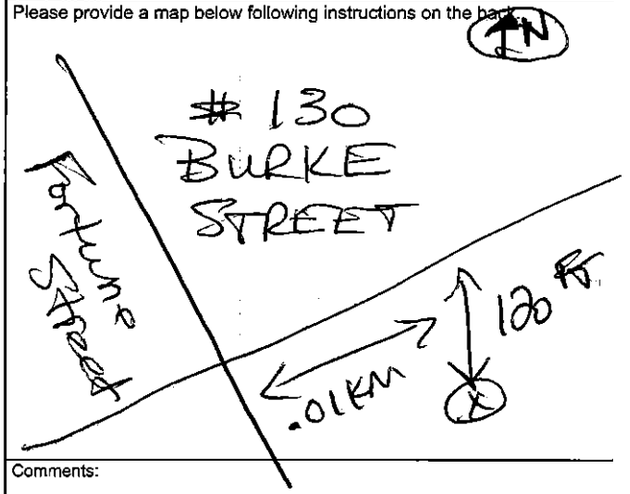
Well production (l/min/GPM)

Disinfected? ☒ Yes ☐ No

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING CO LTD	7681

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

Province	Postal Code	Business E-mail Address
Ont	K0A2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138882170	HANNA Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3632		2020/12/31

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

Date Package Delivered: ____

Date Work Completed: 2020/12/12

Ministry Use Only

Audit No. Z344149

Received JAN 08 2021

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Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A187032 (Print Below)

A187032

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
98 Fortune Street	Goulbourn	X	X

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

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	434387	5003692	Plan D-18	Part U-37

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Clay	& Sand		0'	14'
Grey	Limestone			14'	156'
White	Sandstone			156'	173'
White	Sandstone			173'	179'

* PLAN 4R3417 - Parts 2-4

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
20'	10'	Neat cement	12.5
10'	0'	Bentonite slurry	29.4

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	20'
5 15/16"	Open Hole		20'	179'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth (m/ft)	Kind of Water	
73'	☐ Gas	☒ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft)	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*
Water found at Depth (m/ft)	☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	20'	9 3/4"
20'	179'	5 15/16"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 160

Pumping rate (l/min / GPM): 15 US

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 73.8'

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

Recommended pump depth (m/ft): 120'

Recommended pump rate (l/min / GPM): 12

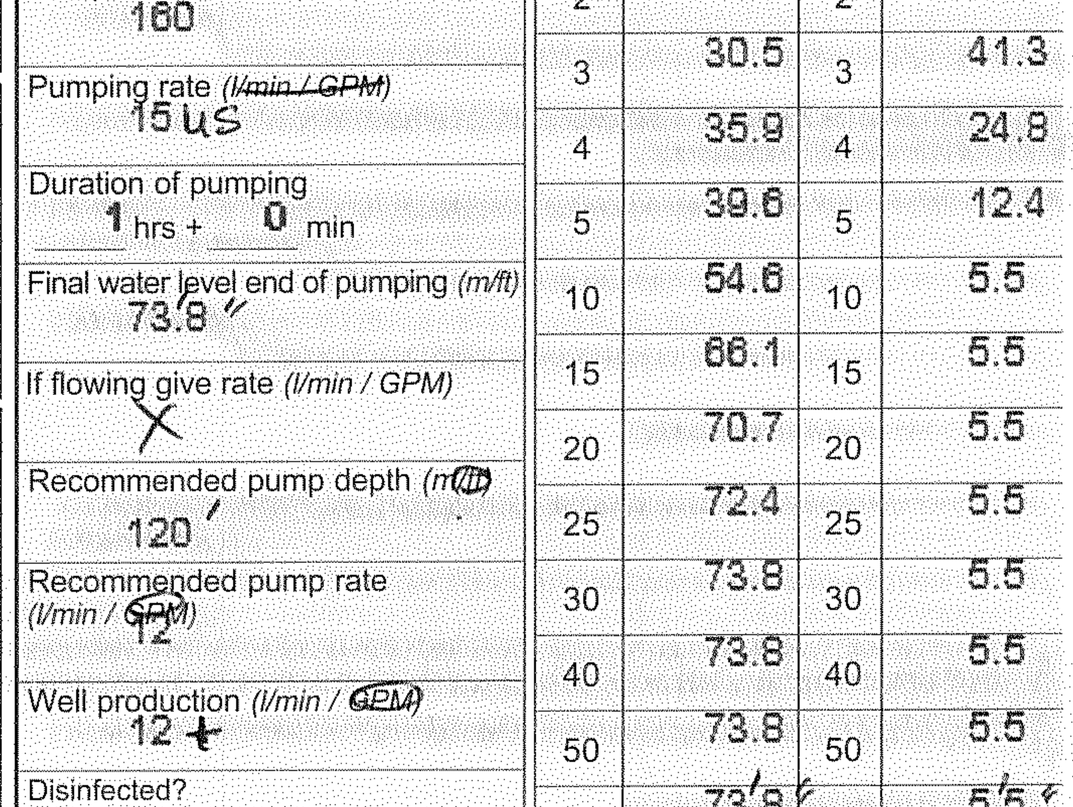
Well production (l/min / GPM): 12 +

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	5.5'		73.8'
1	16.3	1	64.7
2	22.2	2	53.9
3	30.5	3	41.3
4	35.9	4	24.8
5	39.6	5	12.4
10	54.6	10	5.5
15	66.1	15	5.5
20	70.7	20	5.5
25	72.4	25	5.5
30	73.8	30	5.5
40	73.8	40	5.5
50	73.8	50	5.5
60	73.8'	60	5.5'

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1/2 HP - 10 GPM SET @ 120 FT

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
6550 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	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3632		2015 07 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2015 07 02	2015 06 30

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Audit No. Z 191516

SEP 22 2015 Received

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7285368

Ontario — Ministry of the Environment and Climate Change

Tag#: A 207744

A 207744

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Measurements recorded in: ☐ Metric ☒ Imperial

ESTATE OF HELEN BROWN

Address of Well Location (Street Number/Name)	Township	Lot	Concession
# 126 BURKE STREET	GOULBOURN	X	X

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

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	434431	5003742	PLAN D-18	UNIT 39

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sandy Clay with Gravel & Boulders			0'	12'
Grey & Black	Limestone			12'	100'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
20'	0'	Neat Cement Slurry	12.48

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188	+2'	20'
5 15/16"	Open Hole		20'	100'

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth (m/ft)	Kind of Water	
38	☐ Fresh ☒ Untested	☐ Gas ☐ Other, specify
78	☐ Fresh ☒ Untested	☐ Gas ☐ Other, specify
94	☐ Fresh ☒ Untested	☐ Gas ☐ Other, specify

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	20'	9 3/4"
20'	100'	5 15/16"

Results of Well Yield Testing

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

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 80'

Pumping rate (l/min / GPM): 20

Duration of pumping: ____ hrs + 0 min

Final water level end of pumping (m/ft): 19'.4"

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

Recommended pump depth (m/ft): 80'

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

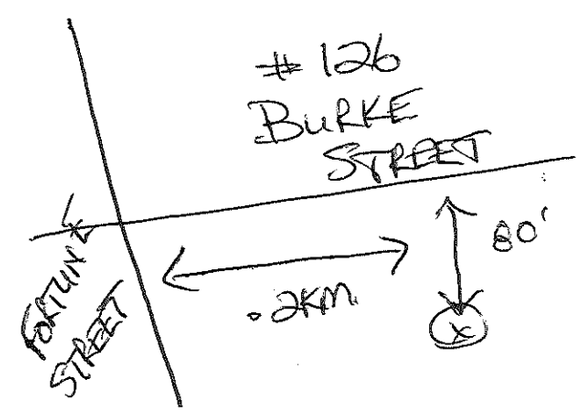
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	8'.7"		19'.4"
1	14.8	1	10.'
2	16.3	2	8'.7"
3	17.	3	8.7"
4	17.3	4	
5	17.6	5	
10	18.	10	
15	18.3	15	
20	18.5	20	
25	18.7	25	
30	18.8	30	
40	19.	40	
50	19.2	50	
60	19.4	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1/2HP-10GPM Set @ 80 FT

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
RR#1	RICHMOND

Province	Postal Code	Business E-mail Address
ONT	K0A2Z0	

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		2017/03/28

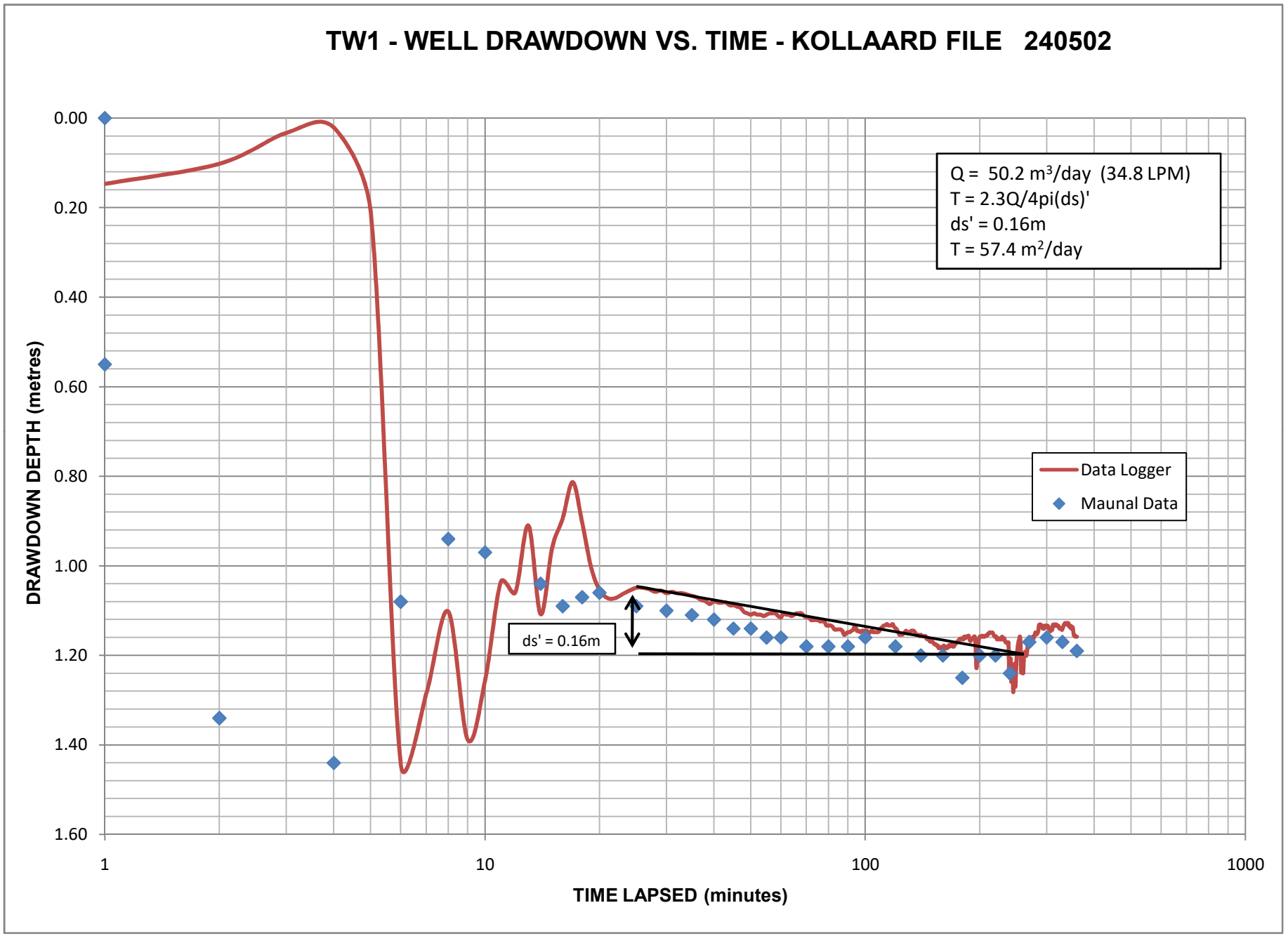
Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	2017/04/27	Audit No. Z237286
	Date Work Completed: 2017/01/26	APR 18 2017 Received

0506E (2014/11) Ministry's Copy

ATTACHMENT B

PUMPING TEST DATA (TW1)

TW1 - WELL DRAWDOWN VS. TIME - KOLLAARD FILE 240502



Kollaard File 240502 Pump Rate 34.8 litres/minute

DRAWDOWN DATA TW1

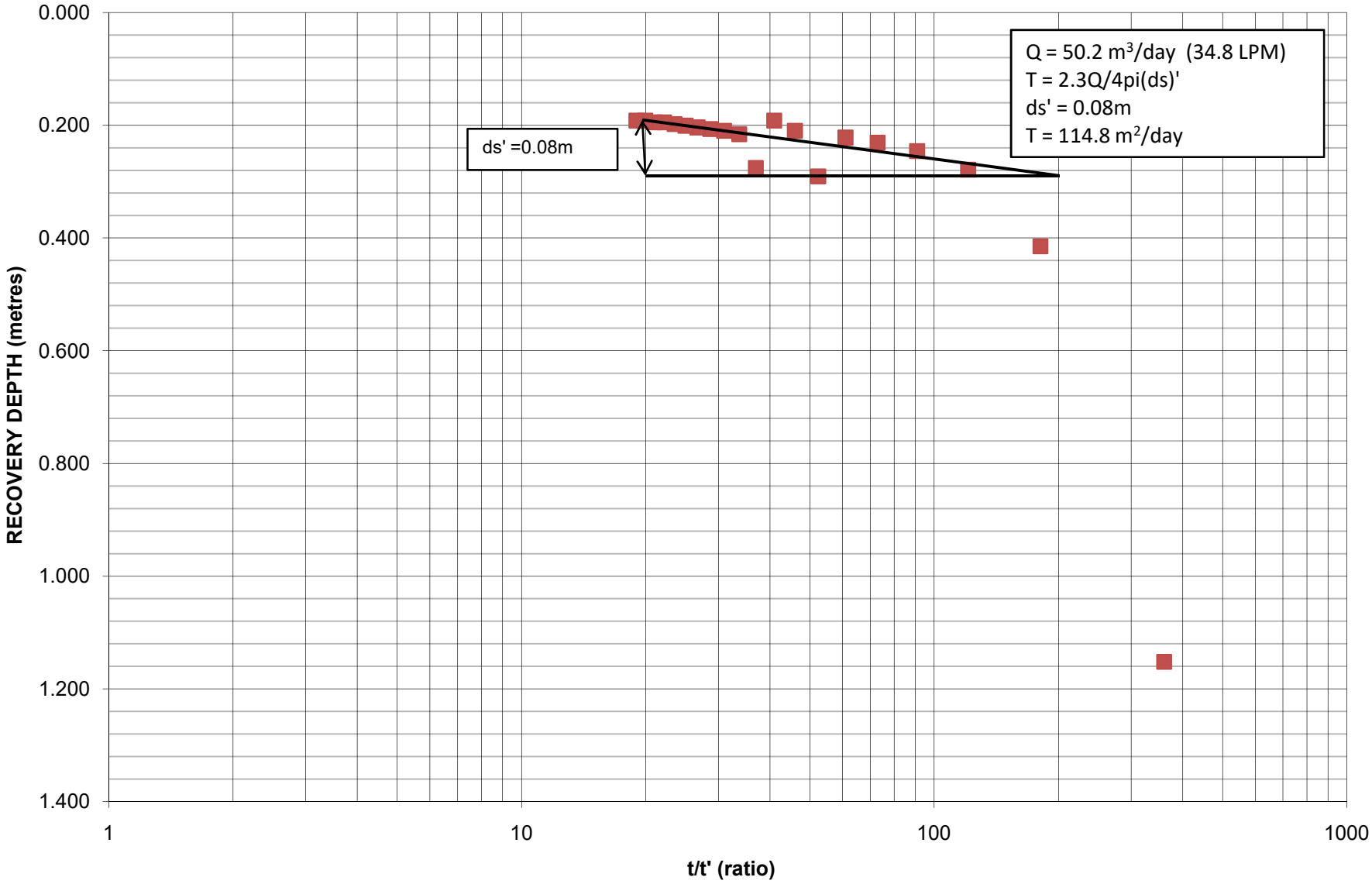
Time Lapsed (minutes)	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)	Water Level (Manual) (m)	Drawdown (m)
0	362.368	9.571	-2.877	0.00	-2.86	0.00
1	360.921	9.571	-3.024	0.15	-3.41	0.55
2	361.364	9.571	-2.979	0.10	-4.20	1.34
3	362.043	9.571	-2.91	0.03		
4	362.161	9.571	-2.898	0.02	-4.30	1.44
5	360.33	9.571	-3.085	0.21		
6	348.228	9.571	-4.319	1.44	-3.94	1.08
7	349.763	9.571	-4.163	1.29		
8	351.563	9.571	-3.979	1.10	-3.80	0.94
9	348.76	9.571	-4.265	1.39		
10	350.058	9.571	-4.133	1.26	-3.83	0.97
11	352.212	9.571	-3.913	1.04		
12	351.976	9.571	-3.937	1.06		
13	353.451	9.571	-3.787	0.91		
14	351.504	9.571	-3.985	1.11	-3.90	1.04
15	352.95	9.571	-3.838	0.96		
16	353.599	9.571	-3.771	0.89	-3.95	1.09
17	354.396	9.571	-3.69	0.81		
18	353.51	9.571	-3.78	0.90	-3.93	1.07
19	352.536	9.571	-3.88	1.00		
20	352.035	9.571	-3.931	1.05	-3.92	1.06
21	351.858	9.571	-3.949	1.07		
22	351.858	9.571	-3.949	1.07		
23	351.946	9.571	-3.94	1.06		
24	352.027	9.472	-3.932	1.06		
25	352.086	9.472	-3.926	1.05	-3.95	1.09
26	352.086	9.472	-3.926	1.05		
27	352.057	9.472	-3.929	1.05		
28	351.998	9.472	-3.935	1.06		
29	352.027	9.472	-3.932	1.06		
30	351.968	9.472	-3.938	1.06	-3.96	1.10
31	351.998	9.472	-3.935	1.06		
32	351.968	9.472	-3.938	1.06		
33	351.968	9.472	-3.938	1.06		
34	351.939	9.472	-3.941	1.06		
35	351.909	9.472	-3.944	1.07	-3.97	1.11
36	351.88	9.472	-3.947	1.07		
37	351.821	9.472	-3.953	1.08		
38	351.791	9.472	-3.956	1.08		
39	351.732	9.472	-3.962	1.09		
40	351.791	9.472	-3.956	1.08	-3.98	1.12
41	351.762	9.472	-3.959	1.08		
42	351.762	9.472	-3.959	1.08		
43	351.762	9.472	-3.959	1.08		
44	351.703	9.472	-3.965	1.09		
45	351.703	9.472	-3.965	1.09	-4.00	1.14
46	351.673	9.472	-3.968	1.09		
47	351.644	9.472	-3.971	1.09		
48	351.555	9.472	-3.98	1.10		
49	351.526	9.472	-3.983	1.11		
50	351.496	9.472	-3.986	1.11	-4.00	1.14
51	351.526	9.472	-3.983	1.11		
52	351.496	9.472	-3.986	1.11		
53	351.496	9.472	-3.986	1.11		
54	351.467	9.472	-3.989	1.11		
55	351.496	9.472	-3.986	1.11	-4.02	1.16
56	351.526	9.472	-3.983	1.11		
57	351.526	9.472	-3.983	1.11		
58	351.526	9.472	-3.983	1.11		
59	351.467	9.472	-3.989	1.11		
60	351.437	9.472	-3.992	1.12	-4.02	1.16
61	351.437	9.472	-3.992	1.11		
62	351.378	9.472	-3.998	1.11		
63	351.378	9.472	-3.998	1.11		
64	351.378	9.472	-3.998	1.11		
65	351.378	9.472	-3.998	1.11		
66	351.349	9.472	-4.001	1.11		
67	351.349	9.472	-4.001	1.11		
68	351.349	9.472	-4.001	1.11		
69	351.26	9.472	-4.01	1.11		
70	351.26	9.472	-4.01	1.12	-4.04	1.18
71	351.26	9.472	-4.01	1.12		
72	351.231	9.472	-4.013	1.12		
73	351.172	9.472	-4.019	1.12		
74	351.172	9.472	-4.019	1.12		
75	351.172	9.472	-4.019	1.12		
76	351.172	9.472	-4.019	1.12		
77	351.142	9.472	-4.022	1.12		
78	351.054	9.472	-4.031	1.12		
79	351.083	9.472	-4.028	1.13		
80	351.113	9.472	-4.025	1.13	-4.04	1.18
81	351.113	9.472	-4.025	1.13		
82	351.142	9.472	-4.022	1.14		
83	351.172	9.472	-4.019	1.14		
84	351.26	9.472	-4.01	1.14		
85	351.142	9.472	-4.022	1.14		
86	351.142	9.472	-4.022	1.14		

87	351.113	9.472	-4.025	1.15		
88	351.142	9.472	-4.022	1.15		
89	351.142	9.472	-4.022	1.15		
90	351.142	9.472	-4.022	1.15	-4.04	1.18
91	351.142	9.472	-4.022	1.15		
92	351.083	9.472	-4.028	1.15		
93	351.113	9.472	-4.025	1.14		
94	351.142	9.472	-4.022	1.13		
95	351.113	9.472	-4.025	1.15		
96	351.113	9.472	-4.025	1.15		
97	351.113	9.472	-4.025	1.15		
98	351.113	9.472	-4.025	1.15		
99	351.142	9.472	-4.022	1.15		
100	351.201	9.472	-4.016	1.15	-4.02	1.16
101	351.231	9.472	-4.013	1.15		
102	351.26	9.472	-4.01	1.15		
103	351.26	9.472	-4.01	1.15		
104	351.29	9.472	-4.007	1.15		
105	351.26	9.472	-4.01	1.15		
106	351.26	9.472	-4.01	1.15		
107	351.26	9.472	-4.01	1.15		
108	351.29	9.472	-4.007	1.15		
109	351.231	9.472	-4.013	1.15		
110	351.201	9.472	-4.016	1.14		
111	351.172	9.472	-4.019	1.14		
112	351.113	9.472	-4.025	1.13		
113	351.054	9.472	-4.031	1.13		
114	351.083	9.472	-4.028	1.13		
115	351.054	9.472	-4.031	1.13		
116	351.083	9.472	-4.028	1.13		
117	351.113	9.472	-4.025	1.13		
118	351.142	9.472	-4.022	1.13		
119	351.083	9.472	-4.028	1.14		
120	351.113	9.472	-4.025	1.14	-4.04	1.18
121	351.113	9.472	-4.025	1.14		
122	351.142	9.472	-4.022	1.15		
123	351.142	9.472	-4.022	1.15		
124	351.142	9.472	-4.022	1.15		
125	351.113	9.472	-4.025	1.15		
126	351.054	9.472	-4.031	1.15		
127	351.054	9.472	-4.031	1.15		
128	351.054	9.472	-4.031	1.15		
129	351.024	9.472	-4.034	1.15		
130	351.054	9.472	-4.031	1.15		
131	351.024	9.472	-4.034	1.15		
132	351.024	9.472	-4.034	1.15		
133	351.024	9.472	-4.034	1.15		
134	351.024	9.472	-4.034	1.15		
135	350.965	9.472	-4.04	1.15		
136	350.965	9.472	-4.04	1.15		
137	350.936	9.472	-4.043	1.15		
138	350.906	9.472	-4.046	1.15		
139	350.906	9.472	-4.046	1.16		
140	350.906	9.472	-4.046	1.15	-4.06	1.20
141	350.877	9.472	-4.049	1.16		
142	350.847	9.472	-4.052	1.16		
143	350.847	9.472	-4.052	1.16		
144	350.818	9.472	-4.055	1.16		
145	350.818	9.472	-4.055	1.16		
146	350.759	9.472	-4.061	1.16		
147	350.788	9.472	-4.058	1.17		
148	350.759	9.472	-4.061	1.17		
149	350.788	9.472	-4.058	1.17		
150	350.788	9.472	-4.058	1.17		
151	350.818	9.472	-4.055	1.17		
152	350.759	9.472	-4.061	1.18		
153	350.788	9.472	-4.058	1.18		
154	350.759	9.472	-4.061	1.18		
155	350.788	9.472	-4.058	1.18		
156	350.84	9.373	-4.054	1.18		
157	350.81	9.373	-4.057	1.18		
158	350.847	9.472	-4.052	1.18		
159	350.84	9.373	-4.054	1.18		
160	350.81	9.373	-4.057	1.18	-4.06	1.20
161	350.81	9.373	-4.057	1.18		
162	350.869	9.373	-4.051	1.18		
163	350.869	9.373	-4.051	1.18		
164	350.899	9.373	-4.048	1.18		
165	350.928	9.373	-4.045	1.18		
166	350.928	9.373	-4.045	1.18		
167	350.965	9.472	-4.04	1.18		
168	350.958	9.373	-4.041	1.18		
169	350.987	9.373	-4.039	1.18		
170	350.958	9.373	-4.041	1.18		
171	350.958	9.373	-4.041	1.18		
172	351.017	9.373	-4.035	1.17		
173	350.987	9.373	-4.039	1.17		
174	351.017	9.373	-4.035	1.17		
175	351.017	9.373	-4.035	1.17		
176	351.017	9.373	-4.035	1.17		
177	351.046	9.373	-4.033	1.16		
178	350.958	9.373	-4.041	1.16		
179	350.928	9.373	-4.045	1.16		

180	350.958	9.373	-4.041	1.16	-4.11	1.25
181	350.987	9.373	-4.039	1.16		
182	350.987	9.373	-4.039	1.16		
183	351.017	9.373	-4.035	1.16		
184	351.017	9.373	-4.035	1.16		
185	350.81	9.373	-4.057	1.16		
186	350.338	9.373	-4.105	1.16		
187	350.574	9.373	-4.081	1.16		
188	350.81	9.373	-4.057	1.16		
189	350.958	9.373	-4.041	1.17		
190	351.017	9.373	-4.035	1.16		
191	351.017	9.373	-4.035	1.16		
192	351.017	9.373	-4.035	1.16		
193	351.046	9.373	-4.033	1.16		
194	351.017	9.373	-4.035	1.16		
195	351.017	9.373	-4.035	1.18		
196	351.017	9.373	-4.035	1.23		
197	351.046	9.373	-4.033	1.20		
198	351.046	9.373	-4.033	1.18		
199	351.046	9.373	-4.033	1.16		
200	351.076	9.373	-4.029	1.16	-4.06	1.20
201	351.076	9.373	-4.029	1.16		
202	351.105	9.373	-4.026	1.16		
203	351.105	9.373	-4.026	1.16		
204	351.105	9.373	-4.026	1.16		
205	351.105	9.373	-4.026	1.16		
206	351.105	9.373	-4.026	1.16		
207	351.076	9.373	-4.029	1.16		
208	351.046	9.373	-4.033	1.16		
209	351.017	9.373	-4.035	1.16		
210	351.017	9.373	-4.035	1.15		
211	351.017	9.373	-4.035	1.15		
212	350.958	9.373	-4.041	1.15		
213	350.958	9.373	-4.041	1.15		
214	350.958	9.373	-4.041	1.15		
215	350.987	9.373	-4.039	1.15		
216	350.958	9.373	-4.041	1.15		
217	350.958	9.373	-4.041	1.15		
218	350.958	9.373	-4.041	1.16		
219	351.017	9.373	-4.035	1.16		
220	350.958	9.373	-4.041	1.16	-4.06	1.20
221	350.958	9.373	-4.041	1.16		
222	350.987	9.373	-4.039	1.16		
223	350.928	9.373	-4.045	1.16		
224	350.899	9.373	-4.048	1.16		
225	350.899	9.373	-4.048	1.16		
226	350.899	9.373	-4.048	1.16		
227	350.869	9.373	-4.051	1.16		
228	350.899	9.373	-4.048	1.16		
229	350.22	9.373	-4.117	1.16		
230	350.25	9.373	-4.114	1.16		
231	350.545	9.373	-4.084	1.16		
232	350.043	9.373	-4.135	1.16		
233	350.22	9.373	-4.117	1.17		
234	350.279	9.373	-4.111	1.17		
235	349.807	9.373	-4.159	1.17		
236	350.132	9.373	-4.126	1.17		
237	350.427	9.373	-4.096	1.17		
238	349.925	9.373	-4.147	1.17		
239	350.22	9.373	-4.117	1.24		
240	350.545	9.373	-4.084	1.24	-4.10	1.24
241	350.722	9.373	-4.066	1.21		
242	350.84	9.373	-4.054	1.26		
243	350.928	9.373	-4.045	1.24		
244	350.958	9.373	-4.041	1.23		
245	351.017	9.373	-4.035	1.28		
246	350.899	9.373	-4.048	1.25		
247	350.25	9.373	-4.114	1.22		
248	350.397	9.373	-4.099	1.27		
249	350.604	9.373	-4.078	1.24		
250	350.22	9.373	-4.117	1.21		
251	350.486	9.373	-4.09	1.19		
252	350.663	9.373	-4.072	1.18		
253	350.692	9.373	-4.069	1.17		
254	350.633	9.373	-4.075	1.16		
255	350.604	9.373	-4.078	1.16		
256	350.663	9.373	-4.072	1.17		
257	350.781	9.373	-4.06	1.24		
258	350.869	9.373	-4.051	1.22		
259	350.958	9.373	-4.041	1.20		
260	350.987	9.373	-4.039	1.24		
261	350.987	9.373	-4.039	1.21		
262	350.987	9.373	-4.039	1.20		
263	350.987	9.373	-4.039	1.19		
264	350.987	9.373	-4.039	1.20		
265	350.987	9.373	-4.039	1.20		
266	351.017	9.373	-4.035	1.20		
267	350.987	9.373	-4.039	1.18		
268	351.046	9.373	-4.033	1.17		
269	351.046	9.373	-4.033	1.16		
270	351.105	9.373	-4.026	1.16	-4.03	1.17
271	351.105	9.373	-4.026	1.16		
272	351.076	9.373	-4.029	1.16		

273	351.076	9.373	-4.029	1.16		
274	351.105	9.373	-4.026	1.16		
275	351.135	9.373	-4.023	1.16		
276	351.253	9.373	-4.011	1.16		
277	351.282	9.373	-4.008	1.16		
278	351.282	9.373	-4.008	1.16		
279	351.282	9.373	-4.008	1.16		
280	351.253	9.373	-4.011	1.15		
281	351.253	9.373	-4.011	1.15		
282	351.253	9.373	-4.011	1.15		
283	351.194	9.373	-4.017	1.15		
284	351.194	9.373	-4.017	1.15		
285	351.194	9.373	-4.017	1.15		
286	351.253	9.373	-4.011	1.13		
287	351.253	9.373	-4.011	1.13		
288	351.223	9.373	-4.014	1.13		
289	351.253	9.373	-4.011	1.13		
290	351.253	9.373	-4.011	1.13		
291	351.223	9.373	-4.014	1.13		
292	351.253	9.373	-4.011	1.13		
293	351.223	9.373	-4.014	1.14		
294	351.194	9.373	-4.017	1.14		
295	351.164	9.373	-4.02	1.14		
296	351.164	9.373	-4.02	1.13		
297	351.135	9.373	-4.023	1.13		
298	351.194	9.373	-4.017	1.14		
299	351.164	9.373	-4.02	1.13		
300	351.164	9.373	-4.02	1.13	-4.02	1.16
301	351.253	9.373	-4.011	1.14		
302	351.282	9.373	-4.008	1.13		
303	351.253	9.373	-4.011	1.14		
304	351.253	9.373	-4.011	1.14		
305	351.282	9.373	-4.008	1.14		
306	351.282	9.373	-4.008	1.14		
307	351.282	9.373	-4.008	1.15		
308	351.282	9.373	-4.008	1.14		
309	351.253	9.373	-4.011	1.14		
310	351.253	9.373	-4.011	1.14		
311	351.253	9.373	-4.011	1.13		
312	351.253	9.373	-4.011	1.13		
313	351.223	9.373	-4.014	1.13		
314	351.194	9.373	-4.017	1.13		
315	351.194	9.373	-4.017	1.13		
316	351.194	9.373	-4.017	1.13		
317	351.194	9.373	-4.017	1.13		
318	351.194	9.373	-4.017	1.13		
319	351.164	9.373	-4.02	1.13		
320	351.194	9.373	-4.017	1.13		
321	351.223	9.373	-4.014	1.13		
322	351.253	9.373	-4.011	1.13		
323	351.282	9.373	-4.008	1.14		
324	351.282	9.373	-4.008	1.14		
325	351.312	9.373	-4.005	1.14		
326	351.312	9.373	-4.005	1.14		
327	351.312	9.373	-4.005	1.14		
328	351.312	9.373	-4.005	1.14		
329	351.282	9.373	-4.008	1.14		
330	351.312	9.373	-4.005	1.14	-4.03	1.17
331	351.312	9.373	-4.005	1.14		
332	351.312	9.373	-4.005	1.13		
333	351.253	9.373	-4.011	1.13		
334	351.253	9.373	-4.011	1.13		
335	351.223	9.373	-4.014	1.13		
336	351.223	9.373	-4.014	1.13		
337	351.253	9.373	-4.011	1.13		
338	351.194	9.373	-4.017	1.13		
339	351.223	9.373	-4.014	1.13		
340	351.223	9.373	-4.014	1.13		
341	351.223	9.373	-4.014	1.13		
342	351.164	9.373	-4.02	1.13		
343	351.076	9.373	-4.029	1.13		
344	351.046	9.373	-4.033	1.13		
345	351.046	9.373	-4.033	1.14		
346	351.046	9.373	-4.033	1.14		
347	351.017	9.373	-4.035	1.13		
348	351.017	9.373	-4.035	1.14		
349	351.017	9.373	-4.035	1.14		
350	351.017	9.373	-4.035	1.14		
351	351.017	9.373	-4.035	1.14		
352	351.017	9.373	-4.035	1.14		
353	351.076	9.373	-4.029	1.15		
354	351.046	9.373	-4.033	1.16		
355	351.046	9.373	-4.033	1.16		
356	351.076	9.373	-4.029	1.16		
357	351.135	9.373	-4.023	1.16		
358	351.105	9.373	-4.026	1.16		
359	351.076	9.373	-4.029	1.16		
360	351.076	9.373	-4.029	1.16	-4.05	1.19

TW1 - WELL RECOVERY VS. TIME - KOLLAARD FILE 240502



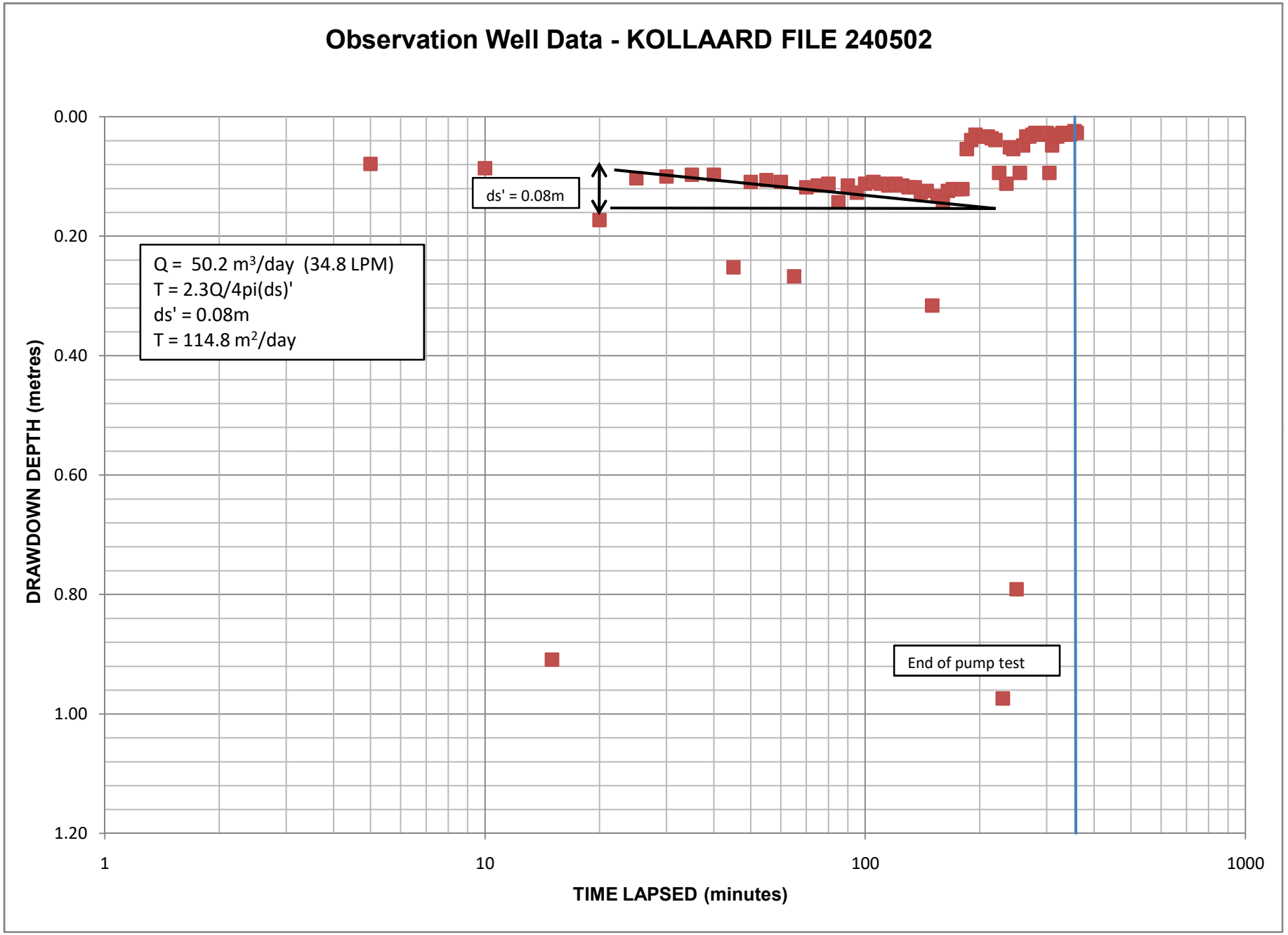
Kollaard File 240502

RECOVERY DATA TW1

t'	t / t'	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)	Recovery (%)
1	361	351.017	9.373	-4.029	1.15	4%
2	181.0	351.046	9.373	-3.292	0.42	65%
3	121.0	351.046	9.373	-3.156	0.28	77%
4	91.0	351.017	9.373	-3.123	0.25	79%
5	73.0	350.987	9.373	-3.108	0.23	81%
6	61.0	350.958	9.373	-3.099	0.22	81%
7	52.4	351.076	9.373	-3.168	0.29	76%
8	46.0	358.307	9.373	-3.087	0.21	82%
9	41.0	359.636	9.373	-3.069	0.19	84%
10	37.0	359.961	9.373	-3.153	0.28	77%
11	33.7	360.108	9.373	-3.093	0.22	82%
12	31.0	360.197	9.373	-3.087	0.21	82%
13	28.7	359.518	9.373	-3.084	0.21	83%
14	26.7	360.315	9.373	-3.081	0.20	83%
15	25.0	360.492	9.373	-3.078	0.20	83%
16	23.5	359.665	9.373	-3.075	0.20	83%
17	22.2	360.256	9.373	-3.072	0.20	84%
18	21.0	360.315	9.373	-3.072	0.20	84%
19	19.9	360.345	9.373	-3.069	0.19	84%
20	19.0	360.374	9.373	-3.069	0.19	84%

ATTACHMENT C

OBSERVATION WELL DATA


Observation Well Data - KOLLAARD FILE 240502
0.00
0.20
0.40
0.60
0.80
1.00
1.20
DRAWDOWN DEPTH (metres)
1
10
100
1000
TIME LAPSED (minutes)
ds' = 0.08m
Q = 50.2 m³/day (34.8 LPM)
T = 2.3Q/4pi(ds)'
ds' = 0.08m
T = 114.8 m²/day
End of pump test

Kollaard File 240502 Pump Rate 34.8 litres/minute

Observation Well Data

Time Lapsed (minutes)	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)
0	166.017	10.944	-2.187	0.00
5	165.248	10.651	-2.266	0.08
10	165.181	10.553	-2.273	0.09
15	157.117	10.455	-3.096	0.91
20	164.331	10.357	-2.36	0.17
25	165.017	10.357	-2.29	0.10
30	165.047	10.357	-2.287	0.10
35	165.077	10.357	-2.284	0.10
40	165.077	10.357	-2.284	0.10
45	163.555	10.357	-2.439	0.25
50	164.957	10.357	-2.296	0.11
55	164.987	10.357	-2.293	0.11
60	164.957	10.357	-2.296	0.11
65	163.406	10.357	-2.454	0.27
70	164.868	10.357	-2.305	0.12
75	164.898	10.357	-2.302	0.12
80	164.927	10.357	-2.299	0.11
85	164.629	10.357	-2.33	0.14
90	164.898	10.357	-2.302	0.12
95	164.778	10.357	-2.314	0.13
100	164.927	10.357	-2.299	0.11
105	164.957	10.357	-2.296	0.11
110	164.927	10.357	-2.299	0.11
115	164.898	10.357	-2.302	0.12
120	164.927	10.357	-2.299	0.11
125	164.898	10.357	-2.302	0.12
130	164.868	10.357	-2.305	0.12
135	164.868	10.357	-2.305	0.12
140	164.778	10.357	-2.314	0.13
145	164.808	10.357	-2.311	0.12
150	162.929	10.357	-2.503	0.32
155	164.719	10.357	-2.32	0.13
160	164.629	10.357	-2.33	0.14
165	164.808	10.357	-2.311	0.12
170	164.838	10.357	-2.308	0.12
175	164.838	10.357	-2.308	0.12
180	164.838	10.357	-2.308	0.12
185	165.494	10.357	-2.241	0.05
190	165.644	10.357	-2.226	0.04
195	165.733	10.357	-2.217	0.03
200	165.703	10.357	-2.22	0.03

205	165.703	10.357	-2.22	0.03
210	165.703	10.357	-2.22	0.03
215	165.673	10.357	-2.223	0.04
220	165.644	10.357	-2.226	0.04
225	165.106	10.357	-2.281	0.09
230	156.483	10.357	-3.161	0.97
235	164.927	10.357	-2.299	0.11
240	165.524	10.357	-2.238	0.05
245	165.494	10.357	-2.241	0.05
250	158.274	10.357	-2.978	0.79
255	165.106	10.357	-2.281	0.09
260	165.554	10.357	-2.235	0.05
265	165.703	10.357	-2.22	0.03
270	165.703	10.357	-2.22	0.03
275	165.733	10.357	-2.217	0.03
280	165.763	10.357	-2.214	0.03
285	165.733	10.357	-2.217	0.03
290	165.733	10.357	-2.217	0.03
295	165.733	10.357	-2.217	0.03
300	165.763	10.357	-2.214	0.03
305	165.793	10.357	-2.211	0.09
310	165.763	10.357	-2.214	0.05
315	165.106	10.357	-2.281	0.03
320	165.703	10.357	-2.22	0.03
325	165.763	10.357	-2.214	0.03
330	163.316	10.357	-2.464	0.03
335	165.644	10.357	-2.226	0.03
340	165.226	10.357	-2.269	0.03
345	165.673	10.357	-2.223	0.03
350	165.494	10.357	-2.241	0.03
355	165.673	10.357	-2.223	0.02
360	165.673	10.357	-2.223	0.03

ATTACHMENT D

WATER QUALITY RESULTS

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

OFFICIAL CERTIFICATE OF ANALYSIS : 3931408

WORK REQUEST : 100286114

Report Date : 2024-06-03

Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention : Colleen Vermeersch

Reception Date : 2024-05-31
Project : 240502
Sampler : NA
PO Number : Not Applicable
Temperature : 12 °C

Analysis	Quantity	External Method
E.Coli and Total Coliforms (DC Plate)	2	Modified from MECP E3407
Heterotrophic Plate Count (mHPC)	2	Modified from SM 9215 D

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

Sample status upon receipt :
7749376 7749377
Compliant

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

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

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

					Eurofins Sample No :	**7749376**	**7749377**			
					Matrix :	Drinking water	Drinking water			
					Sampling Date :	2024-05-30	2024-05-30			
					Client Sample Identification :	TW1-3 Hrs	TW1-6 Hrs			
Microbiology	**RL**	**Unit**	**Criteria**							
			A	**B**	**C**					
E.Coli and Total Coliforms (DC Plate)										
Escherichia coli (DC)	0	CFU/100mL	0			0	0			
Total Coliforms (DC)	0	CFU/100mL	0			0	0			
Heterotrophic Plate Count (mHPC)	0	CFU/1 mL				50	48			

Approved by : _____
Emma-Dawn Ferguson, M.Sc.
Environmental Chemist

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

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
E.Coli and Total Coliforms (DC Plate)									
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 7749376								Prep Date: 2024-05-31 Analysis Date: 2024-06-01	
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 7749377								Prep Date: 2024-05-31 Analysis Date: 2024-06-01	
Method : Heterotrophic Plate Count by MF (mHPC Media). Internal method: OTT-M-BAC-WI45296.									
Heterotrophic Plate Count (mHPC)	CFU/1 mL	0	0					0	0-30
Associated Samples : 7749376, 7749377								Prep Date: 2024-05-31 Analysis Date: 2024-06-02	

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

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DRINKING WATER CHAIN-OF-CUSTODY

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

Eurofins Workorder #:_____

100286114

Printed On : 2024-05-31 12:02:57

CLIENT INFORMATION		WATERWORKS INFORMATION	
Company: Kollaard Associates Inc.		Waterworks Name:	
Contact: Colleen Vermeersch		Waterworks #:	
Address: 210 Prescott St, Kemptville, On K0G 1J0		Contact:	
Telephone: 613-860-0923 ext230	Fax:	Address:	
Email #1:	#2:	Telephone:	Fax:
Project: 240502		Cell Phone:	
PO #:	Quote #: 170314	Email #1:	#2:

REGULATION/GUIDELINE REQUIRED

☐ O. Reg 170 ☐ O. Reg 170 15.1 ☑ ODWSOG ☑ Private Well ☐ None
☐ O. Reg 318/319 ☐ O. Reg 243 ☐ GCDWQ ☐ Other:

TURN-AROUND TIME (Business Days)

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

Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service. Note that some tests (i.e. O. Reg. 170 Schedule 24 pesticides may take up to 3 weeks to analyze). Please see notes (on reverse) about TAT policies.

The optimal temperature conditions during transport must be less than 10°C. Sample(s) cannot be frozen. Note that for drinking water samples, all exceedances will be reported where (and how) the application legislation requires.
The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details								Sample Analysis Required							Field Measurements			
Sample ID	Date/Time Collected	Sample Type Code (see below)	Resample? Y = Yes N = No	MOE/MOH Reportable? Y = Yes N = No	# of Containers	SPL Code/Watertrax	Sample Location (i.e. Kitchen, POE)	Subdivision parameters	Kollaard Subdivisionbacteria	Kollaard Special Metals	true colour				Total Chlorine	Free Chlorine	Field Turbidity	Sample RN# (Lab Use Only)
TW1-3 hrs	05-30 / 11:30	PW	N	N	8		wellhead	✓	✓	✓	✓				-	-	-	7749376
TW1-6 hrs	05-30 / 14:30	PW	N	N	8		wellhead	✓	✓	✓	✓				-	-	-	77

Sample Type Codes for Drinking Water: **RW** = Raw Water, **TW** = Treated Water at Point of Entry to distribution, **TW-NT** = Untreated Water at Point of Entry to distribution, **DW** = Distribution, **RP** = Residential Plumbing, **NRP** = Non-Residential Plumbing, **S** = Standing, **F** = Flushed, **PW** = Private Well

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	Shawn Beaton			
Relinquished By:				
Received By:			5/31/24 1140	12

COMMENTS:
Sample for metals were field filtered using 0.45 micron filter

Copies: White - Laboratory, Yellow - Sampler

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OFFICIAL CERTIFICATE OF ANALYSIS : 3938169

WORK REQUEST : 100286210

Report Date : 2024-06-07

Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
Attention : Colleen Vermeersch

Reception Date : 2024-05-31
Project : 240502
Sampler : NA
PO Number : Not Applicable
Temperature : 12 °C

Analysis	Quantity	External Method
Alkalinity (Water, Automated)	2	Modified from SM 2320 B
Ammonia, Total (Water, Colorimetry)	2	Modified from EPA 350.1
Chloride (Water, IC)	2	Modified from SM 4110 B and C
Colour, Apparent (Water, Spectrophotometry)	2	Modified from SM 2120 C
Colour, True (Water, Spectrophotometry)	2	Modified from SM 2120 C
Conductivity (Water, Automated)	2	Modified from SM 2510 B
DOC (Water, IR)	2	Modified from SM 5310 B
Fluoride (Water, Auto/ISE)	2	Modified from SM 4500-F A and 4500-F C
Hardness (Water, Calculation Only)	2	SM 2340 B
Ion Balance (Water, Calculation)	2	Modified from SM1030 E
Lab Filtration (Water, Sample Preparation)	2	Lab Prep
Metals Scan (Water, ICP/MS)	2	Modified from EPA 200.8
Metals Scan (Water, ICP/OES)	2	Modified from SM 3120 B
Nitrate (Water, IC)	2	Modified from SM 4110 B and C
Nitrite (Water, IC)	2	Modified from SM 4110 B and C
pH (25°C) (Water, Automated)	2	Modified from SM 4500-H+ B
Phenols (Water, Colorimetry)	2	Modified from EPA 420.2
Sulphate (Water, IC)	2	Modified from SM 4110 B and C
Sulphide (Water, Colorimetry)	2	Modified from SM 4500-S2 D
Tannin and Lignin (Water, Spec)	2	Modified from SM 5550 B
TDS (Estimated)	2	Modified from SM 2510 A
Total Kjeldahl Nitrogen (Water, Colorimetry)	2	Modified from EPA 351.2
Turbidity (Water, Turbidimeter)	2	Modified from SM 2130 B

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

Sample status upon receipt :
7750168 7750169
Compliant

Certificate Comments :
7750168 7750169
Hg spike not available due to matrix interferences in the mother sample.

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

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

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OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Kollaard Associates Inc.
Project : 240502

Reception Date : 2024-05-31

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
Colour, Apparent (Water, Spectrophotometry)							
7750168	TW1-3 hrs	Colour (Apparent)	12	TCU	5		
7750169	TW1-6 hrs	Colour (Apparent)	9	TCU	5		
Hardness (Water, Calculation Only)							
7750168	TW1-3 hrs	Hardness as CaCO3 (Calculation)	371	mg/L	80-100		
7750169	TW1-6 hrs	Hardness as CaCO3 (Calculation)	376	mg/L	80-100		
TDS (Estimated)							
7750168	TW1-3 hrs	TDS (Estimated)^	624	mg/L	500		
7750169	TW1-6 hrs	TDS (Estimated)^	624	mg/L	500		

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

						Eurofins Sample No :	**7750168**	**7750169**		
						Matrix :	Drinking water	Drinking water		
						Sampling Date :	2024-05-30	2024-05-30		
						Client Sample Identification :	TW1-3 hrs	TW1-6 hrs		
Anions	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**					
Chloride	0.5	mg/L	250				113	117		
Nitrate (as Nitrogen)	0.1	mg/L	10.0				1.04	1.24		
Nitrite (as Nitrogen)	0.1	mg/L	1.0				<0.1	<0.1		
Sulphate	1	mg/L	500				57	57		

						Eurofins Sample No :	**7750168**	**7750169**		
						Matrix :	Drinking water	Drinking water		
						Sampling Date :	2024-05-30	2024-05-30		
						Client Sample Identification :	TW1-3 hrs	TW1-6 hrs		
Calculations	**RL**	**Unit**								
Ion Balance (Calculation)^	0.1		1.08	1.06						

						Eurofins Sample No :	**7750168**	**7750169**		
						Matrix :	Drinking water	Drinking water		
						Sampling Date :	2024-05-30	2024-05-30		
						Client Sample Identification :	TW1-3 hrs	TW1-6 hrs		
General Chemistry	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**					
Alkalinity (as CaCO3)	5	mg/L	500				273	282		
Colour (Apparent)	2	TCU	5				12	9		
Colour (True)	2	TCU					<2	3		
Conductivity @ 25°C	5	µS/cm					960	960		
Dissolved Organic Carbon	0.5	mg/L	5				1.6	1.7		
Fluoride	0.1	mg/L	1.5				0.34	0.33		
Hardness as CaCO3 (Calculation)	1	mg/L	80-100				371	376		
pH @ 25°C	1		6.5-8.5				7.88	7.84		
Phenols-4AAP	0.001	mg/L					<0.001	<0.001		
Sulphide (S2-)	0.01	mg/L	0.05				<0.01	<0.01		
Tannin and Lignin	0.1	mg/L					<0.1	0.1		
TDS (Estimated)^	5	mg/L	500				624	624		
Turbidity	0.1	NTU	5				2.25	1.59		

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

					Eurofins Sample No :	**7750168**	**7750169**			
					Matrix :	Drinking water	Drinking water			
					Sampling Date :	2024-05-30	2024-05-30			
					Client Sample Identification :	TW1-3 hrs	TW1-6 hrs			
Metals	**RL**	**Unit**	**Criteria A**	**B**	**C**					
Metals Scan (Water, ICP/MS)										
Aluminum	0.01	mg/L	0.1			<0.01	<0.01			
Antimony	0.0005	mg/L	0.006			<0.0005	<0.0005			
Arsenic	0.001	mg/L	0.01			<0.001	<0.001			
Barium	0.001	mg/L	1			0.130	0.131			
Beryllium	0.0005	mg/L				<0.0005	<0.0005			
Boron	0.01	mg/L	5			0.19	0.19			
Cadmium	0.0001	mg/L	0.005			<0.0001	<0.0001			
Chromium	0.001	mg/L	0.05			<0.001	<0.001			
Cobalt	0.0002	mg/L				0.0004	0.0004			
Copper	0.001	mg/L	1			<0.001	<0.001			
Iron	0.03	mg/L	0.3			0.18	0.16			
Lead	0.001	mg/L	0.01			<0.001	<0.001			
Manganese	0.01	mg/L	0.05			0.02	0.02			
Mercury	0.0001	mg/L	0.001			<0.0001	<0.0001			
Molybdenum	0.005	mg/L				<0.005	<0.005			
Nickel	0.005	mg/L				<0.005	<0.005			
Selenium	0.001	mg/L	0.05			<0.001	<0.001			
Silver	0.0001	mg/L				<0.0001	<0.0001			
Strontium	0.001	mg/L				3.18	3.18			
Thallium	0.0001	mg/L				<0.0001	<0.0001			
Uranium	0.001	mg/L	0.02			0.001	0.001			
Vanadium	0.001	mg/L				<0.001	<0.001			
Zinc	0.01	mg/L	5			0.03	0.02			
Metals Scan (Water, ICP/OES)										
Calcium	1	mg/L				91	93			
Magnesium	1	mg/L				35	35			
Potassium	1	mg/L				6	6			
Sodium	1	mg/L	200			73	74			

			Eurofins Sample No :	**7750168**	**7750169**				
			Matrix :	Drinking water	Drinking water				
			Sampling Date :	2024-05-30	2024-05-30				
			Client Sample Identification :	TW1-3 hrs	TW1-6 hrs				
Nutrients	**RL**	**Unit**							
Ammonia (Total, as Nitrogen)	0.02	mg/L	<0.020	<0.020					
Total Kjeldahl Nitrogen	0.1	mg/L	<0.100	<0.100					

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

Eurofins Sample No :			**7750168**	**7750169**					
Matrix :			Drinking water	Drinking water					
Sampling Date :			2024-05-30	2024-05-30					
Client Sample Identification :			TW1-3 hrs	TW1-6 hrs					
Sample Preparation	**RL**	**Unit**							
Lab Filtration			Y	Y					

Approved by : _____
Emma-Dawn Ferguson, M.Sc.
Environmental Chemist

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Alkalinity (Water, Automated)									
Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.									
Alkalinity (as CaCO3)	mg/L	5	<5	98	95-105			-	0-20
Associated Samples : 7750168								Prep Date: 2024-06-04 Analysis Date: 2024-06-05	
Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.									
Alkalinity (as CaCO3)	mg/L	5	<5	95	95-105			1	0-20
Associated Samples : 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	
Ammonia, Total (Water, Colorimetry)									
Method : Ammonia (Water, Colorimetry). Internal method: OTT-I-NUT-WI46201.									
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	88	80-120	102	80-120	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	
Chloride (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Chloride	mg/L	0.5	<0.5	102	80-120	108	80-120	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-05	
Colour, Apparent (Water, Spectrophotometry)									
Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.									
Colour (Apparent)	TCU	2	<2	97	39-159			6	0-40
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-04 Analysis Date: 2024-06-04	
Colour, True (Water, Spectrophotometry)									
Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.									
Colour (True)	TCU	2	<2	97	39-159			-	0-40
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-04 Analysis Date: 2024-06-04	
Conductivity (Water, Automated)									
Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.									
Conductivity @ 25°C	uS/cm	5	<5	99	98-102			-	0-20
Associated Samples : 7750168								Prep Date: 2024-06-04 Analysis Date: 2024-06-05	
Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.									
Conductivity @ 25°C	uS/cm	5	<5	100	98-102				
Associated Samples : 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	
DOC (Water, IR)									
Method : Organic carbon (water, IR, combustion). Internal method: OTT-I-DEM-WI46148.									
Dissolved Organic Carbon	mg/L	0.5	<0.5	107	84-116	105	80-120	-	0-15
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-03 Analysis Date: 2024-06-04	
Fluoride (Water, Auto/ISE)									
Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.									
Fluoride	mg/L	0.1	<0.10	102	90-110			-	0-20
Associated Samples : 7750168								Prep Date: 2024-06-04 Analysis Date: 2024-06-05	
Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.									
Fluoride	mg/L	0.1	<0.10	103	90-110				
Associated Samples : 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.									
Aluminum	mg/L	0.01	<0.01	100	80-120	113	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	96	80-120	93	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	94	80-120	103	70-130	-	0-20
Barium	mg/L	0.001	<0.001	90	80-120	103	70-130	-	0-20
Beryllium	mg/L	0.0005	<0.0005	102	80-120	116	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-120	-	70-130	-	0-20
Cadmium	mg/L	0.0001	<0.0001	99	80-120	105	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	110	80-120	110	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	105	80-120	101	70-130	-	0-20
Copper	mg/L	0.001	<0.001	110	80-120	106	70-130	0	0-20
Iron	mg/L	0.03	<0.03	100	80-120	104	70-130	-	0-20
Lead	mg/L	0.001	<0.001	100	80-120	90	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	102	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	106	80-120			-	0-20
Molybdenum	mg/L	0.005	<0.005	90	80-120	97	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	100	80-120	107	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	96	80-120	-	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	99	80-120	108	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	97	70-130	-	0-20
Thallium	mg/L	0.0001	<0.0001	102	80-120	89	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-120	84	70-130	-	0-20
Vanadium	mg/L	0.001	<0.001	100	80-120	107	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	100	80-120	107	70-130	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	
Metals Scan (Water, ICP/OES)									
Method : Metals (Water, ICP/OES). Internal method: OTT-I-MET-WI48491.									
Calcium	mg/L	1	<1	106	86-115	110	70-130	-	0-20
Magnesium	mg/L	1	<1	100	91-109	108	70-130	-	0-20
Potassium	mg/L	1	<1	112	87-113	111	70-130	-	0-20
Sodium	mg/L	1	<1	107	85-115	111	70-130	0	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-03 Analysis Date: 2024-05-31	
Nitrate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	94	80-120	108	80-120	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-05	
Nitrite (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	95	80-120	104	80-120	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-05	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 240502

Reception Date: 2024-05-31

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
pH (25°C) (Water, Automated)									
Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.									
pH @ 25°C		1	6.11	100	97-103			6	0-20
Associated Samples : 7750168								Prep Date: 2024-06-04 Analysis Date: 2024-06-05	
Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.									
pH @ 25°C		1	6.23	99	97-103			0	0-20
Associated Samples : 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	
Phenols (Water, Colorimetry)									
Method : Phenols (Water, Colorimetry). Internal method: OTT-I-4AAP-WI46150.									
Phenols-4AAP	mg/L	0.001	<0.001	101	75-125	115	70-130	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-03 Analysis Date: 2024-06-03	
Sulphate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Sulphate	mg/L	1	<1	100	90-110	106	80-120	-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-05	
Sulphide (Water, Colorimetry)									
Method : Sulphide, S2- (Water, Colorimetry). Internal method: OTT-I-SPEC-WI45931.									
Sulphide (S2-)	mg/L	0.01	<0.01	112	80-120			13	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-03 Analysis Date: 2024-06-03	
Tannin and Lignin (Water, Spec)									
Method : Tannin and Lignin (Water, Spec), Internal method: OTT-I-SPEC-WI57693.									
Tannin and Lignin	mg/L	0.1	<0.1	94	80-120			-	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-06 Analysis Date: 2024-06-06	
Total Kjeldahl Nitrogen (Water, Colorimetry)									
Method : TKN (Water, colorimetry). Internal method: OTT-I-NUT-WI46201.									
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	94	70-130	84	70-130	12	0-20
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-05 Analysis Date: 2024-06-06	
Turbidity (Water, Turbidimeter)									
Method : Turbidity (Water, Turbidimeter). Internal method: OTT-I-TUR-WI46288.									
Turbidity	NTU	0.1	<0.1	101	80-120			10	0-30
Associated Samples : 7750168, 7750169								Prep Date: 2024-06-01 Analysis Date: 2024-06-01	

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

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DRINKING WATER CHAIN-OF-CUSTODY

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

100286210

Printed On: 2024-05-31 15:57:33

CLIENT INFORMATION

Company: Kollaard Associates Inc.
Contact: Colleen Vermeersch
Address: 210 Prescott St, Kemptville, On K0G 1J0
Telephone: 613-860-0923 ext230 Fax:
Email #1: #2:
Project: 240502
PO #: Quote #: 170314

WATERWORKS INFORMATION

Waterworks Name:
Waterworks #:
Contact:
Address:
Telephone: Fax:
Cell Phone:
Email #1: #2:

REGULATION/GUIDELINE REQUIRED

- [ ] O. Reg 170
- [ ] O. Reg 170 15.1
- [x] ODWSOG
- [x] Private Well
- [ ] None
- [ ] O. Reg 318/319
- [ ] O. Reg 243
- [ ] GCDWQ
- [ ] Other:

TURN-AROUND TIME (Business Days)

- [ ] 1 Day* (100%)
- [ ] 2 Day** (50%)
- [ ] 3-5 Days (25%)
- [x] 5-7 Days (Standard)

Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service. Note that some tests (i.e. O. Reg. 170 Schedule 24 pesticides may take up to 3 weeks to analyze). Please see notes (on reverse) about TAT policies.

The optimal temperature conditions during transport must be less than 10°C. Sample(s) cannot be frozen. Note that for drinking water samples, all exceedances will be reported where (and how) the application legislation requires.
The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample ID	Date/Time Collected	Sample Type Code (see below)	Resample? Y = Yes N = No	MOE/MOH Reportable? Y = Yes N = No	# of Containers	SPL Code/Watertrax	Sample Location (i.e. Kitchen, POE)	Subdivision parameters	Kollaard Subdivision bacteria	Kollaard Special Metals	true colour				Total Chlorine	Free Chlorine	Field Turbidity	Sample RN# (Lab Use Only)
TW1-3 hrs	05-30 / 11:30	PW	N	N	8		wellhead	✓	✓	✓	✓				-	-	-	7750168
TW1-6 hrs	05-30 / 14:30	PW	N	N	8		wellhead	✓	✓	✓	✓				-	--	-	69

Sample Type Codes for Drinking Water: RW = Raw Water, TW = Treated Water at Point of Entry to distribution, TW-NT = Untreated Water at Point of Entry to distribution, DW = Distribution, RP = Residential Plumbing, NRP = Non-Residential Plumbing, S = Standing, F = Flushed, PW = Private Well

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	Shawn Beaton			
Relinquished By:				
Received By:			5/31/24	12

COMMENTS:
Sample for metals were field filtered using 0.45 micron filter

AFCOCDW.8

Copies: White - Laboratory, Yellow - Sampler

Ryznar Stability Index

RSI = 2(pH_s) - pH

RSI << 6 → the scale tendency increases as the index decreases
RSI >> 7 → the calcium carbonate formation probably does not lead to a protective corrosion inhibitor film
RSI >> 8 → mild steel corrosion becomes an increasing problem

Langelier Saturation Index

LSI = pH - pH_s

If LSI is negative → no potential to scale, the water will dissolve $CaCO_3$
If LSI is positive → scale can form and $CaCO_3$ precipitation may occur
If LSI is close to zero → borderline scale potential, water quality or temperature change or evaporation could change the index

where pH measured from sample
pH_s = pH at saturation in calcite or calcium carbonate

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

$$A = \frac{\log_{10}[TDS] - 1}{10}$$

$$B = -13.12 \times \log_{10}(°C + 273) + 34.55$$

$$C = \log_{10}[Ca^{2+} as CaCO_3] - 0.4$$

$$D = \log_{10}[alkalinity as CaCO_3]$$

	TW1-3hr	TW1-6hr
pH	7.88	7.84
hardness [mg/l as $CaCo_3$]	371	374
Alkalinity [mg/l as $CaCo_3$]	273	282
total dissolved solids [mg/l]	624	624
temperature (°C)	15	15
→→ RSI	6.43	6.44
→→ LSI	0.72	0.70