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REPORT ON

**HYDROGEOLOGICAL AND TERRAIN STUDY  
PROPOSED INDUSTRIAL DEVELOPMENT  
6622 BANK STREET  
CITY OF OTTAWA, ONTARIO**

Submitted to:

CAMM Warehousing and Rentals Inc.  
6622 Bank Street  
Greely, Ontario  
K0A 2P0

DATE                      May 28, 2024

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230156



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May 28, 2024

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CAMM Warehousing and Rentals Inc.  
6622 Bank Street  
Greely, Ontario  
K0A 2P0

RE: HYDROGEOLOGICAL STUDY  
PROPOSED EXPANSION TO EXISTING INDUSTRIAL DEVELOPMENT  
6622 BANK STREET  
OSGOODE WARD  
CITY OF OTTAWA, ONTARIO

Dear Sir:

Kollaard Associates Inc. was retained by CAMM Warehousing and Rentals Inc. of Ottawa, Ontario, to supplement an existing hydrogeological and terrain study for a proposed expansion to the existing industrial development at 6622 Bank Street, in the City of Ottawa, Ontario.

This report is an update to a previous Hydrogeological study completed by Kollaard Associates (170035 – Hydrogeological Study, dated June 22, 2017). The report presents the results of an evaluation of the water quality and quantity for the well that will supply water for the existing industrial warehouse building and two proposed industrial buildings. The purpose of this report is to update the existing information from the previous study in accordance with the policies in the *City of Ottawa Hydrogeological and Terrain Guidelines, 2021*. It is understood that it is being proposed to construct two industrial buildings; each warehouse building on the existing ~6.0 hectare (~14.9 acre) property. The proposed buildings are to consist of single storey structures with warehouse and office space.

The well in question was constructed by Olympic Drilling Company Ltd. of Metcalfe, Ontario on May 30, 2017. A Ministry of the Environment, Conservation and Parks (MECP) Well Record for the subject well (TW1) and a Compliance Certificate are provided as Attachment A. This well was drilled for the purposes of the original report and to service the proposed development.



## 1.0 Groundwater Supply Evaluation

The surrounding area of the subject site has had minimal development since 2017. The property to the northeast (6571 Bank St) has developed from a single family dwelling to a storage yard with a single building on site. The lot immediately south (6638 Bank St) has been developed into a storage yard with a single building on site (AIM Recycling and Auto Parts). The remaining development in the area consists of a mixture of residential, commercial and industrial development, which was present prior to 2017. The pumping test carried out in 2017 was done at a high rate of 83 Litres per Minute and the drawdown was 0.12 metres over 6 hours with 92% water level recovery within 15 minutes after the test. The transmissivity of the aquifer is very high in this area (199 m<sup>2</sup>/day). All area wells are at least 30 metres in depth and many are greater than 60 metres in depth. Therefore, the previous evaluation is of water quantity is considered valid.

The 2017 report is supplemented with the following:

- The water quality was updated by obtaining a water sample from the existing supply well that was tested for the subdivision parameters, including trace metals, and Petroleum Hydrocarbons F1-F4 and volatile organic compounds (VOCs) to be in compliance with the 2021 updated water testing parameters for SPC.
- A groundwater impact assessment was carried out using the total sewage design flow for the site and sewage system design information is provided.

A pumping test was carried out at the well, TW1, by a member of our engineering staff on June 8, 2017. The testing consisted of a 6 hour duration constant discharge rate pumping test. During the pumping test, water level measurements were made both manually and using a pressure transducer to monitor the drawdown of the water level in the well in response to pumping. Groundwater samples were collected from TW1 at about hour 3 and at hour 6 of the pumping test to characterize groundwater quality. After the pumping period, the pump was shut off and the recovery of the water level in the well was monitored for a period of time.

### 1.1 Water Quantity

#### A. Water Demand

The water demand is calculated using the information from the sewage system daily design flow and peaking factors available in the City of Ottawa Water Distribution Guidelines, 2010. The sewage design flows are provided below, based on the sewage design information (provided by client).

Daily sewage design flow:

The daily sewage design flow is equal to a maximum daily demand for the site. The site is to be developed as follows, with the corresponding sewage design flows as provided by the sewage design consultant (Kollaard Associates Inc).

#### Water Demand

##### Existing Building

Office: The greater of 8 employees x 75 L/day = 600 L/day OR



Warehouse: 192.1 m<sup>2</sup> Office Space x 75 L/day per 9.3 m<sup>2</sup> = 1,550 L/day  
5 loading bays x 150 L/day = 750 L/day  
1 water closet x 150 L/day = 950 L/day

### Proposed Industrial Buildings

Office: The greater of 8 employees x 75 L/day = 600 L/day OR  
105 m<sup>2</sup> Office Space x 75 L/day per 9.3 m<sup>2</sup> = 900 L/day  
Warehouse: 9 loading bays x 150 L/day = 1,350 L/day  
1 water closet x 150 L/day = 950 L/day

TOTAL DAILY SEWAGE DESIGN FLOW = 6,450 L/day

Since sewage system design is based on the maximum expected daily use, it is equivalent to the Maximum Daily Demand (MDD). The MDD is based on an eight hour operation schedule (i.e. full day occurs over an eight hour period and not over 24 hours).

City of Ottawa calculates the Maximum Hour Demand (MHD) for a commercial or industrial demand to be 1.8 x MDD

MDD = 6,450 litres / day x 1 day / 8 hours x 1 hour / 60 minutes  
= 13.4 litres / minute  
MHD = 1.8 x MDD  
= 1.8 x 13.0 litres / minute  
= 24.2 litres / minute

The predicted peak water hourly demand of 24.2 L/min is used.

The Maximum Hourly Demand (MHD) for the site based on its proposed use is expected to be about ~24.2 litres/minute, compared to the pumping test rate which was 83.1 litres/minute. This indicates that the pumping rate used for the test was appropriate as the peak water demand rate was met for the test. The MDD is 6,450 L/day. The test was carried out for 6 hours at the above noted rate and some ~29,900 Litres of water were removed from the well in that time. As such, the amount of water taking in six hours exceeds the expected daily water taking for the full development.

## **B. Pumping Test**

A pumping test was carried out on June 8, 2017, at the existing well on the property.

The well was pumped for six hours at a pumping rate of about 83 litres per minute. Over the course of the pumping test, the water level in the well dropped some 0.12 metres. At the end of the pumping test, about 92 percent recovery of the total drawdown in the static water level occurred within 15 minutes (water level was at 9.37 metres from top of casing). The D-5-5 Guideline recommends monitoring recovery for at least 24 hours or until 95% recovery has occurred. After 24 hours, the water level was measured and was found to have dropped (9.43 metres from top of casing). The water level was measured again after almost four days and the water level was even lower (9.85 metres from top of casing). It is considered that the water levels in the well at the time of the pumping test were dropping due to the climatic conditions that preceded the test. Confined bedrock aquifers are more likely to have fluctuations in water levels due to recharge events in spring due to water storage occurring only in fractures and as a result, water levels can rise



dramatically in response to recharge events. In this case, there had been a significant amount of rain in the month of May (177 mm) and in early June prior to the pumping test (29 mm). From the day before the test (June 7) to the end of monitoring (June 12), there were no rainfall events recorded at the Ottawa Airport (climate data reviewed for this study). It is considered that the water levels were declining in response to a previous rise in water level due to recharge. It is considered that the water level in the well did recover sufficiently after the pumping test (92% in 15 minutes) and there are no concerns with the long term availability of the water supply at this well.

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<sup>3</sup>/day

ds is the change in drawdown over one time log cycle, m

T is the transmissivity, m<sup>2</sup>/day

Based on the pumping test drawdown data the transmissivity of the aquifer is estimated to be about 199.1 m<sup>2</sup>/day. Based on the recovery data the aquifer transmissivity is estimated to be about 10,426 m<sup>2</sup>/day. It should be noted that the well production rate is very high (360 litres per minute/80 igpm, according to the well record). As a result, the transmissivity estimates may not be accurate as the flow rate used for the test was not sufficient to achieve a high drawdown (i.e. > about 30 cm, where only 12 cm was achieved). However, the flow rate was enough to demonstrate that the water supply from this well is adequate for the proposed domestic use associated with the proposed industrial development. The proposed development does not use water for industrial uses (ie. no process water). As such, the only water use is for domestic use.

## 1.2 Well Interference

A review of sixteen area well records was carried out. The area well records are provided as Attachment A along with a map showing their approximate locations. The wells were indicated to be between about 8.5 and 70 metres in depth. Half of the well records indicate that limestone was encountered during drilling, the other half indicated limestone and sandstone was encountered. Based on reported test pumping rates of between 6 and 113 litres per minute (excluding one record indicating 200 GPM), corresponding specific yields of 4 to 2,481 litres per minute per metre of drawdown were calculated, based on drawdowns reported on the well records.

In order to determine water quantity, information from area well records was obtained. The following chart provides water quantity data using information reported on the well records.

The following is noted. Many of the existing property owners including the subject site were subject to a Settlement Agreement with Cornwall Gravel Company Ltd. in 2011, which required all new



wells to be at least 220 feet (67 metres). Many existing wells were deepened at that time, as a result of Cornwall quarry activities causing shallow wells (typically less than 30 metres depth) to go dry. As such, the well record search may not be accurate for some wells that have been subsequently deepened.

Well No.	Well Depth (m)	Drawdown (m)	Available Drawdown (m)	Yield Test		
				Test rate	Specific Capacity	Spec. Cap.
				(L/min)	(L/min*m)	(m <sup>2</sup> /day)
1517028	14.34	2.44	4.58	45.4	18.6	26.8
A186997	67.10	0.03	21.96	75.7	2482.0	3574.0
A128080	70.15	0.03	58.22	75.7	2482.0	3574.0
1515392	8.54	2.14	3.97	75.7	35.5	51.1
1507372	14.34	-	-	18.9	-	-
1507377	20.74	-	18.30	6.3	-	-
1513850	15.86	0.00	7.93	37.9	-	-
A135283	70.15	0.06	59.23	75.7	1241.0	1787.0
A128031	70.15	0.31	58.71	75.7	248.2	357.4
A021623	26.60	3.00	19.40	44.0	14.7	21.1
A006908	57.91	5.46	22.15	54.6	10.0	14.4
1532268	61.00	25.32	25.32	94.6	3.7	5.4
1532951	61.00	53.38	53.38	757.0	14.2	20.4
1507373	18.30	0.61	8.24	113.6	186.1	268.1
1507374	18.61	0.61	11.29	113.6	186.1	268.1
A093655	63.44	0.08	52.31	75.7	992.8	1429.6

Based on the information from area well records, the specific capacities for area wells are in the range of 5.4 to 3,574 m<sup>2</sup>/day for wells drilled between 8.5 and 70 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 1,000 m<sup>2</sup>/day as low to high 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 37.9 and 113.6 litres per minute. The well record provided for the well at 6622 Bank Street indicates it was drilled in 2017. The specific capacity of that well based on a one hour yield test is 206.8 litres per minute per metre, at a flow rate of 37.9 litres per minute. The well for the subject site is similar depth to the area wells receiving from the sandstone underlying the limestone. However, 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 4.0 and 59.2 metres. There is sufficient available drawdown in existing wells, such that the addition of a commercial well is not expected to affect water supply in offsite wells. Given that the casing is 12.2 metres deep, the water supply well is isolated from any other offsite wells that are less than



12.2 metres deep. This provides additional assurance that the pumping of this well will be unlikely to cause well interference with most area wells.

### **1.3 Water Quality**

To determine the water quality of the groundwater supply, groundwater samples were obtained from the test well during the pumping test as well as additional samples collected on May 1, 2024 and prepared/preserved in the field using appropriate techniques and submitted to Eurofins Environmental Testing 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. For site plan control, additional testing for trace metals and VOCs is required. Due to onsite and offsite uses of heavy equipment PHC F1-F4 were also included. Samples that were tested for trace metals were field filtered using a 0.45 um filter prior to being placed into the laboratory supplied bottles complete with appropriate preservative to maintain sample integrity during transport. The VOC and PHC analyses were carried out by ALS Canada Ltd. The method of obtaining a water sample for VOC testing including ensuring that the water in the discharge hose was in laminar flow and the water was carefully allow to trickle down the laboratory supplied sample bottles rather than splashing to avoid aerating the water sample before storing it in a sealed bottle with no headspace.

The temperature, conductivity, pH, total dissolved solids, turbidity and residual chlorine levels of the groundwater were measured at periodic intervals during the pumping test. The results of the chemical, physical, bacteriological, and PHC and volatile organic compounds (VOCs) analyses and the field water quality of the water samples and the updated water quality compared to 2017 from the test well are provided as Attachment C, Table I, and Table II, respectively.

The water quality as determined from the results of the analyses is acceptable. 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 aesthetic objectives for hardness and total dissolved solids. Sodium is above the 20 mg/l medical advisory limit for those on sodium restricted diets. Based on water quality results there are no changes since 2017 to water quality and no detectible presence of any VOCs or hydrocarbons, trace metals are within allowable limits.

#### **A. Hardness**

The water is considered to be hard by water treatment standards. Water with hardness above 80 to 100 milligrams per litre as  $\text{CaCO}_3$  is often softened for domestic use. The hardness at the well is 318 milligrams per litre. 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.

#### **B. Total Dissolved Solids**

The total dissolved solids (TDS) were measured at 683 milligrams per litre, for the water sample obtained May 1, 2024, above the ODWSOG of 500 milligrams per litre. The Ryznar Stability Indices (RSI) and Langelier Saturation Indices (LSI) were calculated for the sample obtained May 1, 2024 and gave RSI values of 6.75 and LSI of 0.52, indicating that the water has a small potential for scale formation. The effect of elevated TDS levels on drinking water palatability also depends on





the individual components, which are principally chlorides, sulphates, calcium, magnesium and bicarbonates. Depending on which parameters are elevated, TDS exceedances can include hardness, taste, mineral deposition or corrosion. In this case, the test well water samples had a higher level of hardness (i.e. calcium carbonates) (318 mg/l) and presence of sodium and chlorides. The sodium and chlorides were within their aesthetic objectives. It is considered that the elevated TDS levels do not significantly impact water palatability as the individual parameters that contribute to the elevated TDS levels are within the aesthetic objectives.

## **C. Sodium**

The sodium level in the water is about 117 mg/l. The MOECC D-5-5 Guideline states that *“the local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/l so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.”* The sodium levels were well within the aesthetic objective of 200 mg/l.

## **2.0 Terrain Study**

Soils information was obtained from geotechnical boreholes put down at the subject site, which are appended to this report and the Site Plan, Figure 2 provides the locations of the boreholes. The field work for the geotechnical investigation was carried out on May 1, 2024, at which time four boreholes were put down at the site, identified as BH1 to BH4. All boreholes encountered about 0.9 to 2.4 metres of fill material, consisting of either asphalt, crushed gravel, yellow brown sand, trace clay and organics, overlying glacial till to depths of 2.1 to 3.3 metres. Where encountered, water was observed at about 1.1 and 3.2 metres below the ground surface. Two hydrometer analyses were carried out on samples of the glacial till material that was encountered across the site. The results of the hydrometer (Attachment F) indicate that the soil at a depth of 2.3 to 2.9 metres below ground surface has roughly 80% silt and clay sized particles. This is considered to be a fine grained soil which has low permeability. The second sample indicated that the soil at a depth of 3.0 to 3.6 metres below ground surface has roughly 60% sand and gravel sized particles. This is considered to be a medium grained soil which has moderate permeability. As all 4 boreholes encountered the glacial till layer at thicknesses ranging from 0.9 to 2.4 metres, below the fill and topsoil, it is considered that the glacial till deposit at the site and the upper bedrock are the receiving aquifer.

## **2.1 Groundwater Impact Assessment**

The existing septic system for the industrial building at 6622 Bank St was designed by Kollaard Associates (File Number: 170035 – June 6, 2017). The system consists of a fully raised conventional system located in the front of the existing building. The system was designed with a daily sewage flow of 3,250 L/day.

The most probable groundwater receiver for sewage effluent is the glacial till and upper bedrock at the site. To obtain a general indication as to the potential impact of septic effluent on the properties adjoining the proposed development, a nitrate dilution model was used. For this case, as the site is considered to be an industrial use, the daily effluent loading is based on the sewage system design flows. The resulting nitrate dilution calculations are provided as Attachment E, along with the Climate Data used for the calculation.

The sewage design flow calculations were provided by the sewage system designer and are as follows;



### Existing Building

Office: The greater of 8 employees x 75 L/day = 600 L/day OR  
192.1 m<sup>2</sup> Office Space x 75 L/day per 9.3 m<sup>2</sup> = 1,550 L/day  
Warehouse: 5 loading bays x 150 L/day = 750 L/day  
1 water closet x 950 L/day = 950 L/day

### Proposed Commercial Buildings

Office: The greater of 8 employees x 75 L/day = 600 L/day OR  
105 m<sup>2</sup> Office Space x 75 L/day per 9.3 m<sup>2</sup> = 900 L/day  
Warehouse: 9 loading bays x 150 L/day = 1,350 L/day  
1 water closet x 950 L/day = 950 L/day

TOTAL DAILY SEWAGE DESIGN FLOW = 6,450 L/day

Other infiltration factors that were used in the above noted calculations are provided below.

Infiltration is based on moisture surplus and incorporates factors including soils, topography, soil cover and impervious areas (infiltration reduction factors). For this calculation, the background nitrate was assumed to be 0.0 mg/L.

The following provides the basis whereby the infiltration reduction factors for the site were chosen for the dilution calculations.

Topographic, soil and land cover infiltration factors were selected from *Table 2* of the MOE *Hydrological Technical Information Requirements for Land Development Applications*. The following is a discussion of each of the infiltration reduction factors chosen for the site.

The site is characterized by a combination of flat and rolling terrain, based on a topographical survey of the site and the post-development conditions indicate that slope is generally less than 2 metres per kilometre. The topography factor that applies to the site is 0.15.

The type of land cover observed at the site at the time of site visits and by use of satellite imagery consists mostly of cultivated lands, with some mature trees on the west portion of the site. The post-development conditions provided in the Grading Plan (230156-GR) show that the treed area is to remain post-construction (grades to remain as is). The land cover infiltration factor of 0.10 was selected, which corresponds to cultivated land and does not include any trees or post-development re-vegetation.

A soil infiltration factor of 0.20 was chosen as the site is indicated to be underlain by sandy fill followed by the native glacial till soils. The soils range from coarse (greater than 50% sand content) to fine textured silt (less than 50% coarse textured). The glacial till has some 80% silt and clay sized particles while the overlying sand fill is coarse grained. The soil infiltration value that was used corresponds to combinations of clay and loam (glacial till), based on the expected lower permeability of the underlying soils encountered across the site.

In order to determine water surplus estimates for the site area, Environment Canada published values for Ottawa International Airport obtained for the years 1939 to 2021 was used. The expected moisture surplus or net potential infiltration for the site area was estimated 379 millimetres, for the sand to silt type soils that are expected for the site.



Hard Surfaced Area post-development was calculated as follows. The areas of the roofs of the buildings at the site occupy an area of some 6972 square metres and are not available for infiltration. The parking area consists of asphaltic concrete surfaced areas of about 3015 square metres. For asphalt, the runoff coefficient is 0.9. The gravel surfaced area occupies some 25,800 square metres with a corresponding runoff coefficient of 0.6. The Net Infiltration Area (NIA) for the site was calculated as 34,723.0 square metres. There will also be additional infiltration promoted through the stormwater retention area that is not included, making the NIA calculation conservative.

The sewage system that is proposed to service the new buildings development is a tertiary treatment system that is expected to reduce nitrates to 20 mg/L (50% denitrification).

The nitrate impact calculation, using a predicted combined actual sewage flow of a 6,450 L/day (3,250 L/day existing system, and 3,200 L/day proposed development) and associated effluent quality of a conventional and tertiary system (40 mg/L for conventional, and 20 mg/L for tertiary) as total nitrogen indicates that the expected concentration of nitrate at the down gradient property boundary is some 8.6 mg/L, which is within the predicted impact of 10 mg/L.

Based on the above noted information, the expected impact at the down gradient property boundary of the site is expected to be within the allowable limits of the MOE, incorporating the sewage design considerations as discussed in the following section.

## **2.2 Sewage Design Considerations**

The sewage design for the proposed expansion is a tertiary system capable of achieving at least 50% nitrogen removal through denitrification. The sewage system design was outlined by Kollaard (Service Feasibility Report, April 29, 2024) to consist of a class 4 sewage system with a level IV treatment unit, including a buried trench disposal field and Waterloo Biofilter. The proposed tertiary sewage bed is located in the south portion of the site. The proposed location of the sewage system is shown on the Site Plan prepared by Kollaard Associates Inc (Attachment E).

The size of the septic envelopes are a function of the percolation time of the native soil in the vicinity of the septic envelope and/or the fill used for construction of a septic bed and the daily effluent loading to the septic bed. The sewage design for the proposed development (prepared by Kollaard Associates) is indicated to consist of a Waterloo Biofilter capable of achieving 50% nitrogen removal through denitrification.

It is the responsibility of the owner to ensure that the sewage system is maintained indefinitely as is required by the City of Ottawa and the Ottawa Septic System Office (OSSO) for denitrification systems, including:

- A maintenance contract between the owner and a maintenance provider; and
- Owner to contact OSSO regarding additional fees for monitoring and reporting requirements of the treatment system.

## **3.0 Wellhead Protection**

The existing well casing is over 100 metres from the proposed future buildings, the following is required to protect the integrity of the well casing:



- The supply well is located within the northeast portion of the site, outside of and away from any proposed buildings or construction areas; and
- The well is situated at least 30 metres away from potential contaminant sources, including the sewage leaching bed and snow storage areas and current and proposed stormwater retention ponds; and

As the existing well is outside the area of proposed development it is expected that the grading around the wellhead will not be altered. The following is recommended as best practices to comply with well siting requirements and be in accordance with the Ontario Regulation 903 and is considered to be already met by the existing well siting which will not be altered as part of the new building phase:

- The well casing extends to greater than 400 millimetres above final finished grades around the well; and
- The ground surface at the well is graded such that the well is the highest point on the ground surface within 3 metres radially from the exterior of the well casing and shall ensure that water does not collect or pond near the well head.
- The existing sewage system leaching bed is constructed a minimum of 15 metres from the existing well location and the proposed sewage system is well over 50 metres from the existing well;
- The stormwater management pond is located some 25 to 30 metres from the wellhead. A minimum separation distance of 15 metres shall be maintained as stormwater ponds are considered a source of contaminants to the wellhead.
- All possible contaminant sources shall be kept a minimum distance of 15 metres from the well. Possible contaminant sources include; chemical storage, garage and related chemicals, such as antifreeze, gasoline, oils, vehicle/boat/equipment storage, sewer lines, septic systems, animal enclosures, manure or compost piles. If liquid chemicals, such as antifreeze, oil and gasoline/diesel, and their waste products, are to be stored at the site, they should be stored in containers approved for that purpose. The container(s) should be labelled with their contents. Secondary containment should be installed around all bulk liquid chemical or waste storage containers, to collect and contain leaks and spills from the tank and all connections;
- The use of curbs between the parking spaces and the landscaped area are generally sufficient to ensure well is physically protected from the access roadway. With these measures in place, it is considered that an adequate amount of wellhead protection is going to be in place to protect the water supply for the proposed light industrial use of the property.
- The well location is also appropriate for access in case of repairs and well maintenance and is located within a landscaped area.

Recommendations for well maintenance include; inspect wellhead annually to ensure that the casing is structurally sound, verify well cap is sealed and that surface water is not pooling around wellhead. The well is located such that it is easily accessible for maintenance/repairs. A lock on the well cap is useful to prevent vandalism.

## 4.0 Conclusions

Based on the results of this evaluation it is considered that the well in question is capable of supplying water of adequate quantity and quality for the proposed development with suitable treatment and wellhead protection as indicated above.



The sewage impact from the proposed development is within allowable limits of 10 mg/L as nitrate, using denitrification of at least 50% through the use of the Waterloo Biofilter sewage system. The current design flow is some 6,450 L/day which results in a predicted down gradient property boundary of 8.6 mg/L as nitrate, considering the impact of the existing conventional system and the proposed tertiary system with denitrification. Based on the on the above noted information, the predicted sewage impact on the down gradient properties is within the allowable limits.

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

Yours truly,  
Kollaard Associates Inc.

Isaac Bacon, P.Eng.



Colleen Vermeersch, P. Eng.

**KEY PLAN**



**FIGURE 1**



**NOT TO SCALE**

DRAWING NUMBER:  
SITE PLAN, FIGURE 2

LEGEND:

-  TW1 APPROXIMATE TEST WELL LOCATION
-  BH1 APPROXIMATE BOREHOLE LOCATION

REFERENCE: PLAN SUPPLIED BY COSINE

SPECIAL NOTE: THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

REV.	NAME	DATE	DESCRIPTION



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CLIENT:  
CAMM WAREHOUSING AND RENTALS INC.

PROJECT:  
HYDROGEOLOGICAL INVESTIGATION FOR PROPOSED WAREHOUSE BUILDINGS

LOCATION:  
6622 BANK STREET  
CITY OF OTTAWA, ONTARIO

DESIGNED BY: DATE: APRIL 8, 2024  
 DRAWN BY: DT SCALE: N.T.S.  
 KOLLAARD FILE NUMBER: 230156



TABLE I  
FIELD WATER QUALITY MEASUREMENTS  
FOR TEST WELL

	Time Since Pumping Test Started (min)	Temp. (°C)	pH	Turbidity (NTU)	Total Dissolved Solids (ppm)	Conductivity (µS)	Free chlorine (ppm)
TW 1	60	10.9	7.9	0.0	502	1001	-
	120	10.6	7.4	0.0	498	1008	-
	180	10.6	7.5	0.0	505	1035	0.0
	240	10.6	7.5	0.1	500	997	-
	300	10.6	7.5	0.0	496	992	-
	360	11.4	7.3	0.0	496	996	0.0



TABLE II  
SUMMARY OF WATER CHEMISTRY FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
<b>Anions</b>				
<b>Chloride</b> [mg/l]	AO/MCCRT 250	129	126	104
<b>Nitrate</b> [mg/l]	MAC 10.0	<0.10	<0.10	<0.5
<b>Nitrite</b> [mg/l]	MAC 1.0	<0.10	<0.10	<0.5
<b>Sulphate</b> [mg/l]	AO 500	126	124	113
<b>Calculations</b>				
<b>Hardness</b> [mg/l]	OG 100	<b>429</b>	<b>427</b>	<b>318</b>
<b>Ion Balance</b>		0.91	0.92	1.01
<b>General Chemistry</b>				
<b>Alkalinity</b> [mg/l]	OG 500	313	299	307
<b>Colour (True)</b> [TCU]	AO 5 MCCRT 7	2	2	<2
<b>Conductivity</b> [uS/cm]		1110	1100	1050
<b>DOC</b> [mg/l]	AO 5	1.7	1.9	1.8
<b>Fluoride</b> [mg/l]	MAC 1.5	0.18	0.19	0.24
<b>pH</b>		7.95	7.96	7.80
<b>Hydrogen Sulphide</b> [mg/l]	AO 0.05	<0.02	<0.02	<0.01
<b>Tannin &amp; Ligin</b> [mg/l]		<0.1	<0.1	0.4
<b>Turbidity</b> [NTU]	AO 5.0	1.6	1.2	0.3
<b>General Chemistry</b>				
<b>Calcium</b> [mg/l]		96	95	54
<b>Magnesium</b> [mg/l]		46	46	45
<b>Potassium</b> [mg/l]		6	6	6
<b>Sodium</b> [mg/l]	AO 200	62	57	117

TABLE IV (Continued)

SUMMARY OF WATER CHEMISTRY FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
<b>Metals</b>				
<b>Aluminum</b> [mg/l]	OG 0.1			<0.01
<b>Antimony</b> [mg/l]	IMAC 0.006			<0.0005
<b>Arsenic</b> [mg/l]	IMAC 0.01			<0.001
<b>Barium</b> [mg/l]	MAC 1.0			0.118
<b>Beryllium</b> [mg/l]				<0.0005
<b>Boron</b> [mg/l]	IMAC 5.0			0.17
<b>Cadmium</b> [mg/l]	MAC 0.005			<0.0001
<b>Chromium</b> [mg/l]	MAC 0.05			<0.001
<b>Cobalt</b> [mg/l]	*0.0038			<0.0002
<b>Copper</b> [mg/l]	AO 1.0			0.057
<b>Iron</b> [mg/l]	AO 0.3			<0.03
<b>Lead</b> [mg/l]	MAC 0.010			<0.001
<b>Manganese</b> [mg/l]	MAC 0.05			0.04
<b>Mercury</b> [mg/l]	MAC 0.001			<0.0001
<b>Molybdenum</b> [mg/l]				<0.005
<b>Nickel</b> [mg/l]	MAC 0.010			0.006
<b>Selenium</b> [mg/l]	MAC 0.05			<0.001
<b>Silver</b> [mg/l]				<0.0001
<b>Strontium</b> [mg/l]	** 7.0			1.49
<b>Thallium</b> [mg/l]				<0.0001
<b>Uranium</b> [mg/l]	MAC 0.02			<0.001
<b>Vanadium</b> [mg/l]	*0.0062			<0.001
<b>Zinc</b> [mg/l]	AO 5.0			0.07

TABLE II (Continued)

## SUMMARY OF WATER CHEMISTRY FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
<b>Nutrients, Phenols, Solids</b>				
<b>Ammonia</b> [mg/l]		0.14	0.15	0.129
<b>TKN</b> [mg/l]		0.3	0.3	0.200
<b>Phenols</b> [mg/l]		<0.001	<0.001	<0.001
<b>TDS</b> [mg/l]	AO 500	<b>722</b>	<b>715</b>	<b>683</b>

## SUMMARY OF WATER BACTERIA FOR TW1

Parameter	Guideline	6622 Bank St TW1-3Hr (June 8, 2017)	6622 Bank St TW1-6Hr (June 8, 2017)	6622 Bank St TW1 (May 1, 2024)
<b>Nutrients, Phenols, Solids</b>				
<b>Escherichia Coli</b> [ct/100ml]	MAC 0	0	0	0
<b>Faecal Coliforms</b> [ct/100ml]		0	0	NA
<b>Heterotrophic Plate Count</b> [ct/100ml] [ct/1ml]	OG <500	26	0	2
<b>Total Coliforms</b> [ct/100ml]	MAC 0	<b>1*</b>	0	0

Guideline refers to Ontario Drinking Water Standards, Objectives and Guidelines except where noted

\* O. Reg 153/04 standard Table 2 for potable groundwater

\*\* Health Canada health related maximum



ATTACHMENT A

MOE WELL RECORD FOR TW1, CERTIFICATE OF COMPLIANCE  
PROVIDED BY WELL DRILLER  
AND AREA WELL RECORDS AND MAP



**Certificate of Well Compliance**

Wayne Renwick DO HEREBY CERTIFY that I am licensed to drill wells in the Province of Ontario, and that I have supervised the drilling of a well on the property of Camm Warehousing and Rentals Ltd. (Name of Landowner), located at 6622 Bank Street (Legal Description, Lot/Plan #) in the City of Ottawa (Geographic Township of Osgoode).

Lot 13, Concession 6, Plan # 4R-25595, S/L# Parts 1, 2 and 3  
CERTIFY FURTHER that, I am aware of the well drilling requirements, guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to the site and City Standards.

AND DO HEREBY CERTIFY THAT the said well has been drilled, cased, grouted (cement or bentonite) as applicable and constructed in strict conformity with the standards required.

Signed this 20 day of June 2017  
Wayne Renwick  
Well Driller/Company

Olympic Drilling Co Ltd

The Engineer on behalf of the landowner set out above Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg.903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

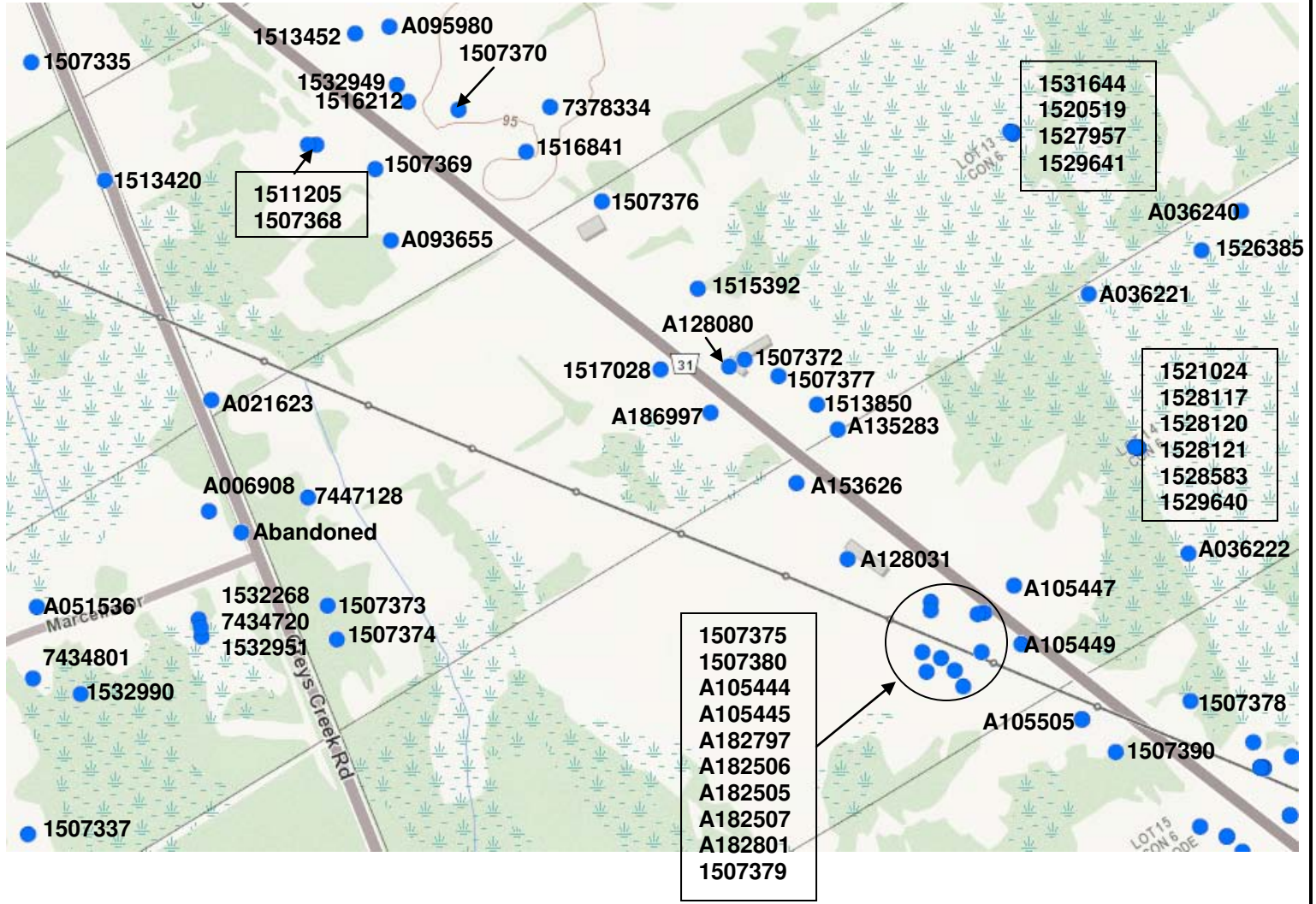
Signed this 21st day of June, 2017  
[Signature]  
Engineer

Table IV: 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 <sup>2</sup> /day
1517028	3.05	Stone	Limestone	6.71	14.34	Fresh	45.4	3.05	18.6	26.8
A186997	4.88	Sand and gravel	Limestone and Sandstone	12.20	67.10	Not Tested	75.7	8.54	2482.0	3574.0
A128080	4.88	Sand and gravel	Limestone and Sandstone	60.39	70.15	Not Tested	75.7	8.88	2482.0	3574.0
1515392	1.22	Shale	Limestone	6.71	8.54	Fresh	75.7	2.14	35.5	51.1
1507372	4.88	Till	Limestone	5.49	14.34	Fresh	18.9	2.44	-	-
1507377	3.66	Stone	Limestone	4.58	20.74	Fresh	6.3	2.14	-	-
1513850	2.59	Topsoil	Limestone	3.05	15.86	Fresh	37.9	2.75	-	-
A135283	4.88	Sand and gravel	Limestone and Sandstone	60.39	70.15	Not Tested	75.7	7.87	1241.0	1787.0
A128031	1.53	Gravel	Limestone and Sandstone	60.39	70.15	Not Tested	75.7	8.39	248.2	357.4
A021623	2.10	Topsoil	Limestone	6.60	26.60	Not Tested	44.0	3.60	14.7	21.1
A006908	1.21	Soil	Limestone and Sandstone	13.10	57.91	Not Tested	54.6	8.33	10.0	14.4
1532268	1.53	Sand	Limestone and Sandstone	12.81	61.00	Not Tested	94.6	5.19	3.7	5.4
1532951	1.22	Clay	Limestone and Sandstone	13.42	61.00	Not Tested	757.0	1.53	14.2	20.4
1507373	3.97	Stone	Limestone	6.10	18.30	Fresh	113.6	3.97	186.1	268.1
1507374	3.66	Stone	Limestone	6.10	18.61	Fresh	113.6	2.44	186.1	268.1
A093655	3.36	Clay and boulders	Limestone and Sandstone	6.10	63.44	Not Tested	75.7	8.69	992.8	1429.6

# REGIONAL WELLS MAP

# APPENDIX A



NOT TO SCALE

316/4h



RECEIVED 15  
JUL 22 1952  
GEOLOGICAL BRANCH  
DEPARTMENT OF MINES

No. 7372

UTM 1182 4588010E

5R 50110110N

Elev. 226 0300

Basin 213

The Well Drillers Act  
Department of Mines, Province of Ontario

# Water Well Record

County or District Carlton Tp. argood Con. 6 Lot 13 Pt. Lot  
T. E. Kelly Truly P.O. Acres  
(including pump)

### Pipe and Casing Record

### Pumping Test

Casing diameter(s) <u>5 in</u>	Date
Length(s) of casing(s) <u>18</u>	Developed Capacity
Length of screen	Duration of Test <u>1 H.R.</u>
Type of screen	Pumping Rate <u>300 m H</u>
Type of pump	Drawdown <u>6 feet</u>
Capacity of pump	Static level of completed well <u>8 feet</u>
Depth of pump setting	Is well a gravel-wall type?

### Water Record

Kind (fresh or mineral) <u>fresh</u>	Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
Quality (hard, soft, contains iron, sulphur etc.) <u>hard</u>	<u>8 feet</u> <u>47</u>	<u>hard</u>	<u>39</u>
Appearance (clear, cloudy, coloured) <u>clear</u>			
For what purpose(s) is the water to be used? <u>cottage</u>			
How far is well from possible source of contamination? <u>8 feet</u>			
What is source of contamination? <u>septic</u>			
Enclose a copy of any mineral analysis that has been made of water			

### Well Log

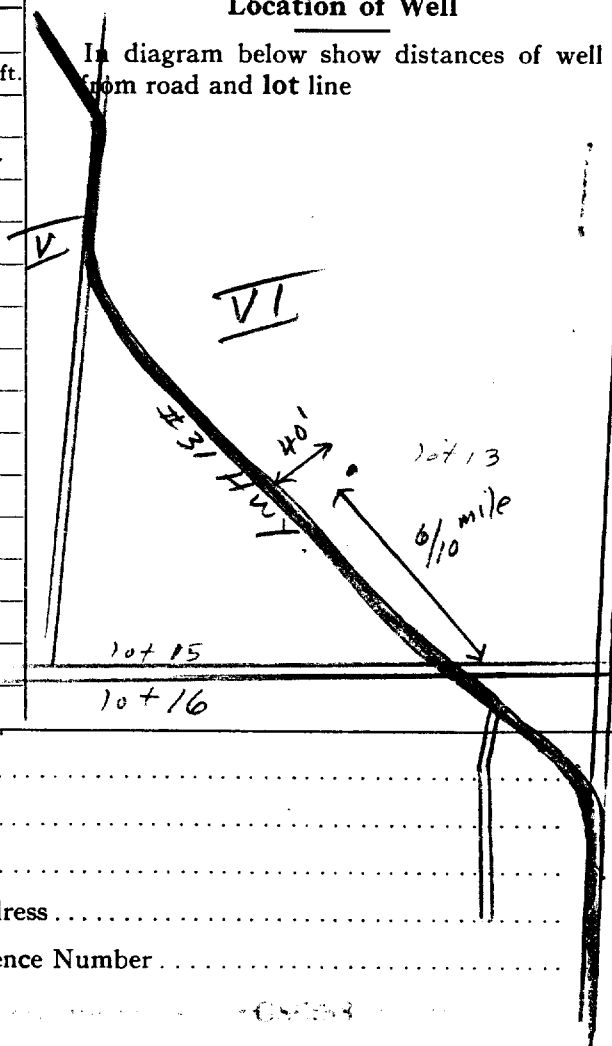
#### Drift and Bedrock Record

From To  
0 ft. ....ft.

<u>Loam</u>	<u>1</u>	<u>16</u>
<u>Lime stone</u>	<u>16</u>	<u>47</u>

### Location of Well

In diagram below show distances of well from road and lot line



Situation: Is well on upland, in valley, or on hillside?  
 Drilling Firm W. L. Cherry  
 Address Vars. P.O.  
 Recorded by ..... Address .....  
 Date ..... Licence Number .....





ONTARIO

The Well Drillers Act

Department of Mines, Province of Ontario

RECEIVED

DEC 12 1952

GEOLOGICAL BRANCH  
DEPARTMENT of MINES

# Water Well Record

County or District *Carleton* Tp. *argood* Con. *VI* Lot. *413* Pt. Lot. ....  
 Owner. [redacted] Address *Greely* Acres .....  
 Date Completed *July 15/52* Cost of Well (not including pump) .....

### Pipe and Casing Record

### Pumping Test

Casing diameter(s) <i>5" <del>4"</del></i>	Date .....
Length(s) of casing(s) <i>12 ft</i>	Developed Capacity .....
Length of screen .....	Duration of Test <i>4 hr</i>
Type of screen .....	Pumping Rate <i>300 P.H.</i>
Type of pump .....	Drawdown <i>11 feet</i>
Capacity of pump .....	Static level of completed well <i>9 feet</i>
Depth of pump setting .....	Is well a gravel-wall type? .....

### Water Record

Kind (fresh or mineral) <i>fresh</i>	Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
Quality (hard, soft, contains iron, sulphur etc.) <i>hard</i>	<i>4 ft</i>	<i>hard</i>	<i>38 ft</i>
Appearance (clear, cloudy, coloured) <i>clear</i>	<i>47 ft</i>		
For what purpose(s) is the water to be used? <i>house</i>			
How far is well from possible source of contamination? <i>15 feet</i>			
What is source of contamination? <i>out house</i>			
Enclose a copy of any mineral analysis that has been made of water .....			

### Well Log

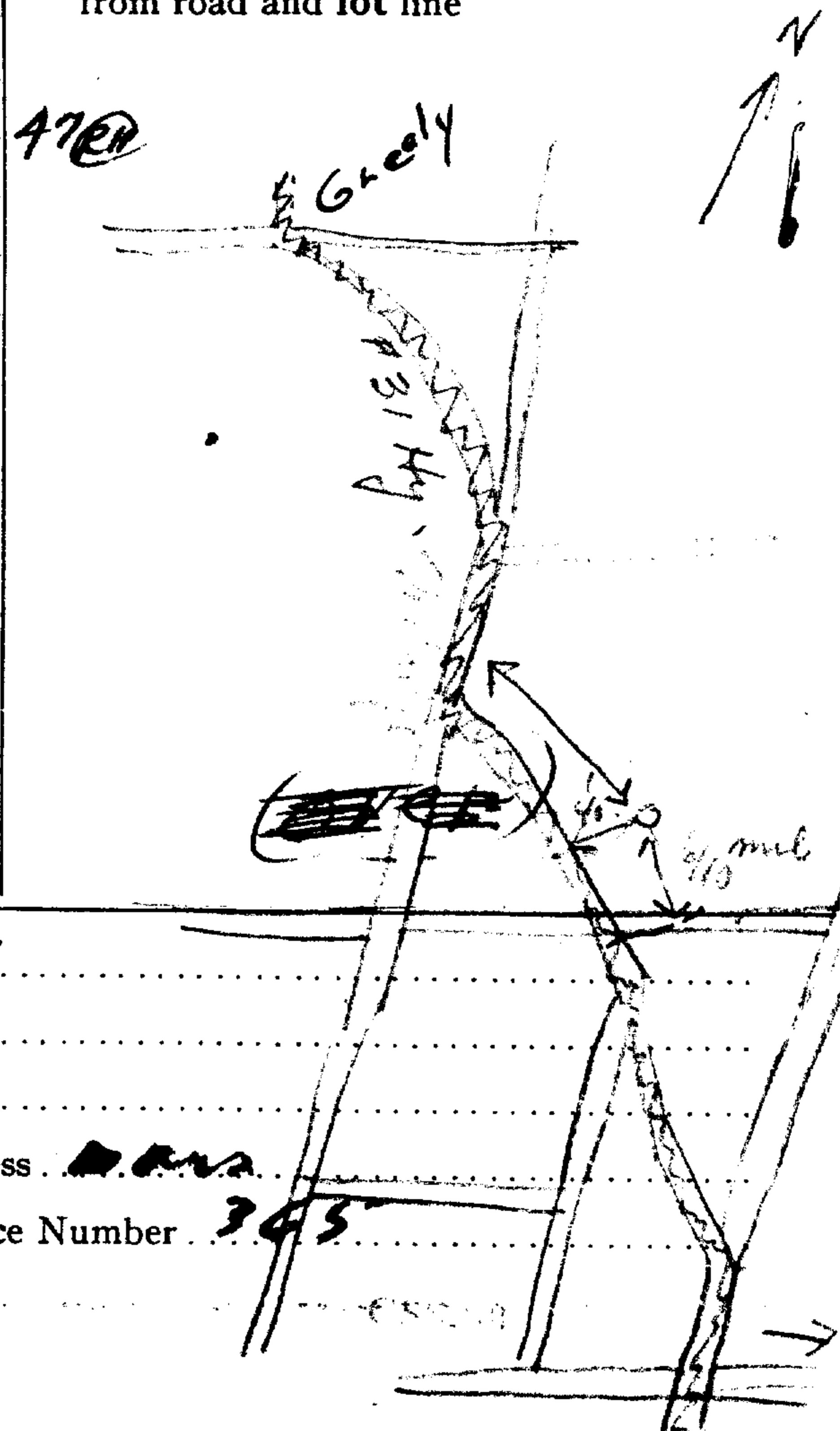
#### Drift and Bedrock Record

From	To
0 ft.	.....ft.

<i>Loam</i>	<i>1</i>	<i>10</i>
<i>Thin stone</i>	<i>10</i>	<i>37</i>

### Location of Well

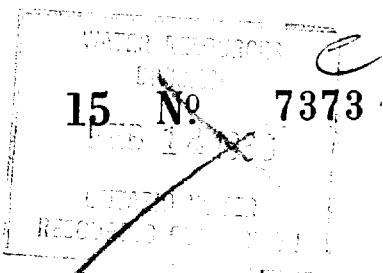
In diagram below show distances of well from road and lot line



Situation: Is well on upland, in valley, or on hillside? *valley*  
 Drilling Firm *Christy*  
 Address *var*  
 Recorded by *M. C. Christy* Address *var*  
 Date *Dec 8/52* Licence Number *345*

**DUPLICATE**

316/544



UTIM 1482 4583010 E

05R 510098210 N

The Ontario Water Resources Commission Act

Elev. 4R 01295

# WATER WELL RECORD

Basin 25 | Carl

Township, Village, Town or City Osgoode

Con. VI Lot 13

Date completed 7 (day) Dec (month) 1965 (year)

Address RR # 3 Metcalfe 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 13'

Test-pumping rate 30 G.P.M.

Pumping level 15'

Duration of test pumping 1 hr

Water clear or cloudy at end of test cloudy

Recommended pumping rate 5 G.P.M.

with pump setting of 40' feet below ground surface

### Well Log

### Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>hardpan &amp; boulders</u>	<u>0'</u>	<u>13'</u>	<u>58'</u>	<u>fresh</u>
<u>limestone</u>	<u>13</u>	<u>60</u>		

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

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

Drilling or Boring Firm Capital Water Supply

Address 1243 Heron Rd Ottawa 733-0600

Licence Number 1687

Name of Driller or Borer H Mains

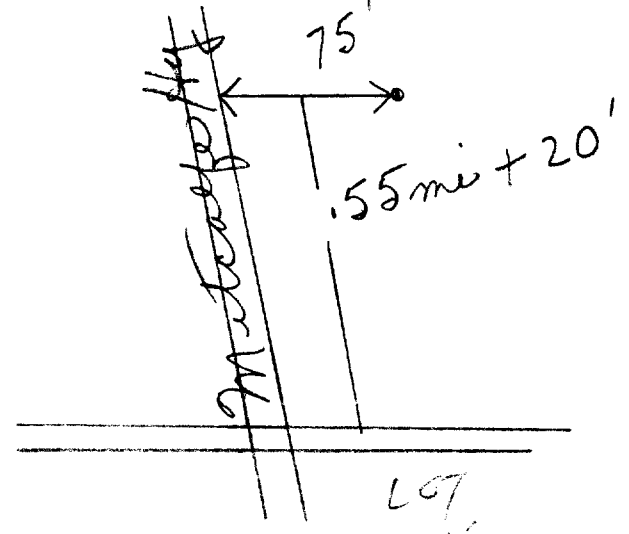
Address .....

Date Dec 8 1965

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.



LOT 16

316/4h



WATER RESOURCES COMMISSION  
15 No. 7374

UTM 182 4583110 E

5 R 50097819 N

The Ontario Water Resources Commission Act

Elev. 4 R 0295

# WATER WELL RECORD

Basin 25 Carl

Township, Village, Town or City Osgoode

Con. V1 Lot 13

Date completed 2 (day) Dec (month) 1965 (year)

Address RR # 3 Metcalf 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 8

Test-pumping rate 30 G.P.M.

Pumping level 10

Duration of test pumping 1 hr

Water clear or cloudy at end of test cloudy

Recommended pumping rate 10 G.P.M.

with pump setting of 45' feet below ground surface

### Well Log

### Water Record

#### Overburden and Bedrock Record

	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>boulders &amp; hardpan limestone</u>	<u>0'</u>	<u>12'</u>	<u>60'</u>	<u>fresh</u>
	<u>12'</u>	<u>61'</u>		

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

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

Drilling or Boring Firm Capital Water Supply

Address 1243 Heron Rd Ottawa 733-0600

Licence Number 1687

Name of Driller or Borer G. Colbourne

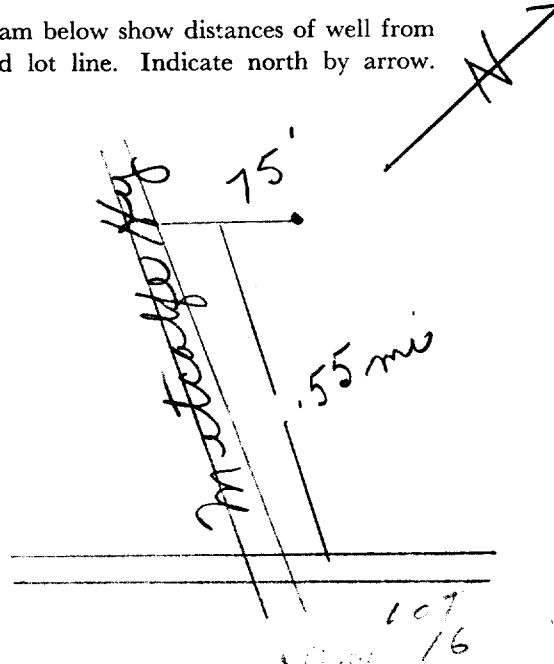
Address .....

Date Dec 4 1965

Stuart Lavanagh  
(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.



31  
UTM 118Z 458840

316/4h  
1962



GROUND WATER BRANCH  
15 No 7377  
FEB 25 1965  
ONTARIO WATER  
RESOURCES COMMISSION

CONSENT 510110090

The Ontario Water Resources Commission Act

# WATER WELL RECORD

Elev. 430300

Basin 25  
County or District Carleton

Township, Village, Town or City Osgoode

Con. 6 Lot 13

Date completed Oct 18 1962  
(day month year)

Address Metcalf road

## Casing and Screen Record

Inside diameter of casing 4  
Total length of casing 15 feet  
Type of screen  
Length of screen  
Depth to top of screen  
Diameter of finished hole 4 inch

## Pumping Test

Static level 7 feet  
Test-pumping rate 102 gal per HOUR GPM  
Pumping level 20 feet  
Duration of test pumping 15 minutes  
Water clear or cloudy at end of test Clear  
Recommended pumping rate 100 GPM  
with pump setting of 67 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)
hard pan - Boulder	0	12		
hard grey limestone	12	68	68	fresh

For what purpose(s) is the water to be used? none

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

Drilling or Boring Firm James R. Kittle

Address Ramsayville

Licence Number 759

Name of Driller or Borer James R. Kittle

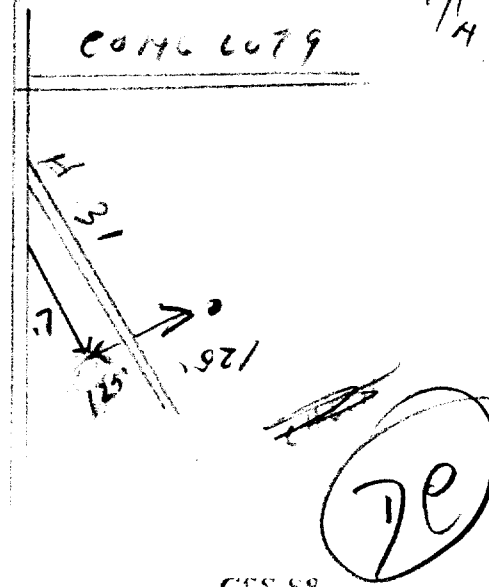
Address Ramsayville

Date Oct 18 1962

James Robert Kittle  
(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.





# WATER WELL RECORD

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

11 | 1513850 | MUNICIPAL 15009 | CON. CAN | 3/9/73 | 106

CARLETON | OS GOODE | CON. BLOCK, TRACT, SURVEY, ETC. CONFESSION 6013 | LOT 25-27

DATE COMPLETED 48-53 DAY 02 NO. 08 YR 73

1513850 18 | 498888 | 5010056 | 4 | 297 | 4 | 26 | MAR 17, 1975 | 247

### LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWNISH		TOP SOIL	ORGANIC	0	8 1/2
BLUE GREY			LIMESTONE	8 1/2	52

31 | 00091602 | 0052315

32

#### 41 WATER RECORD

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

#### 51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	1 <input type="checkbox"/> STEEL	12		
	2 <input checked="" type="checkbox"/> GALVANIZED	5 1/2	0	00.0
	3 <input type="checkbox"/> CONCRETE			
	4 <input type="checkbox"/> OPEN HOLE			
17-18	1 <input type="checkbox"/> STEEL	19		20-23
	2 <input type="checkbox"/> GALVANIZED			
	3 <input type="checkbox"/> CONCRETE			
	4 <input type="checkbox"/> OPEN HOLE			
24-25	1 <input type="checkbox"/> STEEL	26		27-30
	2 <input type="checkbox"/> GALVANIZED			
	3 <input type="checkbox"/> CONCRETE			
	4 <input type="checkbox"/> OPEN HOLE			

#### SCREEN

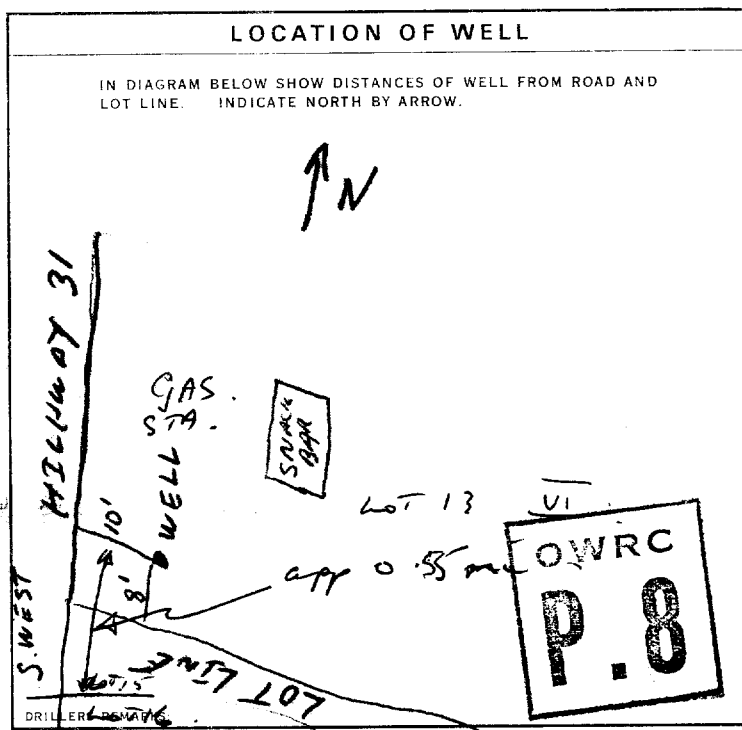
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN
		41-44 FEET

#### 61 PLUGGING & SEALING RECORD

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

#### 71 PUMPING TEST

PUMPING TEST METHOD 1 <input checked="" type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER	PUMPING RATE 0010 GPM	DURATION OF PUMPING 02 HOURS 00 MINS
STATIC LEVEL 069 FEET	WATER LEVEL END OF PUMPING 009 FEET	WATER LEVELS DURING PUMPING
		15 MINUTES: 009 FEET 30 MINUTES: 009 FEET 45 MINUTES: 009 FEET 60 MINUTES: 009 FEET
IF FLOWING GIVE RATE	PUMP INTAKE SET AT 35 FEET	WATER AT END OF TEST 1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE 1 <input checked="" type="checkbox"/> SHALLOW 2 <input type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 035 FEET	RECOMMENDED PUMPING RATE 0010 GPM
	50-53	020.0 GPM./FT. SPECIFIC CAPACITY



#### FINAL STATUS OF WELL

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

#### WATER USE

1  DOMESTIC 5  COMMERCIAL  
2  STOCK 6  MUNICIPAL  
3  IRRIGATION 7  PUBLIC SUPPLY  
4  INDUSTRIAL 8  COOLING OR AIR CONDITIONING  
9  OTHER

#### METHOD OF DRILLING

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

#### CONTRACTOR

NAME OF WELL CONTRACTOR: W. A. Levey | LICENCE NUMBER: 1703  
ADDRESS: 309 Ashton Ave Ottawa Ont  
NAME OF DRILLER OR BORER: W. A. Levey | LICENCE NUMBER: 1703  
SIGNATURE OF CONTRACTOR: [Signature] | SUBMISSION DATE: DAY 2 NO. 8 YR 73

#### OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 1703 | DATE RECEIVED: 110274  
DATE OF INSPECTION: | INSPECTOR: [Signature]  
REMARKS: | P R  
WI



Ontario

MINISTRY OF THE ENVIRONMENT  
The Ontario Water Resources Act

# WATER WELL RECORD

316A

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

11

1515392

MUNICIPALITY

15.009

CON.

CON

06

COUNTY OR DISTRICT <i>Cult</i>	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE <i>Agwood</i>	CON., BLOCK, TRACT, SURVEY, ETC. <i>6</i>	DATE COMPLETED <i>03</i> MO <i>June</i> YR. <i>76</i>
WELLING <i>0.08825</i>		RC <i>5</i>	ELEVATION <i>0290</i>
RC <i>5</i>		BASIN CODE <i>26</i>	

### LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
<i>Brown</i>	<i>shale</i>			<i>0</i>	<i>4</i>
<i>grey</i>	<i>limestone</i>			<i>4</i>	<i>28</i>

31	<i>0004617</i>	<i>0028215</i>
32		

**41 WATER RECORD**

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

**51 CASING & OPEN HOLE RECORD**

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

**SCREEN**

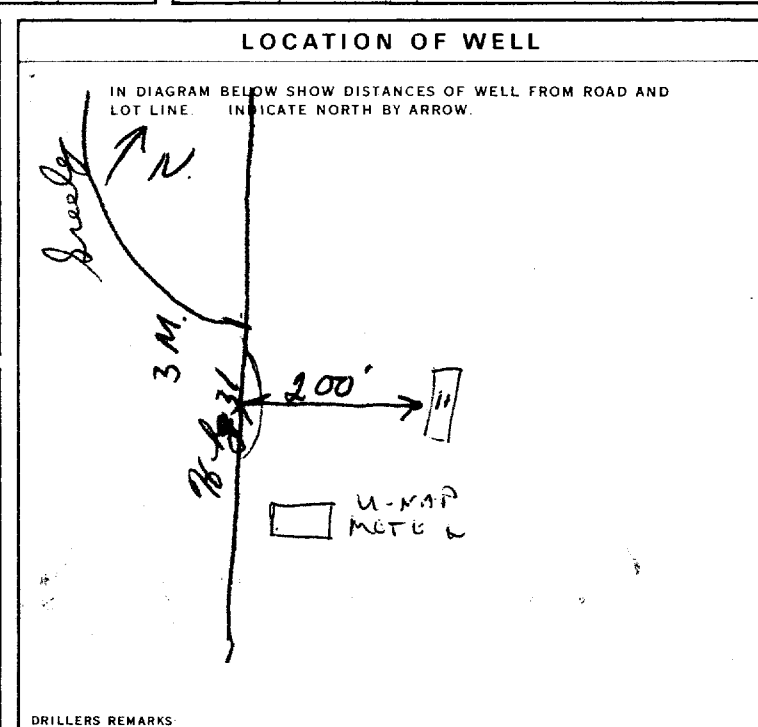
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN
		41-44
		80

**61 PLUGGING & SEALING RECORD**

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

**71 PUMPING TEST**

PUMPING TEST METHOD <input type="checkbox"/> PUMP <input checked="" type="checkbox"/> TRAILER	PUMPING RATE <i>0020</i> GPM	DURATION OF PUMPING <i>01</i> HOURS <i>10</i> MINS
STATIC LEVEL <i>007</i> FEET	WATER LEVEL END OF PUMPING <i>014</i> FEET	WATER LEVELS DURING PUMPING
		15 MINUTES <i>014</i> FEET
		30 MINUTES <i>014</i> FEET
		45 MINUTES <i>014</i> FEET
		60 MINUTES <i>014</i> FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT <i>25</i> FEET	WATER END OF TEST
		1 <input type="checkbox"/> CLEAR 2 <input checked="" type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE <input checked="" type="checkbox"/> SHALLOW <input type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING <i>020</i> FEET	RECOMMENDED PUMPING RATE <i>0005</i> GPM



**FINAL STATUS OF WELL**

<input checked="" type="checkbox"/> WATER SUPPLY	<input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
<input type="checkbox"/> OBSERVATION WELL	<input type="checkbox"/> ABANDONED, POOR QUALITY
<input type="checkbox"/> TEST HOLE	<input type="checkbox"/> UNFINISHED
<input type="checkbox"/> RECHARGE WELL	

**WATER USE**

<input checked="" type="checkbox"/> DOMESTIC	<input type="checkbox"/> COMMERCIAL
<input type="checkbox"/> STOCK	<input type="checkbox"/> MUNICIPAL
<input type="checkbox"/> IRRIGATION	<input type="checkbox"/> PUBLIC SUPPLY
<input type="checkbox"/> INDUSTRIAL	<input type="checkbox"/> COOLING OR AIR CONDITIONING
<input type="checkbox"/> OTHER	<input type="checkbox"/> NOT USED

**METHOD OF DRILLING**

<input checked="" type="checkbox"/> CABLE TOOL	<input type="checkbox"/> BORING
<input type="checkbox"/> ROTARY (CONVENTIONAL)	<input type="checkbox"/> DIAMOND
<input type="checkbox"/> ROTARY (REVERSE)	<input type="checkbox"/> JETTING
<input type="checkbox"/> ROTARY (AIR)	<input type="checkbox"/> DRIVING
<input type="checkbox"/> AIR PERCUSSION	

**CONTRACTOR**

NAME OF WELL CONTRACTOR <i>Maxwell</i>	LICENCE NUMBER <i>1517</i>
ADDRESS <i>3500</i>	
NAME OF DRIVER <i>Carlton</i>	LICENCE NUMBER
SIGNATURE OF CONTRACTOR <i>Maxwell</i>	SUBMISSION DATE DAY _____ MO. _____ YR. _____

**OFFICE USE ONLY**

DATA SOURCE <i>1</i>	CONTRACTOR <i>1517</i>	DATE REC'D <i>300676</i>
DATE OF INSPECTION <i>Aug 31 / 76</i>	INSPECTOR <i>P/R Dyl</i>	
REMARKS		

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

**11** 1517028 **15009** **CON** **06**

COUNTY OR DISTRICT: **010+** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **Carleton Place** CON. BLOCK, TRACT, SURVEY, ETC.: **6 II** LOT: **013**

DATE COMPLETED: **21** DAY **21** MO **June** YR **79**

WELLING: **010099** ELEVATION: **0300** BAIN CODE: **26**

**LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)**

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	hard pan	stone		0	10
grey	limestone			10	47

**31** **001061412** **0007A15**

**32**

**41** **WATER RECORD**

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

**045**

**51** **CASING & OPEN HOLE RECORD**

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 1/4	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	188	0	0022
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			20-23
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			27-30

**SCREEN**

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
	31-33	34-38
		39-40
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN	41-44
		50

**61** **PLUGGING & SEALING RECORD**

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

**71** **PUMPING TEST**

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> W/AILER	0012 GPM	01 15-16 HOURS 00 17-18 MINS
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING
010 FEET	018 FEET	15 MINUTES 26-28 018 FEET 30 MINUTES 29-31 018 FEET 45 MINUTES 32-34 018 FEET 60 MINUTES 35-37 018 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
	47 GPM	1 <input type="checkbox"/> CLEAR 2 <input checked="" type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
1 <input checked="" type="checkbox"/> SHALLOW 2 <input type="checkbox"/> DEEP	025 FEET	0005 GPM

**LOCATION OF WELL**

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

**TN**

**180'**

**Lot 13**

**41831**

DRILLERS REMARKS

**FINAL STATUS OF WELL**

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

**WATER USE**

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

**METHOD OF DRILLING**

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

**CONTRACTOR**

NAME OF WELL CONTRACTOR: **Maurice Cayer Ltd.** LICENCE NUMBER: **1517**

ADDRESS: **Carleton Ont.**

NAME OF DRILLER OR BORER: \_\_\_\_\_ LICENCE NUMBER: \_\_\_\_\_

SIGNATURE OF CONTRACTOR: **Maurice Cayer** SUBMISSION DATE: \_\_\_\_\_

**OFFICE USE ONLY**

DATA SOURCE: **1** CONTRACTOR: **1517** DATE RECEIVED: **09 07 79**

DATE OF INSPECTION: \_\_\_\_\_ INSPECTOR: **K**

REMARKS: \_\_\_\_\_

Print only in spaces provided.  
Mark correct box with a checkmark, where applicable.

11

1532268

Municipality 15009 Con. CAN 05  
10 22 23 24

Sublot 3

County or District: Ottawa-Carleton Township/Borough/City/Town/Village: OSgoode Con block tract survey, etc.: 5 Lot: 13  
Address: Greely, Ont Date completed: 27 07 01  
day month year

21 Northing RC Elevation RC Basin Code ii iii iv

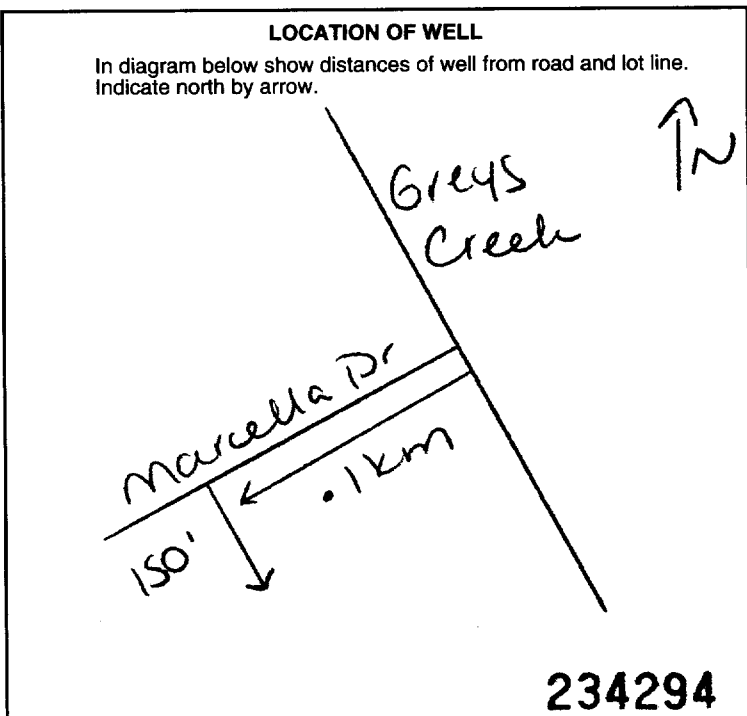
**LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)**

General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
	<u>sand</u>	<u>fill</u>		<u>0</u>	<u>5</u>
<u>grey</u>	<u>limestone</u>			<u>5</u>	<u>178</u>
<u>"</u>	<u>sandstone</u>			<u>178</u>	<u>200</u>

31 32

<b>41 WATER RECORD</b> Water found at - feet: <u>128</u> Kind of water: <u>NOT TESTED</u> 1 <input checked="" type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas 2 <input type="checkbox"/> Salty 6 <input type="checkbox"/> Gas		<b>51 CASING &amp; OPEN HOLE RECORD</b> Inside diam inches: <u>6 1/4</u> Material: <u>Steel</u> Wall thickness inches: <u>188</u> 1 <input checked="" type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic 17-18 <u>83 1/4</u> 1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input checked="" type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic 24-25 <u>6</u> 1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input checked="" type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic		<b>SCREEN</b> Sizes of opening (Slot No.): _____ Diameter: _____ Length: _____ Material and type: _____ Depth at top of screen: _____ feet	
192 1 <input checked="" type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas 2 <input type="checkbox"/> Salty 6 <input type="checkbox"/> Gas		0 42 1 <input type="checkbox"/> Steel 2 <input type="checkbox"/> Galvanized 3 <input type="checkbox"/> Concrete 4 <input checked="" type="checkbox"/> Open hole 5 <input type="checkbox"/> Plastic		<b>61 PLUGGING &amp; SEALING RECORD</b> <input checked="" type="checkbox"/> Annular space <input type="checkbox"/> Abandonment Depth set at - feet: <u>2</u> <u>42</u> Material and type (Cement grout, bentonite, etc.): <u>Cement grout</u> From To	

**71 PUMPING TEST**  
 Pumping test method:  Pump 2  Bailer  
 Pumping rate: 25 GPM Duration of pumping: 1 Hours 17 Mins  
 Static level: 17 feet Water level end of pumping: 100 feet  
 Water levels during: 15 minutes: 17 feet 30 minutes: 17 feet 45 minutes: 17 feet 60 minutes: 17 feet  
 If flowing give rate: \_\_\_\_\_ Pump intake set at: \_\_\_\_\_ Water at end of test:  Clear  Cloudy  
 Recommended pump type:  Shallow  Deep Recommended pump setting: 100 feet Recommended pump rate: 25 GPM



**FINAL STATUS OF WELL**  
 1  Water supply 5  Abandoned, insufficient supply 9  Unfinished  
 2  Observation well 6  Abandoned, poor quality 10  Replacement well  
 3  Test hole 7  Abandoned (Other)  
 4  Recharge well 8  Dewatering

**WATER USE**  
 1  Domestic 5  Commercial 9  Not use  
 2  Stock 6  Municipal 10  Other  
 3  Irrigation 7  Public supply  
 4  Industrial 8  Cooling & air conditioning

**METHOD OF CONSTRUCTION**  
 1  Cable tool 5  Air percussion 9  Driving  
 2  Rotary (conventional) 6  Boring 10  Digging  
 3  Rotary (reverse) 7  Diamond 11  Other  
 4  Rotary (air) 8  Jetting

Name of Well Contractor: AirKoch Drilling Ltd Well Contractor's Licence No.: 1119  
 Address: RR #2 Jasper, Ont  
 Name of Well Technician: Shannon Purcell Well Technician's Licence No.: Ta122  
 Signature of Technician/Contractor: \_\_\_\_\_ Submission date: 1008 01  
 day mo

**MINISTRY USE ONLY**  
 Data source: 1119 Date received: SEP 20 2001  
 Date of inspection: \_\_\_\_\_ Inspector: \_\_\_\_\_  
 Remarks: \_\_\_\_\_  
 CSS.ES1



Print only in spaces provided.  
Mark correct box with a checkmark, where applicable.

11

1532951

Municipality: 15009 Con: CON 05

Plan 4m1029

County or District <b>Ottawa Carleton</b>		Township/Borough/City/Town/Village <b>Osgoode</b>		Con block tract survey, etc. <b>5</b>	Lot <b>13</b>
Owner's surname <b>Miramare Homes</b>	First Name	Address <b>Greely, Ont</b>		Date completed <b>23 05 02</b>	

21

Zone Easting Northing RC Elevation RC Basin Code ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
	clay	fr		0	4
grey	limestone			4	142
grey	sandstone			142	200

31

32

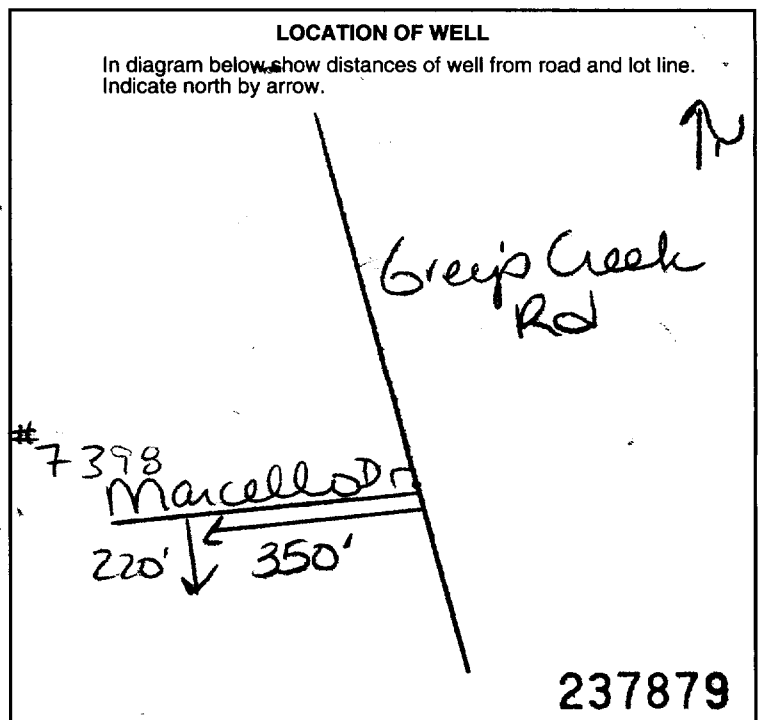
41 WATER RECORD	
Water found at - feet	Kind of water
195	<input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
15-18	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
20-23	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
25-28	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas
30-33	<input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas

51 CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6 1/4	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic	188	0	44
8 3/4	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Open hole <input type="checkbox"/> Plastic		0	42
6	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Open hole <input type="checkbox"/> Plastic		42	200

SCREEN	Sizes of opening (Slot No.)	Diameter inches	Length feet

61 PLUGGING & SEALING RECORD		
Annular space		Abandonment
<input checked="" type="checkbox"/> Annular space <input type="checkbox"/> Abandonment		
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)
From	To	
2	44	Cement grout
18-21	22-25	
26-29	30-33	

71 PUMPING TEST	Pumping test method	Pumping rate	Duration of pumping		
	<input checked="" type="checkbox"/> Pump <input type="checkbox"/> Bailer	200 GPM	1	Hours	Mins
	Static level	Water level end of pumping	Water levels during		
	5 feet	180 feet	15 minutes	30 minutes	45 minutes
		5 feet	5 feet	5 feet	
	If flowing give rate	Pump intake set at	Water at end of test		
	GPM	feet	<input type="checkbox"/> Clear <input checked="" type="checkbox"/> Cloudy		
	Recommended pump type	Recommended pump setting	Recommended pump rate		
	<input type="checkbox"/> Shallow <input checked="" type="checkbox"/> Deep	180 feet	200 GPM		



FINAL STATUS OF WELL		
<input checked="" type="checkbox"/> Water supply	<input type="checkbox"/> Abandoned, insufficient supply	<input type="checkbox"/> Unfinished
<input type="checkbox"/> Observation well	<input type="checkbox"/> Abandoned, poor quality	<input type="checkbox"/> Replacement well
<input type="checkbox"/> Test hole	<input type="checkbox"/> Abandoned (Other)	
<input type="checkbox"/> Recharge well	<input type="checkbox"/> Dewatering	

WATER USE		
<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not use
<input type="checkbox"/> Stock	<input type="checkbox"/> Municipal	<input type="checkbox"/> Other
<input type="checkbox"/> Irrigation	<input type="checkbox"/> Public supply	
<input type="checkbox"/> Industrial	<input type="checkbox"/> Cooling & air conditioning	

METHOD OF CONSTRUCTION		
<input type="checkbox"/> Cable tool	<input checked="" type="checkbox"/> Air percussion	<input type="checkbox"/> Driving
<input type="checkbox"/> Rotary (conventional)	<input type="checkbox"/> Boring	<input type="checkbox"/> Digging
<input type="checkbox"/> Rotary (reverse)	<input type="checkbox"/> Diamond	<input type="checkbox"/> Other
<input type="checkbox"/> Rotary (air)	<input type="checkbox"/> Jetting	

Name of Well Contractor <b>Air Rock Drilling Ltd</b>	Well Contractor's Licence No. <b>1119</b>
Address <b>RR # 1 Richmond, Ont</b>	
Name of Well Technician <b>Shannon Purcell</b>	Well Technician's Licence No. <b>12122</b>
Signature of Technician/Contractor	Submission date <b>13 06 02</b>

MINISTRY USE ONLY	Data source	Contractor	Date received
		<b>1119</b>	<b>JUL 12 2002</b>
	Date of inspection	Inspector	
Remarks			
<b>CSS.ES2</b>			



Instructions for Completing Form

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

Ministry Use Only

Address of Well Location (County/District/Municipality) Ottawa Carleton RR#/Street Number/Name 7399 Marcella Drive GPS Reading NAD Zone Easting Northing Unit Make/Model Mode of Operation: Undifferentiated Averaged Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

Table with columns: General Colour, Most common material, Other Materials, General Description, Depth From, Metres To. Rows include Soil, Broken Rock, Limestone, Sandstone.

Hole Diameter table with columns: Depth From, Metres To, Diameter Centimetres. Values: 0-13.10m (22.53cm), 13.10-57.91m (15.23cm).

Water Record section with fields for Water found at, Kind of Water, Gas, Sulphur, Minerals, Chlorinated status.

Construction Record table with columns: Inside diam, Material, Wall thickness, Depth From, Metres To. Includes Casing and Screen sections.

Test of Well Yield table with columns: Pumping test method, Draw Down, Recovery. Includes submersible pump test results.

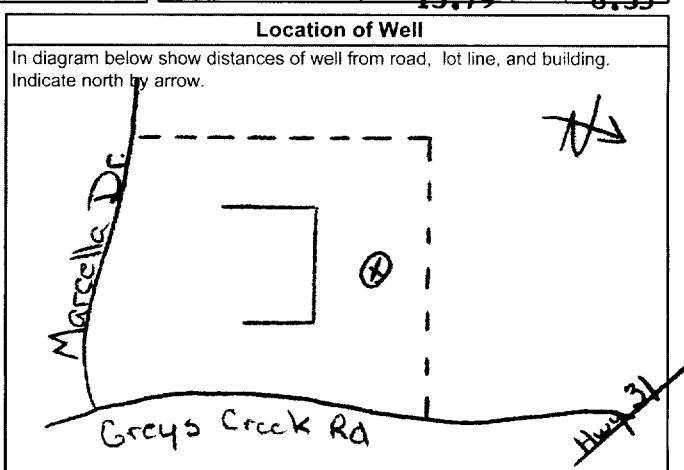
Plugging and Sealing Record table with columns: Depth set at, Material and type, Volume Placed. Includes grouting details.

Method of Construction section with checkboxes for Cable Tool, Rotary (air), Diamond, Digging, etc.

Water Use section with checkboxes for Domestic, Industrial, Public Supply, etc.

Final Status of Well section with checkboxes for Water Supply, Recharge well, etc.

Well Contractor/Technician Information section with fields for Name, Licence No., Signature, Date Submitted.



Audit No. Z 07053, Date Well Completed 2004 02 04, Date Delivered 2004 02 05.

Ministry Use Only section with fields for Data Source, Contractor 1558, Date Received MAR 25 2004, Well Record Number 1534570.

**Instructions for Completing Form**

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- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10<sup>th</sup> of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only											
MUN										CON	LOT

**Well Owner's Information and Location of Well Information**

RR#/Street Number/Name: 4676re Greys Creek Rd Metcalf City/Town/Village: Metcalf Site/Compartment/Block/Tract etc.: 12 0

GPS Reading:  NAD 83 Zone: 18 Easting: 0455193 Northing: 5010288 Unit Make/Model: E Tex Mode of Operation:  Undifferentiated  Averaged  Differentiated, specify

**Log of Overburden and Bedrock Materials (see instructions)**

General Colour	Most common material	Other Materials	General Description	Depth From Metres	Metres To
Brown	Top Soil			0	2.1
Gray	Limestone			2.1	6.6
Gray	Limestone			6.6	26.6

**Hole Diameter**

Depth From	Metres To	Diameter Centimetres
0	6.6	25.40

**Construction Record**

Inside diam centimetres	Material	Wall thickness centimetres	Depth From Metres	Metres To
15.24	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized	0.48	0	6.6

**Test of Well Yield**

Pumping test method	Draw Down		Recovery	
	Time min	Water Level Metres	Time min	Water Level Metres
Pump				
Pump intake set at (metres)	20	3.6	6.6	
Pumping rate (litres/min)	44	1	1	2
Duration of pumping	2	1	2	2
Final water level end of pumping (metres)	3	1	3	1
Recommended pump type	4	0	4	1
Recommended pump depth (metres)	5	0	5	0
Recommended pump rate (litres/min)	10	0	10	0
If flowing give rate (litres/min)	15	0	15	0
	20	0	20	0
	25	0	25	0
	30	0	30	0
	40	0	40	0
	50	0	50	0
	60	0	60	0

**Water Record**

Water found at 20 Metres / Kind of Water

m  Fresh  Sulphur  Gas  Salty  Minerals

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

Chlorinated  Yes  No

**Screen**

Outside diam  Steel  Fibreglass  Plastic  Concrete  Galvanized

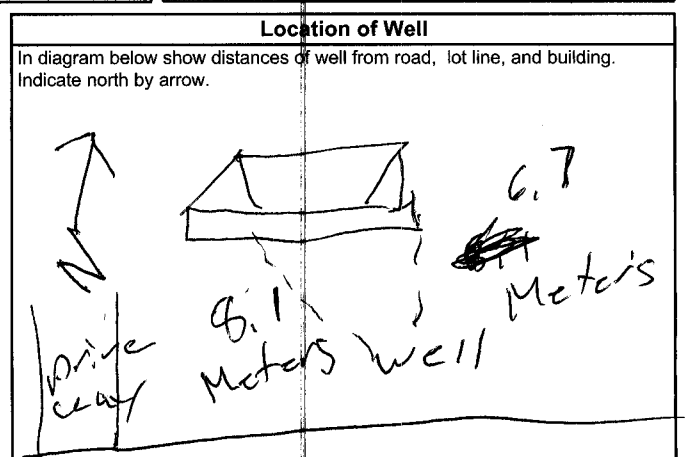
Slot No.

**No Casing or Screen**

Open hole

**Plugging and Sealing Record**  Annular space  Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	6.6	Quick Grant	2 Basis



**Method of Construction**

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

**Water Use**

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

**Final Status of Well**

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

Audit No. **Z 38047** Date Well Completed 2005 10 03

Was the well owner's information package delivered?  Yes  No Date Delivered 2005 10 03

**Well Contractor/Technician Information**

Name of Well Contractor: Daves Well Drilling Well Contractor's Licence No.: 6965

Business Address (street name, number, city etc.): RR 3 North August 79

Name of Well Technician (last name, first name): Dave Fish Well Technician's Licence No.: 10-144

Signature of Technician/Contractor: [Signature] Date Submitted: 2005 10 03

**Ministry Use Only**

Data Source: Contractor **8588**

Date Received: FEB 14 2006 Date of Inspection: YYYY MM DD

Remarks: Well Record Number



Measurements recorded in:  Metric  Imperial

Well Tag: **A093655**

Page      of     

### Well Owner's Information

First Name: **WESA** Last Name / Organization: **WESA** E-mail Address:   Well Constructed by Well Owner

Mailing Address (Street Number/Name): **3108 Carp Road Box 430 Carp Ont K0A1L0** Municipality:  Province:  Postal Code:  Telephone No. (inc. area code):

### Well Location

Address of Well Location (Street Number/Name): **#6570 Bank Street** Township: **Osgoode** Lot: **P/L12** Concession: **6**

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

UTM Coordinates: Zone: **18** Easting: **458409** Northing: **5010477** Municipal Plan and Sublot Number: **PLAN 4R-18752 Part 2** Other:

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	<b>Boulders + Clay</b>			<b>0'</b>	<b>11'</b>
	<b>Grey + black limestone</b>			<b>11'</b>	<b>180'</b>
	<b>Grey + white sandstone</b>			<b>180'</b>	<b>208'</b>

**"Ottawa Childrens Treatment Centre"**

Annular Space		
Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)
<b>20'</b>	<b>0'</b>	<b>Neat Cement Slurry</b>
		<b>Volume Placed (m<sup>3</sup>/ft<sup>3</sup>): 14.04</b>

Method of Construction		Well Use	
<input type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial
<input type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Municipal
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Driving	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole
<input type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning
<input checked="" type="checkbox"/> Air percussion		<input type="checkbox"/> Industrial	
<input type="checkbox"/> Other, specify		<input type="checkbox"/> Other, specify	

Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To	
<b>6"</b>	<b>Steel</b>	<b>0.188"</b>	<b>20'</b>	<b>20'</b>	<input checked="" type="checkbox"/> Water Supply
<b>5 7/8"</b>	<b>Open hole</b>		<b>20'</b>	<b>208'</b>	<input type="checkbox"/> Replacement Well

Construction Record - Screen				Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To	
					<input type="checkbox"/> Test Hole

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m/ft) From	Diameter (cm/in) To
<b>57'</b>	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	<b>0'</b>	<b>20' 6"</b>
<b>201'</b>	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	<b>20'</b>	<b>208' 5 7/8"</b>

**Well Contractor and Well Technician Information**

Business Name of Well Contractor: **AIRLOCK DRILLING CO LTD 1119** Well Contractor's Licence No.:

Business Address (Street Number/Name): **RR#1 RICHMOND** Municipality:

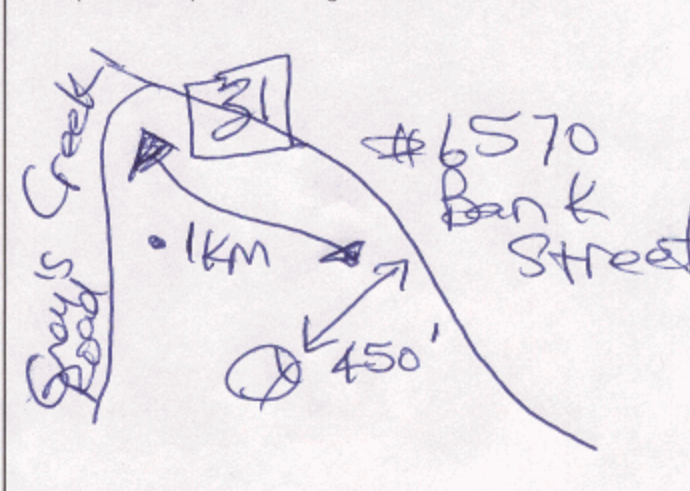
Province: **ONT** Postal Code: **K0A2Z0** Business E-mail Address:

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

Well Technician's Licence No.: **T 3058** Signature of Technician and/or Contractor: **[Signature]** Date Submitted: **20100315**

Results of Well Yield Testing					
After test of well yield, water was:		Draw Down		Recovery	
<input type="checkbox"/> Clear and sand free	<input checked="" type="checkbox"/> Other, specify: <b>NOT TESTED</b>	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: <b>X</b>		Static Level	<b>28'6"</b>		<b>28'9"</b>
Pump intake set at (m/ft): <b>200'</b>		1	<b>28'7"</b>	1	<b>28'6"</b>
Pumping rate (l/min / GPM): <b>20</b>		2	<b>28'8"</b>	2	
Duration of pumping: <b>1 hrs + 0 min</b>		3	<b>↓</b>	3	
Final water level end of pumping (m/ft): <b>28'9"</b>		4	<b>28'9"</b>	4	
If flowing give rate (l/min / GPM): <b>X</b>		5		5	
Recommended pump depth (m/ft): <b>140'</b>		10		10	
Recommended pump rate (l/min / GPM): <b>20</b>		15		15	
Well production (l/min / GPM): <b>30</b>		20		20	
Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		25		25	
		30		30	
		40		40	
		50		50	
		60		60	

### Map of Well Location



Comments:

Well owner's information package delivered: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered: <b>20100202</b>	Ministry Use Only Audit No.: <b>Z 108240</b> Received: <b>22 2010</b>
Date Work Completed: <b>20100128</b>		

Address of Well Location (Street Number/Name) **6682 Bank Street** Township **Osgoode** Lot **W P/L 14 6** Concession \_\_\_\_\_  
 County/District/Municipality **Ottawa-Carleton** City/Town/Village **Osgoode** Province **Ontario** Postal Code \_\_\_\_\_  
 UTM Coordinates Zone **18** Easting **458952** Northing **5010094** Municipal Plan and Sublot Number **Greely** Other \_\_\_\_\_  
 NAD **83** **18** **458952** **5010094**

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Gravel			0'	5'
Grey & Brown	Limestone			5'	174'
Grey	Limestone	+ White Sandstone Mix		174'	212'
Grey	Limestone	+ White Sandstone Mix		212'	230'

**Annular Space**

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m <sup>3</sup> /ft <sup>3</sup> )
198'	0'	Neat cement	95.2

**Method of Construction**

Cable Tool  
 Rotary (Conventional)  
 Rotary (Reverse)  
 Boring  
 Air percussion  
 Other, specify \_\_\_\_\_

Diamond  
 Jetting  
 Driving  
 Digging

**Well Use**

Public  
 Domestic  
 Livestock  
 Irrigation  
 Industrial  
 Other, specify \_\_\_\_\_

Commercial  
 Municipal  
 Test Hole  
 Cooling & Air Conditioning

Not used  
 Dewatering  
 Monitoring

**Construction Record - Casing**

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		Status of Well
			From	To	
6 1/4"	Steel	.188"	12'	198'	<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____ <input type="checkbox"/> Other, specify _____
5 1/8"	Open Hole		198'	230'	

**Construction Record - Screen**

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

**Water Details**

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
212'	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Other, specify _____	0'	198'	9 3/4"
	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	198'	230'	5 7/8"

**Well Contractor and Well Technician Information**

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

Business Address (Street Number/Name): **6659 Franktown Road, RR#1** Municipality: **Richmond**

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

Bus. Telephone No. (inc. area code): **613-938-2170** Name of Well Technician (Last Name, First Name): **Graham, Ryan**

Well Technician's Licence No.: **T3484** Signature of Technician and/or Contractor: *[Signature]* Date Submitted: **2012 08 31**

**Results of Well Yield Testing**

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

If pumping discontinued, give reason: \_\_\_\_\_

Pump intake set at (m/ft) **220'**

Pumping rate (l/min / GPM) **20**

Duration of pumping **1** hrs + **0** min

Final water level end of pumping (m/ft) **28.5"**

If flowing give rate (l/min / GPM) \_\_\_\_\_

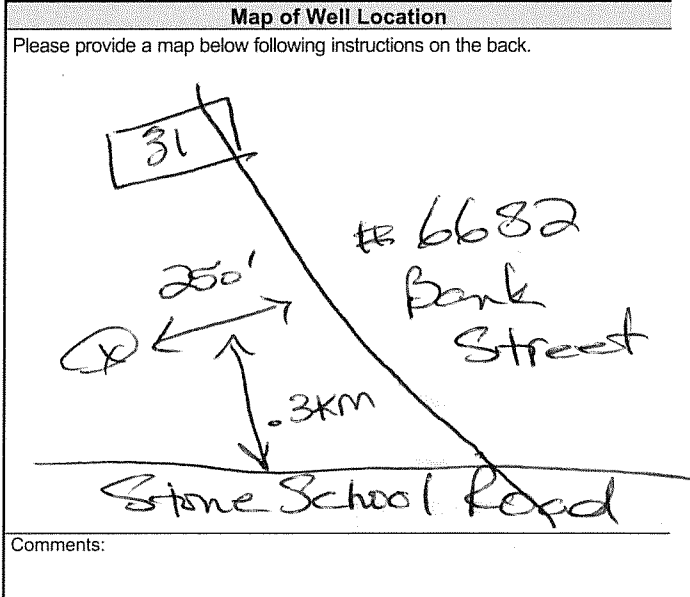
Recommended pump depth (m/ft) **220'**

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

Well production (l/min / GPM) **20**

Disinfected?  Yes  No

Time (min)	Draw Down		Recovery	
	Water Level (m/ft)	Time (min)	Water Level (m/ft)	Time (min)
Static Level	27.5"		28.5"	
1	28.5	1	27.5	
2	28.5	2	27.5	
3	28.5	3	27.5	
4	28.5	4	27.5	
5	28.5	5	27.5	
10	28.5	10	27.5	
15	28.5	15	27.5	
20	28.5	20	27.5	
25	28.5	25	27.5	
30	28.5	30	27.5	
40	28.5	40	27.5	
50	28.5	50	27.5	
60	28.5"	60	27.5"	



Comments: \_\_\_\_\_

Well owner's information package delivered <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered: <b>2012 08 13</b> Date Work Completed: <b>2012 08 08</b>	<b>Ministry Use Only</b> Audit No.: <b>Z144678</b> Rec'd: <b>22 2012</b>
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Measurements recorded in:  Metric  Imperial

A128080

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Address of Well Location (Street Number/Name) **6637 Bank Street** Township **Osgoode** Lot **WP/L 13** Concession **6**

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

UTM Coordinates Zone Easting Northing Municipal Plan and Sublot Number Other

NAD **8 3 18 458812 5010324**

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
	Sand & Gravel			0'	16'
Grey	Limestone			16'	154'
Grey & White	Sandstone			154'	208'
White	Sandstone			208'	217'
White	Sandstone			217'	230'

**Annular Space**

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From 198' To 0'	Neat cement	78

**Method of Construction**

Cable Tool  Diamond  Public  Commercial  Not used

Rotary (Conventional)  Jetting  Domestic  Municipal  Dewatering

Rotary (Reverse)  Driving  Livestock  Test Hole  Monitoring

Boring  Digging  Irrigation  Cooling & Air Conditioning

Air percussion  Industrial  Other, specify

**Construction Record - Casing**

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		Status of Well
			From	To	
6 1/4"	Steel	.188"	0'	198'	<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify
6 1/8"	Open Hole		198'	230'	

**Construction Record - Screen**

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

**Water Details**

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Hole Diameter
208 (m/ft)	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Other, specify	From 0' To 198' 9 3/4"
217 (m/ft)	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Other, specify	From 198' To 230' 6 1/8"

**Well Contractor and Well Technician Information**

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

Business Address (Street Number/Name): **6659 Franktown Road, RR#1** Municipality: **Richmond**

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

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

Well Technician's Licence No.: **T2122** Signature of Technician and/or Contractor: *[Signature]* Date Submitted: **2012 08 31**

**Results of Well Yield Testing**

After test of well yield, water was:

Clear and sand free

Other, specify **Not tested**

If pumping discontinued, give reason:

Pump intake set at (m/ft) **220**

Pumping rate (l/min / GPM) **20**

Duration of pumping **1 hrs + 0 min**

Final water level end of pumping (m/ft) **29.2"**

If flowing give rate (l/min / GPM)

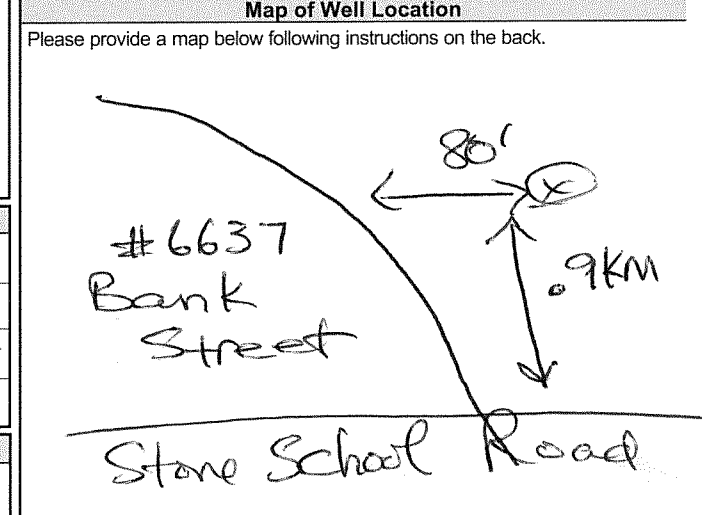
Recommended pump depth (m/ft) **220'**

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

Well production (l/min / GPM) **20**

Disinfected?  Yes  No

Time (min)	Draw Down		Recovery	
	Water Level (m/ft)	Time (min)	Water Level (m/ft)	Time (min)
Static Level	29.1"		29.2"	
1	29.1	1	29.1	
2	29.1	2	29.1	
3	29.1	3	29.1	
4	29.1	4	29.1	
5	29.1	5	29.1	
10	29.1	10	29.1	
15	29.1	15	29.1	
20	29.1	20	29.1	
25	29.1	25	29.1	
30	29.1	30	29.1	
40	29.1	40	29.1	
50	29.2	50	29.1	
60	29.2"	60	29.1"	



Comments:

Well owner's information package delivered:  Yes  No

Date Package Delivered: **2012 08 17**

Date Work Completed: **2012 08 15**

**Ministry Use Only**

Audit No.: **Z144696**

Received: **SEP 22 2012**

**Well Owner's Information**

First Name: \_\_\_\_\_ Last Name / Organization: \_\_\_\_\_ E-mail Address: **HAWLER AUTO BODY**  Well Constructed by Well Owner

Mailing Address (Street Number/Name): **c/o Cornwall Gravel Co. Ltd. 390 Eleventh St. Cornwall** Municipality: **Cornwall** Province: **ON** Postal Code: **K6H 5R9** Telephone No. (inc. area code): \_\_\_\_\_

**Well Location**

Address of Well Location (Street Number/Name): **6653 Bank Street** Township: **Osgoode** Lot: **W P/L 13** Concession: **8**

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

UTM Coordinates Zone: **18** Easting: **458941** Northing: **5010248** Municipal Plan and Sublot Number: \_\_\_\_\_ Other: \_\_\_\_\_

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m)
				From To
	Sand & Gravel			0' 16'
Grey	Limestone			16' 168'
Grey & White	Sandstone			168' 210'
White	Sandstone			210' 211'
White	Sandstone			211' 215'
White	Sandstone			215' 230'

**Annular Space**

Depth Set at (m)	Type of Sealant Used (Material and Type)	Volume Placed (m³)
From To		
198' 0'	Neat cement	82.6

**Results of Well Yield Testing**

Time (min)	Draw Down (m/ft)		Recovery (m/ft)	
	Water Level (m/ft)	Time (min)	Water Level (m/ft)	Time (min)
Static Level	28.5		28.7	
1	28.7	1	28.5	
2	28.7	2	28.5	
3	28.7	3	28.5	
4	28.7	4	28.5	
5		5		
10		10		
15		15		
20		20		
25		25		
30		30		
40		40		
50		50		
60		60		

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): **220**

Pumping rate (l/min / GPM): **20**

Duration of pumping: **1** hrs + **0** min

Final water level end of pumping (m/ft): **28.7"**

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

Recommended pump depth (m): **220'**

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

Well production (l/min / GPM): **20**

Disinfected?  Yes  No

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

Construction Record - Casing			Status of Well	
Inside Diameter (cm)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm)	Depth (m)	
			From	To
6 1/4"	Steel	.188"	12'	198'
6"	Open Hole		198'	230'

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

Construction Record - Screen		
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.

Water Details		Hole Diameter	
Water found at Depth (m)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m)	Diameter (cm/in)
		From	To
211	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Other, specify _____	0'	198'
215	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Other, specify _____	198'	230'

**Well Contractor and Well Technician Information**

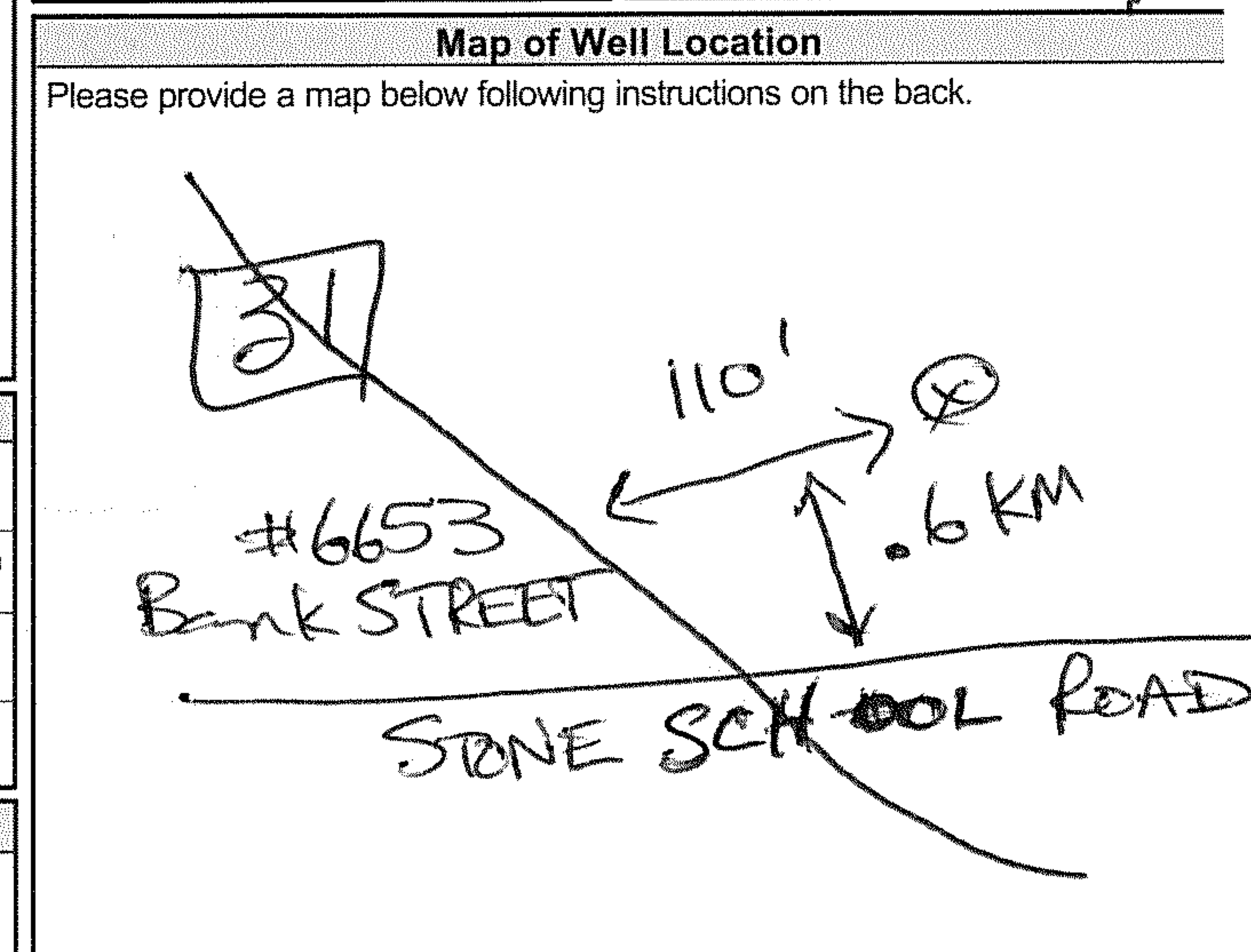
Business Name of Well Contractor: **Air Rock Drilling Co. Ltd.** Well Contractor's Licence No.: **1119**

Business Address (Street Number/Name): **6659 Franktown Road, RR#1** Municipality: **Richmond**

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

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

Well Technician's Licence No.: **T2122** Signature of Technician and/or Contractor: \_\_\_\_\_ Date Submitted: **2012 08 31**



Comments: \_\_\_\_\_

Well owner's information package delivered: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered: <b>2012 08 03</b>	<b>Ministry Use Only</b> Audit No.: <b>Z144668</b> Received: <b>SEP 22 2012</b>
Date Work Completed: <b>2012 07 31</b>		



Measurements recorded in:  Metric  Imperial

A186997

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Well Owner's Information

First Name, Last Name / Organization (Kenny U Pull Ottawa), E-mail Address, Mailing Address (9100 Henri-Bourassa East), Municipality (Montreal), Province (PQ), Postal Code (H1E 2R4), Telephone No.

Well Location

Address of Well Location (6650 Bank Street), Township (Osgoode), Lot (P/L 13), Concession (6), City/Town/Village (Metcalfe), Province (Ontario), Postal Code, UTM Coordinates, Municipal Plan and Sublot Number (4R-25595), Other (Parts 7 to 9)

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

Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth (From/To). Includes handwritten note: \* PO# 32-36479EG \*

Annular Space table with columns: Depth Set at (From/To), Type of Sealant Used, Volume Placed.

Method of Construction and Well Use checkboxes: Cable Tool, Rotary, Boring, Air percussion, Diamond, Jetting, Driving, Digging, Public, Commercial, Not used, Municipal, Test Hole, Monitoring, Irrigation, Cooling & Air Conditioning, Industrial, etc.

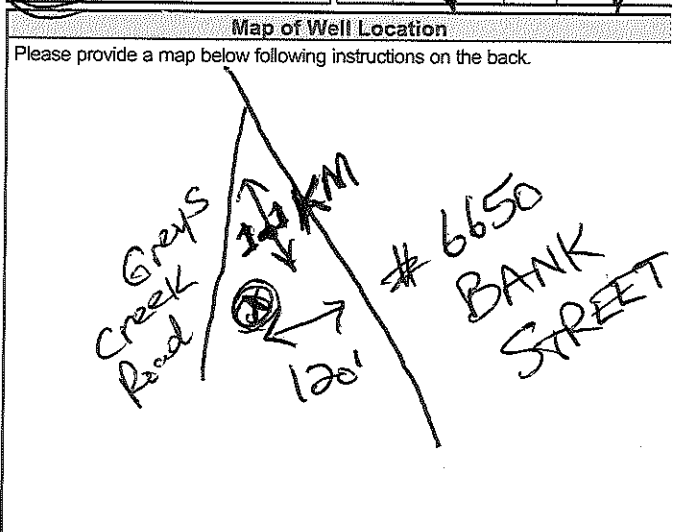
Construction Record - Casing table with columns: Inside Diameter, Open Hole OR Material, Wall Thickness, Depth (From/To), Status of Well.

Construction Record - Screen table with columns: Outside Diameter, Material, Slot No., Depth (From/To), Status of Well.

Water Details and Hole Diameter tables. Water found at depths 108, 204, 214 m. Hole diameters at 0-40, 40-220 m.

Well Contractor and Well Technician Information: Business Name (Air Rock Drilling Co. Ltd.), Licence No. (1112), Business Address (6658 Franktown Road, RR#1), Municipality (Richmond), Province (ON), Postal Code (K0A 2Z0), Business E-mail Address (air-rock@sympatico.ca), Name of Well Technician (Hanna, Jeremy), Signature, Date Submitted (2017 01 31).

Results of Well Yield Testing table with columns: Draw Down (Time, Water Level), Recovery (Time, Water Level). Includes pumping rate (20 L/min), final water level (28.1 m), and recommended pump depth (100').



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

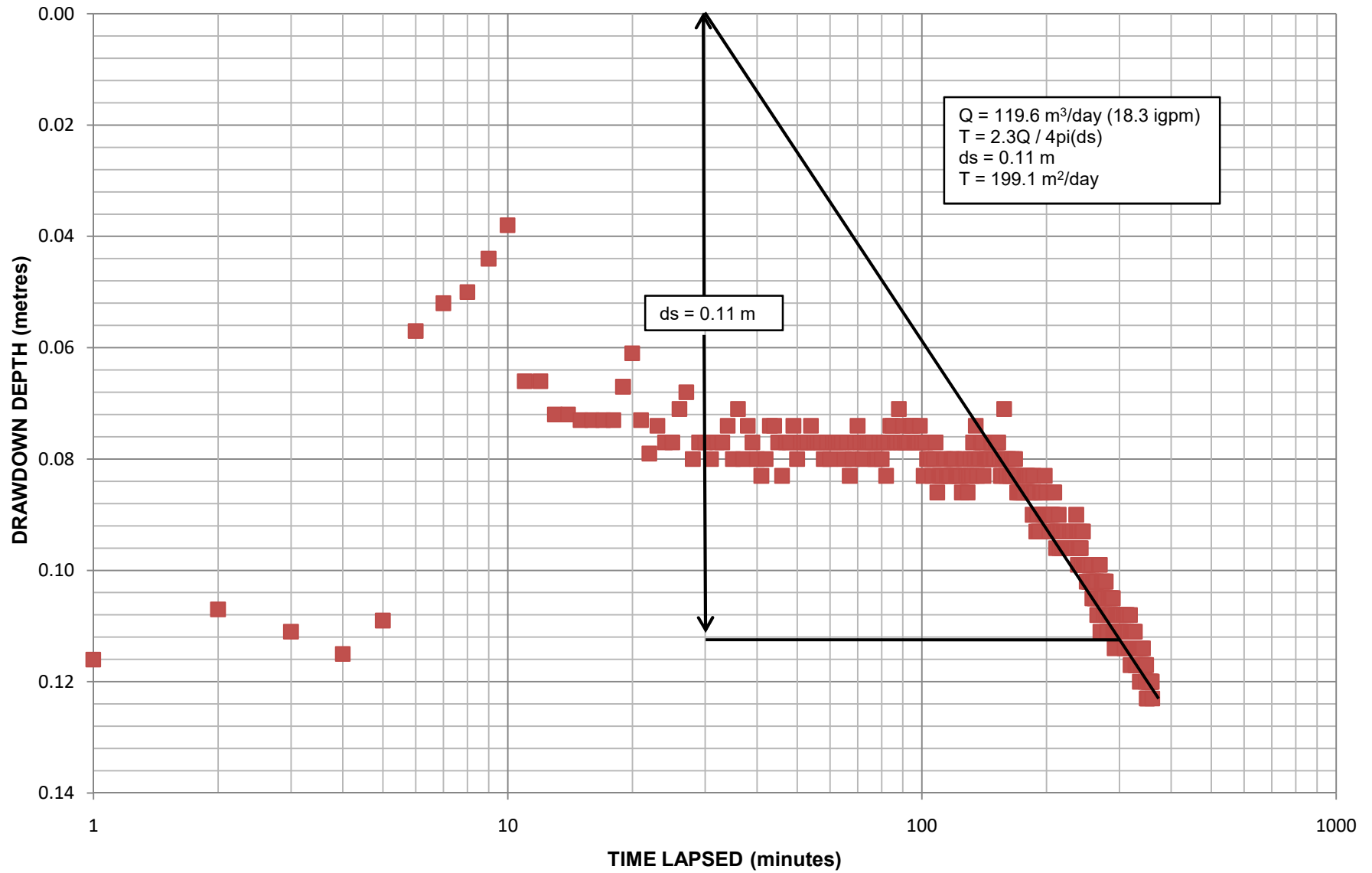
Ministry Use Only section: Well owner's information package delivered (Yes), Date Package Delivered (Y 2017 M 01 D 28), Date Work Completed (2017 01 24), Audit No. (2237272), Received (APR 18 2017).





ATTACHMENT B  
PUMPING TEST DATA FOR TW1

# TW1-WELL DRAWDOWN VS. TIME-KOLLAARD FILE 170035



## DRAWDOWN DATA TW-1

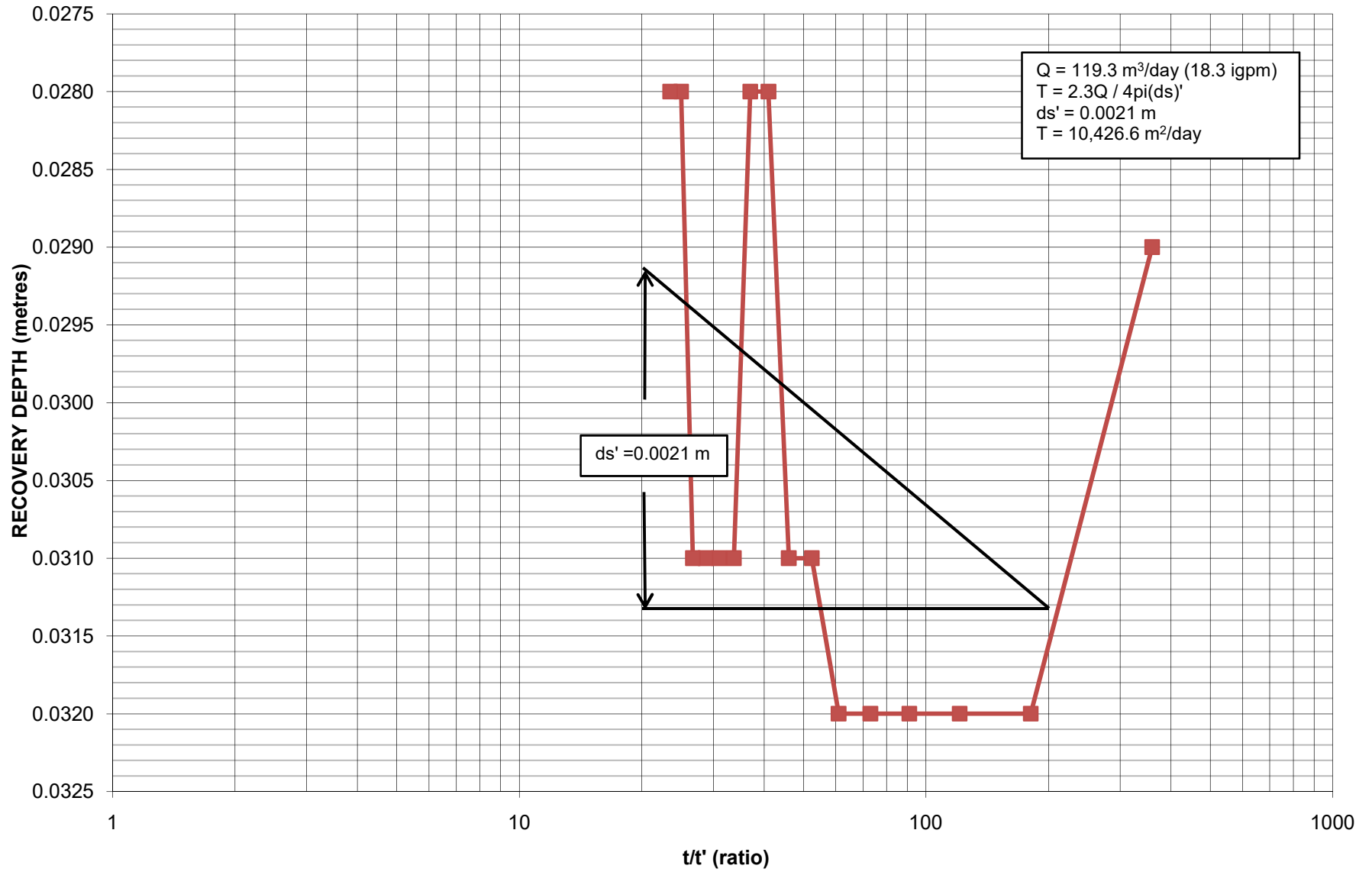
Time Lapsed (minutes)	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)
0	366.717	9.571	-9.36	0.00
1	365.584	9.571	-9.476	0.12
2	365.667	9.472	-9.467	0.11
3	365.63	9.373	-9.471	0.11
4	365.594	9.275	-9.475	0.12
5	365.647	9.176	-9.469	0.11
6	366.154	9.176	-9.417	0.06
7	366.207	9.077	-9.412	0.05
8	366.23	8.978	-9.41	0.05
9	366.29	8.978	-9.404	0.04
10	366.343	8.879	-9.398	0.04
11	366.074	8.879	-9.426	0.07
12	366.068	8.779	-9.426	0.07
13	366.008	8.779	-9.432	0.07
14	366.008	8.779	-9.432	0.07
15	366.001	8.68	-9.433	0.07
16	366.001	8.68	-9.433	0.07
17	366.001	8.68	-9.433	0.07
18	366.001	8.68	-9.433	0.07
19	366.061	8.68	-9.427	0.07
20	366.121	8.68	-9.421	0.06
21	366.001	8.68	-9.433	0.07
22	365.942	8.68	-9.439	0.08
23	365.995	8.581	-9.434	0.07
24	365.965	8.581	-9.437	0.08
25	365.965	8.581	-9.437	0.08
26	366.025	8.581	-9.431	0.07
27	366.054	8.581	-9.428	0.07
28	365.935	8.581	-9.44	0.08
29	365.965	8.581	-9.437	0.08
30	365.965	8.581	-9.437	0.08
31	365.935	8.581	-9.44	0.08
32	365.965	8.581	-9.437	0.08
33	365.965	8.581	-9.437	0.08
34	365.995	8.581	-9.434	0.07
35	365.935	8.581	-9.44	0.08
36	366.025	8.581	-9.431	0.07
37	365.935	8.581	-9.44	0.08
38	365.995	8.581	-9.434	0.07
39	365.965	8.581	-9.437	0.08
40	365.935	8.581	-9.44	0.08
41	365.905	8.581	-9.443	0.08
42	365.935	8.581	-9.44	0.08
43	365.995	8.581	-9.434	0.07
44	365.995	8.581	-9.434	0.07
45	365.965	8.581	-9.437	0.08
46	365.905	8.581	-9.443	0.08
47	365.965	8.581	-9.437	0.08
48	365.965	8.581	-9.437	0.08
49	365.995	8.581	-9.434	0.07
50	365.935	8.581	-9.44	0.08
51	365.965	8.581	-9.437	0.08
52	365.965	8.581	-9.437	0.08
53	365.965	8.581	-9.437	0.08
54	365.995	8.581	-9.434	0.07
55	365.965	8.581	-9.437	0.08
56	365.965	8.581	-9.437	0.08
57	365.965	8.581	-9.437	0.08
58	365.935	8.581	-9.44	0.08
59	365.965	8.581	-9.437	0.08
60	365.935	8.581	-9.44	0.08
61	365.965	8.581	-9.437	0.08
62	365.965	8.581	-9.437	0.08
63	365.965	8.581	-9.437	0.08
64	365.965	8.581	-9.437	0.08
65	365.935	8.581	-9.44	0.08
66	365.965	8.581	-9.437	0.08
67	365.905	8.581	-9.443	0.08
68	365.935	8.581	-9.44	0.08
69	365.965	8.581	-9.437	0.08
70	365.995	8.581	-9.434	0.07
71	365.965	8.581	-9.437	0.08
72	365.935	8.581	-9.44	0.08
73	365.965	8.581	-9.437	0.08
74	365.965	8.581	-9.437	0.08
75	365.965	8.581	-9.437	0.08
76	365.965	8.581	-9.437	0.08
77	365.935	8.581	-9.44	0.08
78	365.935	8.581	-9.44	0.08
79	365.965	8.581	-9.437	0.08
80	365.935	8.581	-9.44	0.08
81	365.965	8.581	-9.437	0.08
82	365.905	8.581	-9.443	0.08
83	365.965	8.581	-9.437	0.08
84	365.995	8.581	-9.434	0.07
85	365.995	8.581	-9.434	0.07
86	365.965	8.581	-9.437	0.08

87	365.965	8.581	-9.437	0.08
88	366.018	8.481	-9.431	0.07
89	365.965	8.581	-9.437	0.08
90	365.995	8.581	-9.434	0.07
91	365.965	8.581	-9.437	0.08
92	365.965	8.581	-9.437	0.08
93	365.965	8.581	-9.437	0.08
94	365.995	8.581	-9.434	0.07
95	365.988	8.481	-9.434	0.07
96	365.965	8.581	-9.437	0.08
97	365.958	8.481	-9.437	0.08
98	365.958	8.481	-9.437	0.08
99	365.988	8.481	-9.434	0.07
100	365.965	8.581	-9.437	0.08
101	365.905	8.581	-9.443	0.08
102	365.958	8.481	-9.437	0.08
103	365.935	8.581	-9.44	0.08
104	365.935	8.581	-9.44	0.08
105	365.929	8.481	-9.44	0.08
106	365.899	8.481	-9.443	0.08
107	365.929	8.481	-9.44	0.08
108	365.958	8.481	-9.437	0.08
109	365.869	8.481	-9.446	0.09
110	365.899	8.481	-9.443	0.08
111	365.899	8.481	-9.443	0.08
112	365.899	8.481	-9.443	0.08
113	365.929	8.481	-9.44	0.08
114	365.929	8.481	-9.44	0.08
115	365.899	8.481	-9.443	0.08
116	365.899	8.481	-9.443	0.08
117	365.899	8.481	-9.443	0.08
118	365.929	8.481	-9.44	0.08
119	365.929	8.481	-9.44	0.08
120	365.929	8.481	-9.44	0.08
121	365.899	8.481	-9.443	0.08
122	365.899	8.481	-9.443	0.08
123	365.899	8.481	-9.443	0.08
124	365.899	8.481	-9.443	0.08
125	365.869	8.481	-9.446	0.09
126	365.929	8.481	-9.44	0.08
127	365.929	8.481	-9.44	0.08
128	365.899	8.481	-9.443	0.08
129	365.869	8.481	-9.446	0.09
130	365.899	8.481	-9.443	0.08
131	365.929	8.481	-9.44	0.08
132	365.899	8.481	-9.443	0.08
133	365.958	8.481	-9.437	0.08
134	365.929	8.481	-9.44	0.08
135	365.988	8.481	-9.434	0.07
136	365.899	8.481	-9.443	0.08
137	365.929	8.481	-9.44	0.08
138	365.929	8.481	-9.44	0.08
139	365.958	8.481	-9.437	0.08
140	365.958	8.481	-9.437	0.08
141	365.899	8.481	-9.443	0.08
142	365.929	8.481	-9.44	0.08
143	365.929	8.481	-9.44	0.08
144	365.929	8.481	-9.44	0.08
145	365.929	8.481	-9.44	0.08
146	365.929	8.481	-9.44	0.08
147	365.958	8.481	-9.437	0.08
148	365.958	8.481	-9.437	0.08
149	365.929	8.481	-9.44	0.08
150	365.929	8.481	-9.44	0.08
151	365.958	8.481	-9.437	0.08
152	365.958	8.481	-9.437	0.08
153	365.958	8.481	-9.437	0.08
154	365.929	8.481	-9.44	0.08
155	365.899	8.481	-9.443	0.08
156	365.899	8.481	-9.443	0.08
157	365.929	8.481	-9.44	0.08
158	366.018	8.481	-9.431	0.07
159	365.929	8.481	-9.44	0.08
160	365.899	8.481	-9.443	0.08
161	365.929	8.481	-9.44	0.08
162	365.929	8.481	-9.44	0.08
163	365.899	8.481	-9.443	0.08
164	365.899	8.481	-9.443	0.08
165	365.929	8.481	-9.44	0.08
166	365.899	8.481	-9.443	0.08
167	365.929	8.481	-9.44	0.08
168	365.929	8.481	-9.44	0.08
169	365.899	8.481	-9.443	0.08
170	365.869	8.481	-9.446	0.09
171	365.869	8.481	-9.446	0.09
172	365.869	8.481	-9.446	0.09
173	365.869	8.481	-9.446	0.09
174	365.869	8.481	-9.446	0.09
175	365.869	8.481	-9.446	0.09
176	365.869	8.481	-9.446	0.09
177	365.899	8.481	-9.443	0.08
178	365.899	8.481	-9.443	0.08
179	365.899	8.481	-9.443	0.08

180	365.899	8.481	-9.443	0.08
181	365.869	8.481	-9.446	0.09
182	365.899	8.481	-9.443	0.08
183	365.869	8.481	-9.446	0.09
184	365.869	8.481	-9.446	0.09
185	365.839	8.481	-9.45	0.09
186	365.899	8.481	-9.443	0.08
187	365.869	8.481	-9.446	0.09
188	365.869	8.481	-9.446	0.09
189	365.809	8.481	-9.453	0.09
190	365.839	8.481	-9.45	0.09
191	365.809	8.481	-9.453	0.09
192	365.809	8.481	-9.453	0.09
193	365.869	8.481	-9.446	0.09
194	365.869	8.481	-9.446	0.09
195	365.869	8.481	-9.446	0.09
196	365.839	8.481	-9.45	0.09
197	365.839	8.481	-9.45	0.09
198	365.899	8.481	-9.443	0.08
199	365.839	8.481	-9.45	0.09
200	365.869	8.481	-9.446	0.09
201	365.839	8.481	-9.45	0.09
202	365.839	8.481	-9.45	0.09
203	365.809	8.481	-9.453	0.09
204	365.839	8.481	-9.45	0.09
205	365.839	8.481	-9.45	0.09
206	365.839	8.481	-9.45	0.09
207	365.839	8.481	-9.45	0.09
208	365.869	8.481	-9.446	0.09
209	365.869	8.481	-9.446	0.09
210	365.809	8.481	-9.453	0.09
211	365.779	8.481	-9.456	0.10
212	365.809	8.481	-9.453	0.09
213	365.809	8.481	-9.453	0.09
214	365.839	8.481	-9.45	0.09
215	365.779	8.481	-9.456	0.10
216	365.809	8.481	-9.453	0.09
217	365.809	8.481	-9.453	0.09
218	365.779	8.481	-9.456	0.10
219	365.779	8.481	-9.456	0.10
220	365.809	8.481	-9.453	0.09
221	365.809	8.481	-9.453	0.09
222	365.779	8.481	-9.456	0.10
223	365.809	8.481	-9.453	0.09
224	365.779	8.481	-9.456	0.10
225	365.779	8.481	-9.456	0.10
226	365.779	8.481	-9.456	0.10
227	365.779	8.481	-9.456	0.10
228	365.809	8.481	-9.453	0.09
229	365.779	8.481	-9.456	0.10
230	365.779	8.481	-9.456	0.10
231	365.809	8.481	-9.453	0.09
232	365.779	8.481	-9.456	0.10
233	365.779	8.481	-9.456	0.10
234	365.779	8.481	-9.456	0.10
235	365.779	8.481	-9.456	0.10
236	365.839	8.481	-9.45	0.09
237	365.809	8.481	-9.453	0.09
238	365.75	8.481	-9.459	0.10
239	365.779	8.481	-9.456	0.10
240	365.809	8.481	-9.453	0.09
241	365.779	8.481	-9.456	0.10
242	365.779	8.481	-9.456	0.10
243	365.75	8.481	-9.459	0.10
244	365.809	8.481	-9.453	0.09
245	365.809	8.481	-9.453	0.09
246	365.75	8.481	-9.459	0.10
247	365.75	8.481	-9.459	0.10
248	365.75	8.481	-9.459	0.10
249	365.75	8.481	-9.459	0.10
250	365.72	8.481	-9.462	0.10
251	365.75	8.481	-9.459	0.10
252	365.75	8.481	-9.459	0.10
253	365.72	8.481	-9.462	0.10
254	365.72	8.481	-9.462	0.10
255	365.72	8.481	-9.462	0.10
256	365.72	8.481	-9.462	0.10
257	365.75	8.481	-9.459	0.10
258	365.69	8.481	-9.465	0.11
259	365.72	8.481	-9.462	0.10
260	365.72	8.481	-9.462	0.10
261	365.69	8.481	-9.465	0.11
262	365.69	8.481	-9.465	0.11
263	365.72	8.481	-9.462	0.10
264	365.72	8.481	-9.462	0.10
265	365.66	8.481	-9.468	0.11
266	365.66	8.481	-9.468	0.11
267	365.69	8.481	-9.465	0.11
268	365.75	8.481	-9.459	0.10
269	365.75	8.481	-9.459	0.10
270	365.63	8.481	-9.471	0.11
271	365.69	8.481	-9.465	0.11
272	365.72	8.481	-9.462	0.10

273	365.69	8.481	-9.465	0.11
274	365.72	8.481	-9.462	0.10
275	365.66	8.481	-9.468	0.11
276	365.69	8.481	-9.465	0.11
277	365.72	8.481	-9.462	0.10
278	365.72	8.481	-9.462	0.10
279	365.66	8.481	-9.468	0.11
280	365.63	8.481	-9.471	0.11
281	365.63	8.481	-9.471	0.11
282	365.69	8.481	-9.465	0.11
283	365.66	8.481	-9.468	0.11
284	365.66	8.481	-9.468	0.11
285	365.69	8.481	-9.465	0.11
286	365.69	8.481	-9.465	0.11
287	365.66	8.481	-9.468	0.11
288	365.69	8.481	-9.465	0.11
289	365.69	8.481	-9.465	0.11
290	365.63	8.481	-9.471	0.11
291	365.63	8.481	-9.471	0.11
292	365.601	8.481	-9.474	0.11
293	365.63	8.481	-9.471	0.11
294	365.63	8.481	-9.471	0.11
295	365.66	8.481	-9.468	0.11
296	365.63	8.481	-9.471	0.11
297	365.63	8.481	-9.471	0.11
298	365.66	8.481	-9.468	0.11
299	365.63	8.481	-9.471	0.11
300	365.66	8.481	-9.468	0.11
301	365.66	8.481	-9.468	0.11
302	365.66	8.481	-9.468	0.11
303	365.66	8.481	-9.468	0.11
304	365.63	8.481	-9.471	0.11
305	365.63	8.481	-9.471	0.11
306	365.63	8.481	-9.471	0.11
307	365.66	8.481	-9.468	0.11
308	365.66	8.481	-9.468	0.11
309	365.601	8.481	-9.474	0.11
310	365.63	8.481	-9.471	0.11
311	365.66	8.481	-9.468	0.11
312	365.66	8.481	-9.468	0.11
313	365.66	8.481	-9.468	0.11
314	365.63	8.481	-9.471	0.11
315	365.63	8.481	-9.471	0.11
316	365.601	8.481	-9.474	0.11
317	365.601	8.481	-9.474	0.11
318	365.66	8.481	-9.468	0.11
319	365.571	8.481	-9.477	0.12
320	365.63	8.481	-9.471	0.11
321	365.601	8.481	-9.474	0.11
322	365.601	8.481	-9.474	0.11
323	365.63	8.481	-9.471	0.11
324	365.601	8.481	-9.474	0.11
325	365.63	8.481	-9.471	0.11
326	365.601	8.481	-9.474	0.11
327	365.63	8.481	-9.471	0.11
328	365.571	8.481	-9.477	0.12
329	365.571	8.481	-9.477	0.12
330	365.601	8.481	-9.474	0.11
331	365.601	8.481	-9.474	0.11
332	365.571	8.481	-9.477	0.12
333	365.601	8.481	-9.474	0.11
334	365.601	8.481	-9.474	0.11
335	365.601	8.481	-9.474	0.11
336	365.541	8.481	-9.48	0.12
337	365.601	8.481	-9.474	0.11
338	365.571	8.481	-9.477	0.12
339	365.601	8.481	-9.474	0.11
340	365.571	8.481	-9.477	0.12
341	365.571	8.481	-9.477	0.12
342	365.601	8.481	-9.474	0.11
343	365.571	8.481	-9.477	0.12
344	365.571	8.481	-9.477	0.12
345	365.571	8.481	-9.477	0.12
346	365.571	8.481	-9.477	0.12
347	365.541	8.481	-9.48	0.12
348	365.571	8.481	-9.477	0.12
349	365.511	8.481	-9.483	0.12
350	365.511	8.481	-9.483	0.12
351	365.511	8.481	-9.483	0.12
352	365.541	8.481	-9.48	0.12
353	365.541	8.481	-9.48	0.12
354	365.541	8.481	-9.48	0.12
355	365.541	8.481	-9.48	0.12
356	365.541	8.481	-9.48	0.12
357	365.541	8.481	-9.48	0.12
358	365.541	8.481	-9.48	0.12
359	365.541	8.481	-9.48	0.12
360	365.511	8.481	-9.483	0.12

# TW1- WELL RECOVERY VS. TIME - KOLLAARD FILE 170035



**RECOVERY DATA TW-1**

t'	t / t'	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)	Manual Measured Water Level	Drawdown (m)	Recovery (%)
1	360	366.435	8.481	-9.389	0.03	9.38	0.02	83%
2	181.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
3	121.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
4	91.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
5	73.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
6	61.0	366.405	8.481	-9.392	0.03	9.38	0.02	83%
7	52.4	366.412	8.581	-9.391	0.03	9.38	0.02	83%
8	46.0	366.412	8.581	-9.391	0.03	9.38	0.02	83%
9	41.0	366.442	8.581	-9.388	0.03	9.38	0.02	83%
10	37.0	366.442	8.581	-9.388	0.03	9.38	0.02	83%
11	33.7	366.412	8.581	-9.391	0.03	9.38	0.02	83%
12	31.0	366.412	8.581	-9.391	0.03	9.38	0.02	83%
13	28.7	366.412	8.581	-9.391	0.03	9.38	0.02	83%
14	26.7	366.412	8.581	-9.391	0.03	9.38	0.02	83%
15	25.0	366.442	8.581	-9.388	0.03	9.37	0.01	92%
16	23.5	366.442	8.581	-9.388	0.03	9.37	0.01	92%
17	22.2	366.442	8.581	-9.388	0.03	-	-	-
18	21.0	366.442	8.581	-9.388	0.03	-	-	-
19	19.9	366.412	8.581	-9.391	0.03	-	-	-
20	19.0	366.442	8.581	-9.388	0.03	-	-	-
21	18.1	366.442	8.581	-9.388	0.03	-	-	-
1405	1.3	365.445	9.275	-9.49	0.13	9.43	0.07	-
5740	1.1	362.053	9.373	-9.836	0.48	9.85	0.49	-





ATTACHMENT C

RESULTS OF LABORATORY TESTING  
OF WELL WATER SAMPLES (2017 and 2024)

Client: Kollaard Associates Inc.  
210 Prescott St., Box 189  
Kemptville, ON  
K0G 1J0  
Attention: Ms. Colleen Vermeersch  
PO#:  
Invoice to: Kollaard Associates Inc.

Report Number: 1709239  
Date Submitted: 2017-06-09  
Date Reported: 2017-06-11  
Project: 170035  
COC #: 190936

Page 1 of 2

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**Dear Colleen Vermeersch:**

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

Report Comments:

APPROVAL: \_\_\_\_\_

Dragana Dzeletovic  
Team Leader, Microbiology

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

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

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

Eurofins (Mississauga) is accredited for specific parameters by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025

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

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Report Number: 1709239  
 Date Submitted: 2017-06-09  
 Date Reported: 2017-06-11  
 Project: 170035  
 COC #: 190936

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1297441 Water  2017-06-08 TW1 - 3hrs	1297442 Water  2017-06-08 TW1 - 6 hours
Others	Escherichia Coli	0	ct/100mL	MAC 0		0	0
	Faecal Coliforms	0	ct/100mL			0	0
	Heterotrophic Plate Count	0	ct/100mL				0
			ct/1mL			26	
	Total Coliforms	0	ct/100mL	MAC 0		1*	0

**Guideline = ODWSOG**

**\* = Guideline Exceedence**

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

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

**Analytical Method: AMBCOLM1**

additional QA/QC information available on request.

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

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

Client: Kollaard Associates Inc.  
210 Prescott St., Box 189  
Kemptville, ON  
K0G 1J0  
Attention: Ms. Colleen Vermeersch  
PO#: 170035  
Invoice to: Kollaard Associates Inc.

Report Number: 1709240  
Date Submitted: 2017-06-09  
Date Reported: 2017-06-16  
Project: 170035  
COC #: 190936

Page 1 of 5

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**Dear Colleen Vermeersch:**

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

Report Comments:

APPROVAL: \_\_\_\_\_

Addrine Thomas  
Team Leader, Inorganics

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 PO#: 170035  
 Invoice to: Kollaard Associates Inc.

Report Number: 1709240  
 Date Submitted: 2017-06-09  
 Date Reported: 2017-06-16  
 Project: 170035  
 COC #: 190936

Group	Analyte	MRL	Units	Guideline	1297443 Water 2017-06-08 TW1-3hrs	1297444 Water 2017-06-08 TW1-6hrs
Calculations	Hardness as CaCO3	1	mg/L	OG 100	429*	427*
	Ion Balance	0.01			0.91	0.92
	TDS (COND - CALC)	1	mg/L	AO 500	722*	715*
General Chemistry	Alkalinity as CaCO3	5	mg/L	OG 500	313	299
	Cl	1	mg/L	AO 250	129	126
	Colour	2	TCU	AO 5	2	2
	Conductivity	5	uS/cm		1110	1100
	F	0.10	mg/L	MAC 1.5	0.18	0.19
	N-NO2	0.10	mg/L	MAC 1.0	<0.10	<0.10
	N-NO3	0.10	mg/L	MAC 10.0	<0.10	<0.10
	pH	1.00		6.5-8.5	7.95	7.96
	SO4	1	mg/L	AO 500	126	124
	Turbidity	0.1	NTU	AO 5.0	1.6	1.2
Metals	Ca	1	mg/L		96	95
	Fe	0.03	mg/L	AO 0.3	0.19	0.16
	K	1	mg/L		6	6
	Mg	1	mg/L		46	46
	Mn	0.01	mg/L	AO 0.05	0.04	0.04
	Na	2	mg/L	AO 200	62	57
Nutrients	Total Kjeldahl Nitrogen	0.1	mg/L		0.3	0.3
Phenols	Phenols	0.001	mg/L		<0.001	<0.001
Subcontract	DOC	0.5	mg/L	AO 5	1.7	1.9
	N-NH3	0.01	mg/L		0.14	0.15
	S2-	0.02	mg/L	AO 0.05	<0.02	<0.02
	Tannin & Lignin	0.1	mg/L		<0.1	<0.1

**Guideline = ODWSOG**

**\* = Guideline Exceedence**

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

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Report Number: 1709240  
 Date Submitted: 2017-06-09  
 Date Reported: 2017-06-16  
 Project: 170035  
 COC #: 190936

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
<b>Run No</b> 328025 <b>Analysis/Extraction Date</b> 2017-06-09 <b>Analyst</b> H_D			
<b>Method</b> C SM2130B			
Turbidity	<0.1 NTU	99	70-130
<b>Run No</b> 328037 <b>Analysis/Extraction Date</b> 2017-06-09 <b>Analyst</b> SKH			
<b>Method</b> M SM3120B-3500C			
Calcium	<1 mg/L	95	90-110
Potassium	<1 mg/L	94	87-113
Magnesium	<1 mg/L	94	76-124
Sodium	<2 mg/L	95	82-118
<b>Run No</b> 328051 <b>Analysis/Extraction Date</b> 2017-06-09 <b>Analyst</b> H_D			
<b>Method</b> C SM4500-NO3-F			
N-NO2	<0.10 mg/L	107	80-120
N-NO3	<0.10 mg/L	108	80-120
<b>Run No</b> 328101 <b>Analysis/Extraction Date</b> 2017-06-12 <b>Analyst</b> SKH			
<b>Method</b> EPA 200.8			
Iron	<0.03 mg/L	95	91-109
Manganese	<0.01 mg/L	98	92.9-107
<b>Run No</b> 328114 <b>Analysis/Extraction Date</b> 2017-06-12 <b>Analyst</b> MAG			

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Report Number: 1709240  
 Date Submitted: 2017-06-09  
 Date Reported: 2017-06-16  
 Project: 170035  
 COC #: 190936

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
<b>Method C SM2120C</b>			
Colour	<2 TCU	95	90-110
<b>Run No 328249 Analysis/Extraction Date 2017-06-13 Analyst H_D</b>			
<b>Method C SM4500-H+B</b>			
Alkalinity (CaCO3)	<5 mg/L	100	90-110
Conductivity	<5 uS/cm	99	90-110
F	<0.10 mg/L	101	90-110
pH	5.89	99	90-110
<b>Run No 328360 Analysis/Extraction Date 2017-06-13 Analyst AET</b>			
<b>Method SM 4110</b>			
Chloride	<1 mg/L	104	90-110
SO4	<1 mg/L	107	90-110
<b>Run No 328373 Analysis/Extraction Date 2017-06-14 Analyst AET</b>			
<b>Method SUBCONTRACT P-INORG</b>			
DOC	<0.5 mg/L	92	
N-NH3	<0.01 mg/L	96	
Phenols	<0.001 mg/L	96	69-132
S2-	<0.02 mg/L	96	

**Guideline = ODWSOG**

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 Date Submitted: 2017-06-09  
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 Project: 170035  
 COC #: 190936

**QC Summary**

Analyte	Blank	QC % Rec	QC Limits
Tannin & Lignin	<0.1 mg/L	100	
Total Kjeldahl Nitrogen	<0.1 mg/L	99	81-126
<b>Run No</b> 328434 <b>Analysis/Extraction Date</b> 2017-06-16 <b>Analyst</b> AET			
<b>Method</b> C Ion Balance			
Ion Balance			
<b>Method</b> C SM2340B			
Hardness as CaCO3			
<b>Method</b> C SM2540			
TDS (COND - CALC)			

**Guideline = ODWSOG**

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## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.  
Project : 230156

Reception Date: 2024-05-02

		Eurofins Sample No :		<b>7668653</b>					
		Matrix :		Drinking water					
		Sampling Date :		2024-05-01					
		Client Sample Identification :		6622 Bank St					
Microbiology	RL	Unit	Criteria						
			A	B	C				
<b>E.Coli and Total Coliforms (DC Plate)</b>									
Escherichia coli (DC)	0	CFU/100mL	0			0			
Total Coliforms (DC)	0	CFU/100mL	0			0			
Heterotrophic Plate Count (mHPC)	0	CFU/1 mL				2			

Approved by :   
 Emma-Dawn Ferguson,  
 Environmental Chemist

## OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.  
 Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
<b>E.Coli and Total Coliforms (DC Plate)</b>									
<i>Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.</i>									
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 7668653								Prep Date: 2024-05-02 Analysis Date: 2024-05-03	
<i>Method : Heterotrophic Plate Count by MF (mHPC Media). Internal method: OTT-M-BAC-WI45296.</i>									
Heterotrophic Plate Count (mHPC)	CFU/1 mL	0	0					0	0-30
Associated Samples : 7668653								Prep Date: 2024-05-02 Analysis Date: 2024-05-04	

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





## OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Kollaard Associates Inc.  
 Project : 230156

Reception Date : 2024-05-02

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
<b>Hardness (Water, Calculation Only)</b>							
7668847	6622 Bank St	Hardness as CaCO3 (Calculation)	318	mg/L	80-100		
<b>TDS (Estimated)</b>							
7668847	6622 Bank St	TDS (Estimated)^	683	mg/L	500		

## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.  
Project : 230156

Reception Date: 2024-05-02

Eurofins Sample No :						<b>7668847</b>				
Matrix :						Drinking water				
Sampling Date :						2024-05-01				
Client Sample Identification :						6622 Bank St				
Anions	RL	Unit	Criteria							
			A	B	C					
Chloride	0.5	mg/L	250			104				
Nitrate (as Nitrogen)	0.1	mg/L	10.0			<0.5				
Nitrite (as Nitrogen)	0.1	mg/L	1.0			<0.5				
Sulphate	1	mg/L	500			113				

Eurofins Sample No :						<b>7668847</b>				
Matrix :						Drinking water				
Sampling Date :						2024-05-01				
Client Sample Identification :						6622 Bank St				
Calculations	RL	Unit	Criteria							
			A	B	C					
Ion Balance (Calculation)^	0.1		1.01							

Eurofins Sample No :						<b>7668847</b>				
Matrix :						Drinking water				
Sampling Date :						2024-05-01				
Client Sample Identification :						6622 Bank St				
General Chemistry	RL	Unit	Criteria							
			A	B	C					
Alkalinity (as CaCO3)	5	mg/L	500			307				
Colour (Apparent)	2	TCU	5			<2				
Colour (True)	2	TCU				<2				
Conductivity @ 25°C	5	uS/cm				1050				
Dissolved Organic Carbon	0.5	mg/L	5			1.8				
Fluoride	0.1	mg/L	1.5			0.24				
Hardness as CaCO3 (Calculation)	1	mg/L	80-100			<b>318</b>				
pH @ 25°C	1		6.5-8.5			7.80				
Phenols-4AAP	0.001	mg/L				<0.001				
Sulphide (S2-)	0.01	mg/L	0.05			<0.01				
Tannin and Lignin	0.1	mg/L				0.4				
TDS (Estimated)^	5	mg/L	500			<b>683</b>				
Turbidity	0.1	NTU	5			0.3				

## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.  
Project : 230156

Reception Date: 2024-05-02

		Eurofins Sample No :		<b>7668847</b>					
		Matrix :		Drinking water					
		Sampling Date :		2024-05-01					
		Client Sample Identification :		6622 Bank St					
Metals	RL	Unit	Criteria						
			A	B	C				
<b>Metals Scan (Water, ICP/MS)</b>									
Aluminum	0.01	mg/L	0.1			<0.01			
Antimony	0.0005	mg/L	0.006			<0.0005			
Arsenic	0.001	mg/L	0.01			<0.001			
Barium	0.001	mg/L	1			0.118			
Beryllium	0.0005	mg/L				<0.0005			
Boron	0.01	mg/L	5			0.17			
Cadmium	0.0001	mg/L	0.005			<0.0001			
Chromium	0.001	mg/L	0.05			<0.001			
Cobalt	0.0002	mg/L				<0.0002			
Copper	0.001	mg/L	1			0.057			
Iron	0.03	mg/L	0.3			<0.03			
Lead	0.001	mg/L	0.01			<0.001			
Manganese	0.01	mg/L	0.05			0.04			
Mercury	0.0001	mg/L	0.001			<0.0001			
Molybdenum	0.005	mg/L				<0.005			
Nickel	0.005	mg/L				0.006			
Selenium	0.001	mg/L	0.05			<0.001			
Silver	0.0001	mg/L				<0.0001			
Strontium	0.001	mg/L				1.49			
Thallium	0.0001	mg/L				<0.0001			
Uranium	0.001	mg/L	0.02			<0.001			
Vanadium	0.001	mg/L				<0.001			
Zinc	0.01	mg/L	5			0.07			
<b>Metals Scan (Water, ICP/OES)</b>									
Calcium	1	mg/L				54			
Magnesium	1	mg/L				45			
Potassium	1	mg/L				6			
Sodium	1	mg/L	200			117			

		Eurofins Sample No :		<b>7668847</b>					
		Matrix :		Drinking water					
		Sampling Date :		2024-05-01					
		Client Sample Identification :		6622 Bank St					
Nutrients	RL	Unit							
			Ammonia (Total, as Nitrogen)	0.02	mg/L				
Total Kjeldahl Nitrogen	0.1	mg/L	0.200						



## OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.

Project : 230156

Reception Date: 2024-05-02

Eurofins Sample No :		<b>7668847</b>						
Matrix :		Drinking water						
Sampling Date :		2024-05-01						
Client Sample Identification :		6622 Bank St						
<b>Sample Preparation</b>	<b>RL</b>	<b>Unit</b>						
Lab Filtration		y						

Approved by :



Emma-Dawn Ferguson, M.Sc.  
Environmental Chemist

Client : Kollaard Associates Inc.  
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
<b>Alkalinity (Water, Automated)</b>									
<i>Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.</i>									
Alkalinity (as CaCO <sub>3</sub> )	mg/L	5	<5	97	95-105			0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
<b>Ammonia, Total (Water, Colorimetry)</b>									
<i>Method : Ammonia (Water, Colorimetry). Internal method: OTT-I-NUT-WI46201.</i>									
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	118	80-120	108	80-120	3	0-20
Associated Samples : 7668847								Prep Date: 2024-05-07 Analysis Date: 2024-05-08	
<b>Chloride (Water, IC)</b>									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Chloride	mg/L	0.5	<0.5	100	80-120	96	80-120	1	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
<b>Colour, Apparent (Water, Spectrophotometry)</b>									
<i>Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.</i>									
Colour (Apparent)	TCU	2	<2	87	39-159			4	0-40
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-06	
<b>Colour, True (Water, Spectrophotometry)</b>									
<i>Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.</i>									
Colour (True)	TCU	2	<2	87	39-159			-	0-40
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-06	
<b>Conductivity (Water, Automated)</b>									
<i>Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.</i>									
Conductivity @ 25°C	uS/cm	5	<5	99	98-102			0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
<b>DOC (Water, IR)</b>									
<i>Method : Organic carbon (water, IR, combustion). Internal method: OTT-I-DEM-WI46148.</i>									
Dissolved Organic Carbon	mg/L	0.5	<0.5	101	84-116			4	0-15
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
<b>Fluoride (Water, Auto/ISE)</b>									
<i>Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.</i>									
Fluoride	mg/L	0.1	<0.1	101	90-110			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	

## OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.  
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
<b>Metals Scan (Water, ICP/MS)</b>									
<i>Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.</i>									
Aluminum	mg/L	0.01	<0.01	100	80-120	97	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	94	80-120	88	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	103	80-120	98	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	87	70-130	3	0-20
Beryllium	mg/L	0.0005	<0.0005	106	80-120	108	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-120	91	70-130	0	0-20
Cadmium	mg/L	0.0001	<0.0001	104	80-120	98	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	110	80-120	96	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	110	80-120	93	70-130	-	0-20
Copper	mg/L	0.001	<0.001	110	80-120	92	70-130	3	0-20
Iron	mg/L	0.03	<0.03	100	80-120	96	70-130	-	0-20
Lead	mg/L	0.001	<0.001	110	80-120	92	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	94	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	96	80-120	90	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	100	80-120	96	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	110	80-120	96	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	100	80-120	93	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	104	80-120	80	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	89	70-130	2	0-20
Thallium	mg/L	0.0001	<0.0001	109	80-120	93	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-120	93	70-130	-	0-20
Vanadium	mg/L	0.001	<0.001	100	80-120	95	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	110	80-120	95	70-130	-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
<b>Metals Scan (Water, ICP/OES)</b>									
<i>Method : Metals (Water, ICP/OES). Internal method: OTT-I-MET-WI48491.</i>									
Calcium	mg/L	1	<1	101	86-115	106	70-130	0	0-20
Magnesium	mg/L	1	<1	100	91-109	103	70-130	0	0-20
Potassium	mg/L	1	<1	100	87-113	104	70-130	-	0-20
Sodium	mg/L	1	<1	99	85-115	105	70-130	0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-02	
<b>Nitrate (Water, IC)</b>									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	97	80-120	106	80-120	-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
<b>Nitrite (Water, IC)</b>									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	95	80-120			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
<b>pH (25°C) (Water, Automated)</b>									
<i>Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.</i>									
pH @ 25°C		1	5.74	100	97-103			0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	

## OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.  
Project : 230156

Reception Date: 2024-05-02

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
<b>Phenols (Water, Colorimetry)</b>									
<i>Method : Phenols (Water, Colorimetry). Internal method: OTT-I-4AAP-WI46150.</i>									
Phenols-4AAP	mg/L	0.001	<0.001	112	75-125	106	70-130	-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
<b>Sulphate (Water, IC)</b>									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Sulphate	mg/L	1	<1	90	90-110	89	80-120	0	0-20
Associated Samples : 7668847								Prep Date: 2024-05-06 Analysis Date: 2024-05-07	
<b>Sulphide (Water, Colorimetry)</b>									
<i>Method : Sulphide, S2- (Water, Colorimetry). Internal method: OTT-I-SPEC-WI45931.</i>									
Sulphide (S2-)	mg/L	0.01	<0.01	115	80-120			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-08	
<b>Tannin and Lignin (Water, Spec)</b>									
<i>Method : Tannin and Lignin (Water, Spec), Internal method: OTT-I-SPEC-WI57693.</i>									
Tannin and Lignin	mg/L	0.1	<0.1	108	80-120			-	0-20
Associated Samples : 7668847								Prep Date: 2024-05-09 Analysis Date: 2024-05-09	
<b>Total Kjeldahl Nitrogen (Water, Colorimetry)</b>									
<i>Method : TKN (Water, colorimetry). Internal method: OTT-I-NUT-WI46201.</i>									
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	109	70-130	115	70-130	16	0-20
Associated Samples : 7668847								Prep Date: 2024-05-08 Analysis Date: 2024-05-09	
<b>Turbidity (Water, Turbidimeter)</b>									
<i>Method : Turbidity (Water, Turbidimeter). Internal method: OTT-I-TUR-WI46288.</i>									
Turbidity	NTU	0.1	<0.1	98	80-120			4	0-30
Associated Samples : 7668847								Prep Date: 2024-05-03 Analysis Date: 2024-05-06	

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



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>WT2410851</b></p> <p>Client : <b>Kollaard Associates Inc.</b></p> <p>Contact : Colleen Vermeersch</p> <p>Address : 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0</p> <p>Telephone : 613 860 0923</p> <p>Project : 230156</p> <p>PO : 230156</p> <p>C-O-C number : ----</p> <p>Sampler : CLIENT</p> <p>Site : ----</p> <p>Quote number : SOA 2024</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Costas Farassoglou</p> <p>Address : 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8</p> <p>Telephone : 613 225 8279</p> <p>Date Samples Received : 02-May-2024 13:50</p> <p>Date Analysis Commenced : 06-May-2024</p> <p>Issue Date : 08-May-2024 10:46</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
-	no units
µg/L	micrograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.



## Analytical Results

Sub-Matrix: Water					Client sample ID	6622 BANK ST	---	---	---	---
(Matrix: Water)					Client sampling date / time	01-May-2024 10:00	---	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2410851-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Volatile Organic Compounds</b>										
Acetone	67-64-1	E611D/WT	20	µg/L	<20	---	---	---	---	
Benzene	71-43-2	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Bromodichloromethane	75-27-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Bromoform	75-25-2	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Bromomethane	74-83-9	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Carbon tetrachloride	56-23-5	E611D/WT	0.20	µg/L	<0.20	---	---	---	---	
Chlorobenzene	108-90-7	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Chloroform	67-66-3	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dibromochloromethane	124-48-1	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dibromoethane, 1,2-	106-93-4	E611D/WT	0.20	µg/L	<0.20	---	---	---	---	
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichlorodifluoromethane	75-71-8	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethane, 1,1-	75-34-3	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethane, 1,2-	107-06-2	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, 1,1-	75-35-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L	<1.0	---	---	---	---	
Dichloropropane, 1,2-	78-87-5	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	0.30	µg/L	<0.30	---	---	---	---	
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	0.30	µg/L	<0.30	---	---	---	---	
Ethylbenzene	100-41-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Hexane, n-	110-54-3	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	20	µg/L	<20	---	---	---	---	
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	20	µg/L	<20	---	---	---	---	
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	6622 BANK ST	----	----	----	----
(Matrix: Water)					Client sampling date / time	01-May-2024 10:00	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	WT2410851-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Volatile Organic Compounds</b>										
Styrene	100-42-5	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethylene	127-18-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Toluene	108-88-3	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethylene	79-01-6	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Trichlorofluoromethane	75-69-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Vinyl chloride	75-01-4	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
Xylene, m+p-	179601-23-1	E611D/WT	0.40	µg/L	<0.40	---	---	---	---	
Xylene, o-	95-47-6	E611D/WT	0.30	µg/L	<0.30	---	---	---	---	
Xylenes, total	1330-20-7	E611D/WT	0.50	µg/L	<0.50	---	---	---	---	
BTEX, total	---	E611D/WT	1.0	µg/L	<1.0	---	---	---	---	
<b>Hydrocarbons</b>										
F1 (C6-C10)	---	E581.F1-L/WT	25	µg/L	<25	---	---	---	---	
F2 (C10-C16)	---	E601.SG/WT	100	µg/L	<100	---	---	---	---	
F3 (C16-C34)	---	E601.SG/WT	250	µg/L	<250	---	---	---	---	
F4 (C34-C50)	---	E601.SG/WT	250	µg/L	<250	---	---	---	---	
F1-BTEX	---	EC580/WT	25	µg/L	<25	---	---	---	---	
Hydrocarbons, total (C6-C50)	n/a	EC581SG/WT	240	µg/L	<370	---	---	---	---	
Chromatogram to baseline at nC50	n/a	E601.SG/WT	-	-	YES	---	---	---	---	
<b>Hydrocarbons Surrogates</b>										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG/WT	1.0	%	93.2	---	---	---	---	
Dichlorotoluene, 3,4-	95-75-0	E581.F1-L/WT	1.0	%	103	---	---	---	---	
<b>Volatile Organic Compounds Surrogates</b>										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%	104	---	---	---	---	
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%	98.5	---	---	---	---	



Page : 5 of 5  
Work Order : WT2410851  
Client : Kollaard Associates Inc.  
Project : 230156

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Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.




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## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>WT2410851</b></p> <p><b>Client</b> : <b>Kollaard Associates Inc.</b></p> <p><b>Contact</b> : Colleen Vermeersch</p> <p><b>Address</b> : 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0</p> <p><b>Telephone</b> : 613 860 0923</p> <p><b>Project</b> : 230156</p> <p><b>PO</b> : 230156</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CLIENT</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : SOA 2024</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : ALS Environmental - Waterloo</p> <p><b>Account Manager</b> : Costas Farassoglou</p> <p><b>Address</b> : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p><b>Telephone</b> : 613 225 8279</p> <p><b>Date Samples Received</b> : 02-May-2024 13:50</p> <p><b>Issue Date</b> : 08-May-2024 10:46</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
  - CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
  - DQO: Data Quality Objective.
  - LOR: Limit of Reporting (detection limit).
  - RPD: Relative Percent Difference.
- 

### ***Workorder Comments***

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Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

***Outliers : Analysis Holding Time Compliance (Breaches)***

- No Analysis Holding Time Outliers exist.

***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)</b>										
Glass vial (sodium bisulfate) 6622 BANK ST	E581.F1-L	01-May-2024	07-May-2024	14 days	6 days	✔	07-May-2024	14 days	6 days	✔
<b>Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID</b>										
Amber glass/Teflon lined cap (sodium bisulfate) 6622 BANK ST	E601.SG	01-May-2024	06-May-2024	14 days	5 days	✔	07-May-2024	40 days	1 days	✔
<b>Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS</b>										
Glass vial (sodium bisulfate) 6622 BANK ST	E611D	01-May-2024	07-May-2024	14 days	6 days	✔	07-May-2024	14 days	6 days	✔

### Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✔
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1430025	1	10	10.0	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✔
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1430025	1	10	10.0	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1430753	1	5	20.0	5.0	✔
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1430751	1	20	5.0	5.0	✔



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L  ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.  Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG  ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4).  Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D  ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580  ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG  ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581  ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601  ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: WT2410851</b>	<b>Page</b>	: 1 of 10
<b>Client</b>	: Kollaard Associates Inc.	<b>Laboratory</b>	: ALS Environmental - Waterloo
<b>Contact</b>	: Colleen Vermeersch	<b>Account Manager</b>	: Costas Farassoglou
<b>Address</b>	: 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0	<b>Address</b>	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
<b>Telephone</b>	: 613 860 0923	<b>Telephone</b>	: 613 225 8279
<b>Project</b>	: 230156	<b>Date Samples Received</b>	: 02-May-2024 13:50
<b>PO</b>	: 230156	<b>Date Analysis Commenced</b>	: 06-May-2024
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 08-May-2024 10:47
<b>Sampler</b>	: CLIENT		
<b>Site</b>	: ----		
<b>Quote number</b>	: SOA 2024		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

Page : 2 of 10  
Work Order : WT2410851  
Client : Kollaard Associates Inc.  
Project : 230156



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## General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## Workorder Comments

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Volatile Organic Compounds (QC Lot: 1430751)</b>											
WT2410851-001	6622 BANK ST	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Volatile Organic Compounds (QC Lot: 1430751) - continued</b>											
WT2410851-001	6622 BANK ST	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----		
<b>Hydrocarbons (QC Lot: 1430753)</b>											
WT2410851-001	6622 BANK ST	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 1430751)</b>						
Acetone	67-64-1	E611D	20	µg/L	<20	----
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	----
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	----
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 1430751) - continued</b>						
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
<b>Hydrocarbons (QCLot: 1430025)</b>						
F2 (C10-C16)	----	E601.SG	100	µg/L	<100	----
F3 (C16-C34)	----	E601.SG	250	µg/L	<250	----
F4 (C34-C50)	----	E601.SG	250	µg/L	<250	----
<b>Hydrocarbons (QCLot: 1430753)</b>						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 1430751)</b>									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	97.8	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	98.8	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	90.3	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	99.8	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	113	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	99.9	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	97.6	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	92.8	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	77.4	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	87.8	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	88.5	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	99.3	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	103	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	96.4	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	97.0	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	93.4	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	84.3	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	90.6	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	91.7	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	98.0	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	94.4	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	99.4	70.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 1430751) - continued</b>									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	95.4	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	110	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	96.3	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	102	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	100	70.0	130	----
<b>Hydrocarbons (QCLot: 1430025)</b>									
F2 (C10-C16)	----	E601.SG	100	µg/L	4010 µg/L	108	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	8300 µg/L	109	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4360 µg/L	111	70.0	130	----
<b>Hydrocarbons (QCLot: 1430753)</b>									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	92.3	80.0	120	----



### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 1430751)</b>										
WT2410851-001	6622 BANK ST	Acetone	67-64-1	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		Benzene	71-43-2	E611D	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		Bromodichloromethane	75-27-4	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Bromoform	75-25-2	E611D	90.9 µg/L	100 µg/L	90.9	60.0	140	----
		Bromomethane	74-83-9	E611D	95.7 µg/L	100 µg/L	95.7	60.0	140	----
		Carbon tetrachloride	56-23-5	E611D	109 µg/L	100 µg/L	109	60.0	140	----
		Chlorobenzene	108-90-7	E611D	97.4 µg/L	100 µg/L	97.4	60.0	140	----
		Chloroform	67-66-3	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Dibromochloromethane	124-48-1	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	97.8 µg/L	100 µg/L	97.8	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	99.1 µg/L	100 µg/L	99.1	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	63.4 µg/L	100 µg/L	63.4	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	99.9 µg/L	100 µg/L	99.9	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	92.1 µg/L	100 µg/L	92.1	60.0	140	----
		Dichloromethane	75-09-2	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	96.7 µg/L	100 µg/L	96.7	60.0	140	----
		Ethylbenzene	100-41-4	E611D	95.9 µg/L	100 µg/L	95.9	60.0	140	----
		Hexane, n-	110-54-3	E611D	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Styrene	100-42-5	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		Toluene	108-88-3	E611D	95.2 µg/L	100 µg/L	95.2	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Trichloroethylene	79-01-6	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Vinyl chloride	75-01-4	E611D	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	193 µg/L	200 µg/L	96.3	60.0	140	----
		Xylene, o-	95-47-6	E611D	96.4 µg/L	100 µg/L	96.4	60.0	140	----

Page : 10 of 10  
 Work Order : WT2410851  
 Client : Kollaard Associates Inc.  
 Project : 230156



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Hydrocarbons (QCLot: 1430753)</b>										
WT2410851-001	6622 BANK ST	F1 (C6-C10)	----	E581.F1-L	1610 µg/L	2000 µg/L	80.7	60.0	140	----





www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page of

Contact and company name below will appear on the final report

Report Format / Distribution

Select Service Level Below - Contact your AM to confirm all E&P TAT's (surcharges may apply)

Company: Kollard Associates (27196)

Select Report Format:  F  EXCEL  EDD (DIGITAL)

Regular [R]  Standard TAT if received by 3 pm - business days - no surcharges apply

Contact: Colleen Vermeersch

Quality Control (QC) Report with Report  Y  N

1 Business day [E1 - 100%]

Phone: 613.860.0923, ext 230

Compare Results to Criteria on Report - provide details below if box checked

3 day [P3-25%]  Same Day, Weekend or Statutory holiday [E2 - 200%]

Company address below will appear on the final report

Select Distribution:  EMAIL  MAIL  FAX

2 day [P2-50%]  (Laboratory opening fees may apply)

Street: 210 Prescott Street, Unit 1 P.O. Box 189

Email 1 or Fax: colleen@kollard.ca

Date and Time Required for all E&P TAT's:

City/Province: Kemptville, Ontario

Email 2

For tests that can not be performed according to the service level selected, you will be contacted.

Postal Code: K0G 1J0

Email 3

Indicate Filtered (F), Preserved (P) or Filler

Invoice To: Same as Report To

Invoice Distribution

Analy

Company: Kollard Associates Inc.

Select Invoice Distribution:  EMAIL  MAIL  FAX

Environmental Division

Contact: admin@kollard.ca

Email 1 or Fax: admin@kollard.ca

Waterloo

Project Information

Email 2

Work Order Reference

ALS Account # / Quote #: Q71021

Oil and Gas Required Fields (client use)

WT2410851

Job #: PO / A/E: 230166

Major/Minor Code: Routing Code:

Telephone: + 1 519 886 8910

LSD: Location:

Requestioner:

Barcode

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

ALS Sample # (lab use only): 6822 Bank St

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy): 1-May-24

Time (hh:mm): 10:00

Sample Type: Water

Time (hh:mm): 3:50

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

VOCs

Petroleum Hydrocarbons F1-F4

Drinking Water (DW) Samples (client use)

Ontario Drinking Water Regulation (ODWQS) JAN 1, 2017

Sample Condition as Received (lab use only)

Are samples taken from a Regulated DW System?  Y  N

Frozen

Ice Packs

Are samples for human consumption/ use?  Y  N

Shipping Release (client use)

Initial Cooler Temperatures: 11.8

Released by: [Signature]

Received by: [Signature]

Final Shipment Reception (lab use only)

Date: [Signature]

Date: 02/05/24

Received by: [Signature]

Time: [Signature]

Date: 02/05/24

Date: 3 May 21

Time: [Signature]

Date: 02/05/24

Time: 8:20

Time: [Signature]

Date: 02/05/24

Time: 8:20

Time: [Signature]

Date: 02/05/24

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WT142, 02053

## 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<sub>3</sub>

If LSI is positive → scale can form and CaCO<sub>3</sub> 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<sub>s</sub> = pH at saturation in calcite or calcium carbonate

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

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

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

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

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

	TW1-3hr	TW1-6hr
pH	7.95	7.96
hardness [mg/l as CaCO <sub>3</sub> ]	429	427
Alkalinity [mg/l as CaCO <sub>3</sub> ]	313	299
total dissolved solids [mg/l]	722	715
temperature (°C)	8.5	8.5
A	0.18585	0.18543
B	2.41284	2.41284
C	2.23246	2.23043
D	2.49554	2.47567
pH <sub>s</sub>	7.1707	7.19217
→→ RSI	6.39139	6.42435
→→ LSI	0.7793	0.76783



ATTACHMENT D  
SEWAGE EFFLUENT DILUTION CALCULATIONS  
AND CLIMATE DATA

SEPTIC EFFLUENT DILUTION CALCULATIONS

Number of Lots	1
Gross Site Area	60190.0 m <sup>2</sup>
Env. Can. Water Surplus (NPI-Glacial Till)	379 mm

Hard Surface Area (Post-Development)

Existing Building Area	2326 m <sup>2</sup>		
Proposed Storage Building	2323 m <sup>2</sup>		
Proposed Warehouse Building	2323 m <sup>2</sup>		
Asphalt (C=0.9)	3015.0 m <sup>2</sup>		
gravel area (semi-pervious, C=0.6)	15480.0 m <sup>2</sup>	Total gravel area	25,800 m <sup>2</sup>

Net Infiltration Area = Gross Site Area - Hard Surface Area (Post-Development)  
34723.0 m<sup>2</sup>

Maximum daily sewage flow 6,450 L/day  
2,354 m<sup>3</sup>/year

Infiltration Reduction Factor:

Topography (rolling/flat, 2m/km)	0.15
Soil (med. Combinations of clay and loam)	0.20
<u>Cover (cultivated)</u>	<u>0.10</u>
Total IRF	0.45

Concentration Septic System #1 (Conventional) C <sub>1</sub>	40 mg/L
Volume Septic System #1 (Conventional) V <sub>1</sub>	3250 L
Concentration Septic System #2 (Tertiary) C <sub>2</sub>	20 mg/L
Volume Septic System #2 (Tertiary) V <sub>2</sub>	3200 L

$V_{\text{water}}$  = annual volume of precipitation infiltration, available for dilution

$V_{\text{water}} = \text{NIA} \times \text{NPI} \times \text{IRF}$

$V_{\text{water}} = 5922.008 \text{ m}^3/\text{yr}$

$V_{\text{sewage}}$  = annual volume of sewage generated

$V_{\text{sewage}} = 2354.25 \text{ m}^3/\text{yr}$

$[\text{NO}_3]_{\text{gw}} = \frac{[\text{NO}_3]_{\text{eff}} \times \text{Daily Flow} \times 365 \text{ days/year}}{V_{\text{water}} + V_{\text{sewage}}}$

$8.6 \text{ mg/L}$

Ottawa Intl A WATER BUDGET MEANS FOR THE PERIOD 1939-2021 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY... 75 MM HEAT INDEX... 36.75  
 LONG... 75.67 LOWER ZONE..... 45 MM A..... 1.080

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	62	12	14	0	0	0	25	83	74	294
28- 2	-9.0	56	10	16	1	1	0	26	111	74	350
31- 3	-2.8	65	31	77	6	6	0	103	68	75	416
30- 4	5.7	73	68	73	31	31	0	110	0	75	489
31- 5	13.1	75	75	0	80	80	0	14	0	56	565
30- 6	18.3	85	85	0	116	107	-9	5	0	29	650
31- 7	20.9	88	88	0	136	103	-33	3	0	11	737
31- 8	19.7	84	84	0	118	83	-35	1	0	11	822
30- 9	14.8	82	82	0	75	65	-10	4	0	24	904
31-10	8.3	78	78	0	37	36	-1	14	0	52	78
30-11	1.2	76	59	8	10	10	0	38	9	71	154
31-12	-6.9	79	27	14	1	1	0	36	47	74	233
AVE	6.0 TTL	903	699	202	611	523	-88	379			

Ottawa Intl A STANDARD DEVIATIONS FOR THE PERIOD 1939-2021 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	2.9	26	15	17	1	1	0	28	44	3	59
28- 2	2.6	26	14	25	1	1	0	34	59	3	63
31- 3	2.6	28	22	49	5	5	0	55	87	0	71
30- 4	1.8	32	33	88	9	9	0	89	2	2	80
31- 5	1.8	34	34	2	12	12	0	24	0	22	94
30- 6	1.2	38	38	0	8	17	18	16	0	29	105
31- 7	1.2	45	45	0	8	31	33	16	0	22	117
31- 8	1.3	37	37	0	9	29	31	4	0	21	126
30- 9	1.5	39	39	0	8	16	16	15	0	28	132
31-10	1.5	37	37	1	7	7	2	21	0	27	37
30-11	1.8	27	27	8	4	4	0	32	13	12	45
31-12	3.0	30	22	13	1	1	0	30	34	4	55



ATTACHMENT E  
SITE PLAN (KOLLAARD)



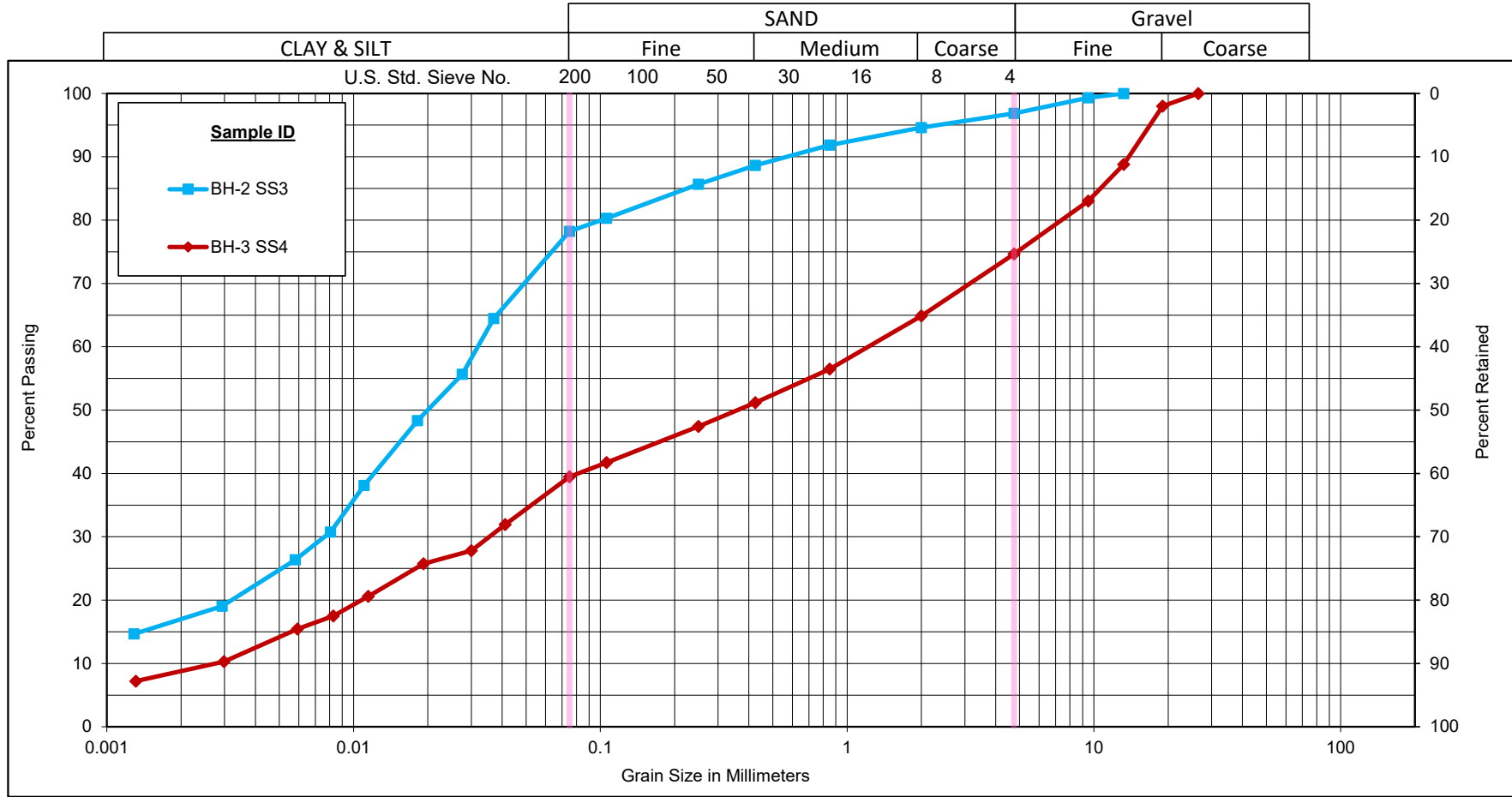


ATTACHMENT F

HYDROMETER ANALYSIS FOR GLACIAL TILL, BH2 AND BH3



# Unified Soil Classification System



Sample ID	Depth	% Gravel	% Sand	% Silt	% Clay
BH-2 SS3	7'6"-9'6"	3.1	18.7	61.2	17.0
BH-3 SS4	10'-12'	25.3	35.2	31.5	8.0



## GRAIN SIZE DISTRIBUTION

Kolaard Associates, File #230156  
Camm Machinery

Figure No.

Project No. 121625581



# Particle-Size Analysis of Soils

LS702

AASHTO T88

PROJECT DETAILS			
Client:	Kolaard Associates, File #230156	Project No.:	121625581
Project:	Camm Machinery	Test Method:	LS702
Material Type:	Soil	Sampled By:	Kolaard Associates
Source:	BH-2	Date Sampled:	May 1, 2024
Sample No.:	SS3	Tested By:	Brian Prevost
Sample Depth	7'6" - 9'6"	Date Tested:	May 6, 2024

WASH TEST DATA	
Oven Dry Mass In Hydrometer Analysis (g)	63.19
Sample Weight after Hydrometer and Wash (g)	11.20
Percent Passing No. 200 Sieve (%)	82.3
Percent Passing Corrected (%)	77.85

PERCENT LOSS IN SIEVE	
Sample Weight Before Sieve (g)	191.60
Sample Weight After Sieve (g)	191.50
Percent Loss in Sieve (%)	0.05

SOIL INFORMATION		
Liquid Limit (LL)		
Plasticity Index (PI)		
Soil Classification		
Specific Gravity (G <sub>s</sub> )	2.750	
Sg. Correction Factor (α)	0.978	
Mass of Dispersing Agent/Litre	40	g

CALCULATION OF DRY SOIL MASS	
Oven Dried Mass (W <sub>o</sub> ), (g)	115.44
Air Dried Mass (W <sub>a</sub> ), (g)	117.16
Hygroscopic Corr. Factor (F=W <sub>o</sub> /W <sub>a</sub> )	0.9853
Air Dried Mass in Analysis (M <sub>a</sub> ), (g)	64.13
Oven Dried Mass in Analysis (M <sub>o</sub> ), (g)	63.19
Percent Passing 2.0 mm Sieve (P <sub>10</sub> ), (%)	94.62
Sample Represented (W), (g)	66.78

SIEVE ANALYSIS		
Sieve Size mm	Cum. Wt. Retained	Percent Passing
75.0		100.0
63.0		100.0
53.0		100.0
37.5		100.0
26.5		100.0
19.0		100.0
13.2	0.0	100.0
9.5	1.3	99.3
4.75	6.0	96.9
2.00	10.3	94.6
Total (C + F) <sup>1</sup>	191.50	
0.850	1.86	91.84
0.425	3.98	88.66
0.250	5.97	85.68
0.106	9.56	80.31
0.075	10.95	78.23
PAN	11.07	

Note 1: (C + F) = Coarse + Fine

HYDROMETER DETAILS	
Volume of Bulb (V <sub>B</sub> ), (cm <sup>3</sup> )	63.0
Length of Bulb (L <sub>2</sub> ), (cm)	14.47
Length from '0' Reading to Top of Bulb (L <sub>1</sub> ), (cm)	10.29
Scale Dimension (h <sub>s</sub> ), (cm/Div)	0.155
Cross-Sectional Area of Cylinder (A), (cm <sup>2</sup> )	27.25
Meniscus Correction (H <sub>m</sub> ), (g/L)	1.0

START TIME 10:05 AM

HYDROMETER ANALYSIS											
Date	Time	Elapsed Time T Mins	H <sub>s</sub> Divisions g/L	H <sub>c</sub> Divisions g/L	Temperature T <sub>c</sub> °C	Corrected Reading R = H <sub>s</sub> - H <sub>c</sub> g/L	Percent Passing P %	L cm	η Poise	K	Diameter D mm
06-May-24	10:06 AM	1	51.0	7.0	23.0	44.0	64.46	8.30904	9.39251	0.012818	0.03695
06-May-24	10:07 AM	2	45.0	7.0	23.0	38.0	55.67	9.23904	9.39251	0.012818	0.02755
06-May-24	10:10 AM	5	40.0	7.0	23.0	33.0	48.35	10.01404	9.39251	0.012818	0.01814
06-May-24	10:20 AM	15	33.0	7.0	23.0	26.0	38.09	11.09904	9.39251	0.012818	0.01103
06-May-24	10:35 AM	30	28.0	7.0	23.0	21.0	30.77	11.87404	9.39251	0.012818	0.00806
06-May-24	11:05 AM	60	25.0	7.0	23.0	18.0	26.37	12.33904	9.39251	0.012818	0.00581
06-May-24	2:15 PM	250	20.0	7.0	23.0	13.0	19.0463	13.11404	9.39251	0.012818	0.00294
07-May-24	9:16 AM	1391	17.0	7.0	21.5	10.0	14.6510	13.57904	9.73081	0.013047	0.00129

Remarks:

Reviewed By: Brian Prevost  
Date: May 8, 2024



**Particle-Size Analysis of Soils**  
 LS702  
 AASHTO T88

**PROJECT DETAILS**

Client:	Kolaard Associates, File #230156	Project No.:	121625581
Project:	Camm Machinery	Test Method:	LS702
Material Type:	Soil	Sampled By:	Kolaard Associates
Source:	BH-3	Date Sampled:	May 1, 2024
Sample No.:	SS4	Tested By:	Brian Prevost
Sample Depth	10'-12'	Date Tested:	May 6, 2024

**WASH TEST DATA**

Oven Dry Mass In Hydrometer Analysis (g)	61.66
Sample Weight after Hydrometer and Wash (g)	24.49
Percent Passing No. 200 Sieve (%)	60.3
Percent Passing Corrected (%)	39.11

**PERCENT LOSS IN SIEVE**

Sample Weight Before Sieve (g)	432.70
Sample Weight After Sieve (g)	431.70
Percent Loss in Sieve (%)	0.23

**SOIL INFORMATION**

Liquid Limit (LL)		
Plasticity Index (PI)		
Soil Classification		
Specific Gravity (G <sub>s</sub> )	2.750	
Sg. Correction Factor (α)	0.978	
Mass of Dispersing Agent/Litre	40	g

**CALCULATION OF DRY SOIL MASS**

Oven Dried Mass (W <sub>o</sub> ), (g)	216.14
Air Dried Mass (W <sub>a</sub> ), (g)	217.30
Hygroscopic Corr. Factor (F=W <sub>o</sub> /W <sub>a</sub> )	0.9947
Air Dried Mass in Analysis (M <sub>a</sub> ), (g)	61.99
Oven Dried Mass in Analysis (M <sub>o</sub> ), (g)	61.66
Percent Passing 2.0 mm Sieve (P <sub>10</sub> ), (%)	64.87
Sample Represented (W), (g)	95.05

**SIEVE ANALYSIS**

Sieve Size mm	Cum. Wt. Retained	Percent Passing
75.0		100.0
63.0		100.0
53.0		100.0
37.5		100.0
26.5	0.0	100.0
19.0	8.6	98.0
13.2	48.4	88.8
9.5	73.5	83.0
4.75	109.6	74.7
2.00	152.0	64.9
Total (C + F) <sup>1</sup>	431.70	
0.850	7.97	56.49
0.425	13.01	51.18
0.250	16.59	47.42
0.106	22.01	41.71
0.075	24.13	39.48
PAN	24.21	

Note 1: (C + F) = Coarse + Fine

**HYDROMETER DETAILS**

Volume of Bulb (V <sub>B</sub> ), (cm <sup>3</sup> )	63.0
Length of Bulb (L <sub>2</sub> ), (cm)	14.47
Length from '0' Reading to Top of Bulb (L <sub>1</sub> ), (cm)	10.29
Scale Dimension (h <sub>s</sub> ), (cm/Div)	0.155
Cross-Sectional Area of Cylinder (A), (cm <sup>2</sup> )	27.25
Meniscus Correction (H <sub>m</sub> ), (g/L)	1.0

**START TIME** 10:05 AM

**HYDROMETER ANALYSIS**

Date	Time	Elapsed Time T Mins	H <sub>s</sub> Divisions g/L	H <sub>c</sub> Divisions g/L	Temperature T <sub>c</sub> °C	Corrected Reading R = H <sub>s</sub> - H <sub>c</sub> g/L	Percent Passing P %	L cm	η Poise	K	Diameter D mm
6-May-24	10:06 AM	1	38.0	7.0	23.0	31.0	31.91	10.32404	9.39251	0.012818	0.04119
6-May-24	10:07 AM	2	34.0	7.0	23.0	27.0	27.79	10.94404	9.39251	0.012818	0.02999
6-May-24	10:10 AM	5	32.0	7.0	23.0	25.0	25.73	11.25404	9.39251	0.012818	0.01923
6-May-24	10:20 AM	15	27.0	7.0	23.0	20.0	20.59	12.02904	9.39251	0.012818	0.01148
6-May-24	10:35 AM	30	24.0	7.0	23.0	17.0	17.50	12.49404	9.39251	0.012818	0.00827
6-May-24	11:05 AM	60	22.0	7.0	23.0	15.0	15.44	12.80404	9.39251	0.012818	0.00592
6-May-24	2:15 PM	250	17.0	7.0	23.0	10.0	10.29	13.57904	9.39251	0.012818	0.00299
7-May-24	9:17 AM	1392	14.0	7.0	21.5	7.0	7.21	14.04404	9.73081	0.013047	0.00131

Remarks:

Reviewed By: Brian Prevost  
 Date: May 8, 2024