



**AGENDA
COMMITTEE OF ADJUSTMENT**

**Wednesday, October 16, 2024, 4:00 PM
Corporation of The Township of Edwardsburgh Cardinal
Council Chambers, Spencerville Ontario**

Indigenous Land Acknowledgement: The Township of Edwardsburgh Cardinal is situated on traditional territory of Indigenous peoples dating back countless generations, which is rich in history and home to many First Nations, Métis and Inuit people today.

As a Township, we have a responsibility for the stewardship of the lands on which we live, work and play, and today, this meeting place is still home to Indigenous people, and we are grateful to have the opportunity to work on and call this land home.

- 1. Welcome and Introductions**
- 2. Disclosure of Pecuniary Interest or Conflict of Interest & the General Nature Thereof**
- 3. Review and Discussion of Minor Variance for 27 David Street**
 - a. Proposal Details
 - b. Public Comments
 - c. Committee Review and Decision
- 4. Decision on Minor Variance**
- 5. Adjournment**



**TOWNSHIP OF EDWARDSBURGH CARDINAL
ACTION ITEM**

Committee: Committee of Adjustments

Date: October 16, 2024

Department: Community Development

Topic: Application for Minor Variance A-02-24 (Broniszeski)

Purpose and effect: The purpose of the application is to obtain relief from the provisions of section 6.1.2 of the Township's Zoning Bylaw 2022-37 for two lots within the Residential Second Density (R2) zone. The application proposes to permit a reduced lot size of 0.094 hectares for the proposed severed and retained lots where the minimum lot size is 0.4 hectares. The effect of the application would be to fulfill a condition of consent B-38-23, which received conditional approval by the consent granting authority.

Background: The subject land is a 0.193 hectare through lot at 27 David Street in the Village of Spencerville. A severance application was conditionally approved by the consent granting authority on August 16, 2023. The application will create a new 0.094 ha lot with frontage on Charles Street and a 0.099 ha retained lot on David Street.

A hydrogeological study was submitted with the severance application to review water quality and quantity at the site in support of a reduced lot size in the R2 zone. As a condition of severance approval, the applicant must enter into a development agreement with the Township to implement the recommendations of the hydrogeological study for the new lot and obtain relief from the zoning bylaw to permit a smaller lot size.

The hydrogeological study was prepared by Kollaard Associates in October 2022. The study determines that a well constructed on the new lot will provide sufficient water quantity for domestic use for a residential dwelling. In regards to water quality, the study finds that the water is hard by water treatment standards; the total dissolved solids may be present above the aesthetic objective in the future well; and iron and sulphides also measured high. The report provides recommendations for treatment of each concern.

The study also recommends that future well construction should conform with the recommended construction in the Thomson report from 2005 that was supported through the MOE report from 2020;

- well should be cased to a depth of at least 25 to 32 metres; AND
- the annulus of the well shall be sealed using suitable grouting and sealant for its entire length to the ground surface.

Subject to Council approval, the development agreement will include the hydrogeological assessment report and require the property owner to comply with the report's recommendations. The agreement would be registered on title and apply to all future owners of the land.

Policy Implications: In considering an application for minor variance, the Committee must determine if the application meets the following 4 tests, as provided by section 45 (1) of the *Planning Act*.

Is the application minor in nature?

The application proposes a lot size of 0.094 hectares where the minimum lot size for lots in the R2 zone on private or partial services is 0.4 hectares. The lot has a suitable building envelope for a dwelling on partial servicing and the size is consistent with the adjacent lots. Any impact to neighbouring properties and future development on the lot is expected to be minor.

Is the application desirable for the appropriate development or use of the land, building or structure?

The proposal allows appropriate intensification within the Spencerville settlement area, allowing a future dwelling to be constructed on the land.

Does the application maintain the general intent and purpose of the zoning bylaw?

A minimum lot size ensures that a property can be developed and used as intended with appropriate setbacks. Where development will be on private or partial services, the lot size needs to be large enough to provide appropriate servicing.

Future development will be on partial services with municipal sewer and private water. Available water quality and quantity has been assessed through a hydrogeological assessment. The lot is a sufficient size to support the existing dwelling on the retained land and future development on the severed lot while meeting required setbacks.

Does the application maintain the general intent and purpose of the official plan?

In section 3.1 of our official plan, the Township seeks to encourage more concentrated residential and commercial growth and development in the Settlement Policy Areas. Further, the Plan tells us that the Township will promote intensification and redevelopment of vacant or underused sites within the Settlement Area.

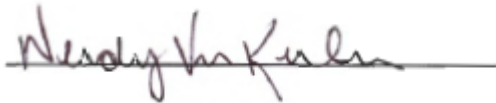
Section 7.1.1.1 of our official plan gives a minimum lot size of 0.4ha but permits a smaller lot size for lands within the Settlement Policy Area. An amendment to the Plan approved in March this year added the following clause to section 7.1.1.1:

Notwithstanding the minimum lot area of generally 0.4 hectares, where any new lot is proposed to be less than 1.0 hectare and requires partial or private servicing, a hydrogeological assessment and terrain analysis may be required, to demonstrate that the lot can be adequately serviced for the long-term to the satisfaction of the Township.

The proposed reduced lot size meets the general intent and purpose of the official plan.

Financial Considerations: The applicant has submitted the required fee to the Township for the minor variance, in accordance with the Planning Fees Bylaw 2022-40.

Recommendation: That Committee approve minor variance application A-02-24 to permit a reduced lot size of 0.94ha for the severed and retained lots of consent application B-38-23.

A handwritten signature in dark ink, appearing to read "Wendy Van Kesteren", is written over a horizontal line.

Community Development Coordinator

File Number: A-02-24

NOTICE OF APPLICATION FOR

Minor Variance –s. 45(1) Permission –s. 45(2)

Name of Committee: Township of Edwardsburgh Cardinal Committee of Adjustments

Application Submitted by: Ed Broniszeski

Property Location: 27 David Street, Spencerville

LT 5 S/S DAVID ST, 5 N/S CHARLES ST PL 40 EXCEPT PT 3, 15R9446; PT
BRUCE ST PL 40 CLOSED BY PR145570, PT 16 & 17, 15R9446;

PUBLIC HEARING - Committee of Adjustments

Date: October 16, 2024

Time: 4:00 p.m.

Place: Council Chambers,
18 Centre Street, Spencerville Ontario, K0E 1X0

Purpose and Effect of the Proposed Application:

The purpose of the application is to obtain relief from the provisions of section 6.1.2 of the Township's Zoning Bylaw 2022-37 for two lots within the Residential Second Density (R2) zone. The application proposes to permit a reduced lot size of 0.097 hectares for the proposed severed and retained lots where the minimum lot size is 0.4 hectares. The effect of the application would be to fulfill a condition of consent B-38-23, which has received conditional approval by the consent granting authority on August 19, 2023.

Other Applications: Severance File No. B-38-23

Additional information regarding the application will be available to the public for inspection at the Township office Monday to Friday from 8:30 a.m. to 4:30 p.m.

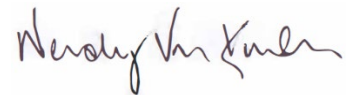
If you wish to be notified of the decision of the Committee of Adjustments in respect to the proposed variance, you must make a written request to the Township of Edwardsburgh Cardinal c/o: Wendy Van Keulen, PO Box 129, 18 Centre St, Spencerville, ON K0E 1X0 or by email at wvankeulen@twpec.ca

Public Hearing: You are entitled to attend this public hearing in person or you may be represented by counsel or an agent to give evidence about this application. Signed, written submissions that relate to an application shall be accepted by the Secretary-Treasurer before or during the hearing of the application above and shall be available to any interested person for inspection at the hearing.

Failure to Attend: If you do not attend this public hearing it may proceed in your absence and, except as otherwise provided in the Planning Act, you will not be entitled to any further notice in the proceeding.

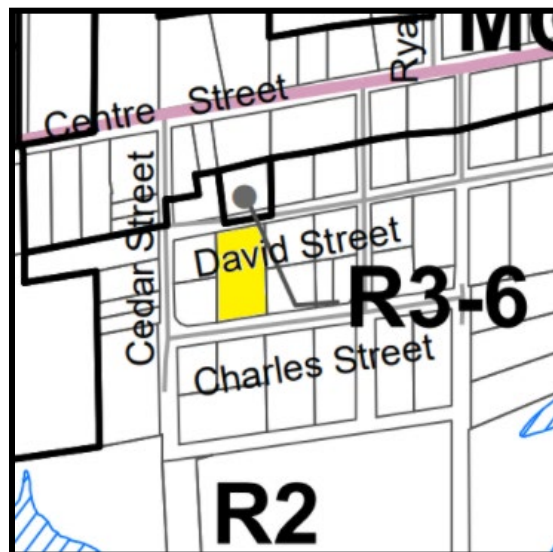
Notice of Decision: A certified copy of the Decision, together with a notice of the last day for appealing to the Ontario Land Tribunal shall be sent, not later than 10 days from the making of the decision, to the applicant, and to each person who filed with the Secretary-Treasurer a written request to receive notice of the Decision.

Dated at the Township of Edwardsburgh Cardinal this 3rd day of October, 2024.



Wendy Van Keulen
Secretary-Treasurer of the Committee of Adjustments
Township of Edwardsburgh Cardinal
PO Box 129
18 Centre Street
Spencerville ON K0E 1X0
Tel: 613-658-3055 x 101

KEY MAP:



■ Subject Land

WATER ACCESS - Where access to the subject land is by water only:

Docking facilities (specify)	Parking facilities (specify)
distance from subject land	distance from subject land
distance from nearest public road	distance from nearest public road

EXISTING USES of the subject land:	LENGTH OF TIME the existing uses of the subject land have continued:
residential	

EXISTING BUILDINGS - STRUCTURES - Where there are any buildings or structures on the subject land, indicate for each:

TYPE - residential home	Front lot line setback: 2.5m	Height in metres:
	Rear lot line setback: 13.5m	Dimensions:
DATE CONSTRUCTED	Side lot line setback: 6.5m	Floor area:
	Side lot line setback: 10.5m	
TYPE -	Front lot line setback:	Height in metres:
	Rear lot line setback:	Dimensions:
DATE CONSTRUCTED	Side lot line setback:	Floor area:
	Side lot line setback:	

attach additional page if necessary

PROPOSED USES of the subject land:

residential

PROPOSED BUILDINGS - STRUCTURES - Where any buildings or structures are proposed to be built on the subject land, indicate for each:

TYPE -	Front lot line setback:	Height in metres:
	Rear lot line setback:	Dimensions:
	Side lot line setback:	Floor area:
	Side lot line setback:	
TYPE -	Front lot line setback:	Height in metres:
	Rear lot line setback:	Dimensions:
	Side lot line setback:	Floor area:
	Side lot line setback:	

attach additional page if necessary

DATE - Subject land was acquired by current owner on:

WATER is provided to the subject land by:

<input type="checkbox"/> Publicly-owned/operated piped water system	<input type="checkbox"/> Lake or other water body
<input checked="" type="checkbox"/> Privately-owned/operated individual well	<input type="checkbox"/> Other means (specify)
<input type="checkbox"/> Privately-owned/operated communal well	

SEWAGE DISPOSAL is provided to the subject land by:

<input checked="" type="checkbox"/> Publicly-owned/operated sanitary sewage system	<input type="checkbox"/> Privately-owned/operated individual septic system
<input type="checkbox"/> Privately-owned/operated communal septic system	<input type="checkbox"/> Privy
<input type="checkbox"/> Other means (specify)	

STORM DRAINAGE is provided to the subject land by:

Sewers Ditches Swales Other means (specify)

OTHER APPLICATIONS - If known, indicate if the subject land is the subject of an application under the Act for:

Approval of a plan of subdivision (under section 51) File # Status

Consent (under section 53) File # B-38-23 Status GRANTED

Previous application (under section 45) File # Status

AUTHORIZATION BY OWNER

I, the undersigned, being the owner of the subject land, hereby authorize
to be the applicant in the submission of this application.

.....
Signature of owner

.....
Signature of witness

.....
Date

DECLARATION OF APPLICANT

I, Ed Bronsizedski of the Township of
Edwardsburgh Cardinal in the Province of Ontario

solemnly declare that:

All the statements contained in this application and provided by me are true and I make this solemn
declaration conscientiously believing it to be true and knowing that it is of the same force and effect
as if made under oath.

DECLARED before me at the Town
of Prescott
in the Province of ONTARIO
this 29 day of August 2024

Ed Bronsizedski
Signature of applicant

[Signature]
Signature of commissioner, etc.

Ashton Cynthia Mayes,
a Commissioner, etc., Province of Ontario,
for Tobin, Grenkie & Reynolds LLP
Barristers & Solicitors.
Expires November 1, 2024

It is required this application be accompanied by a fee of \$ in cash or by cheque made payable to the Treasurer of
the

Personal information contained on this form, collected pursuant to the *Planning Act*, will be used for the purpose of responding to the initial application.
Questions should be directed to the Freedom of Information and Privacy Coordinator at the institution conducting the procedures under the Act.

PLANS REQUIRED

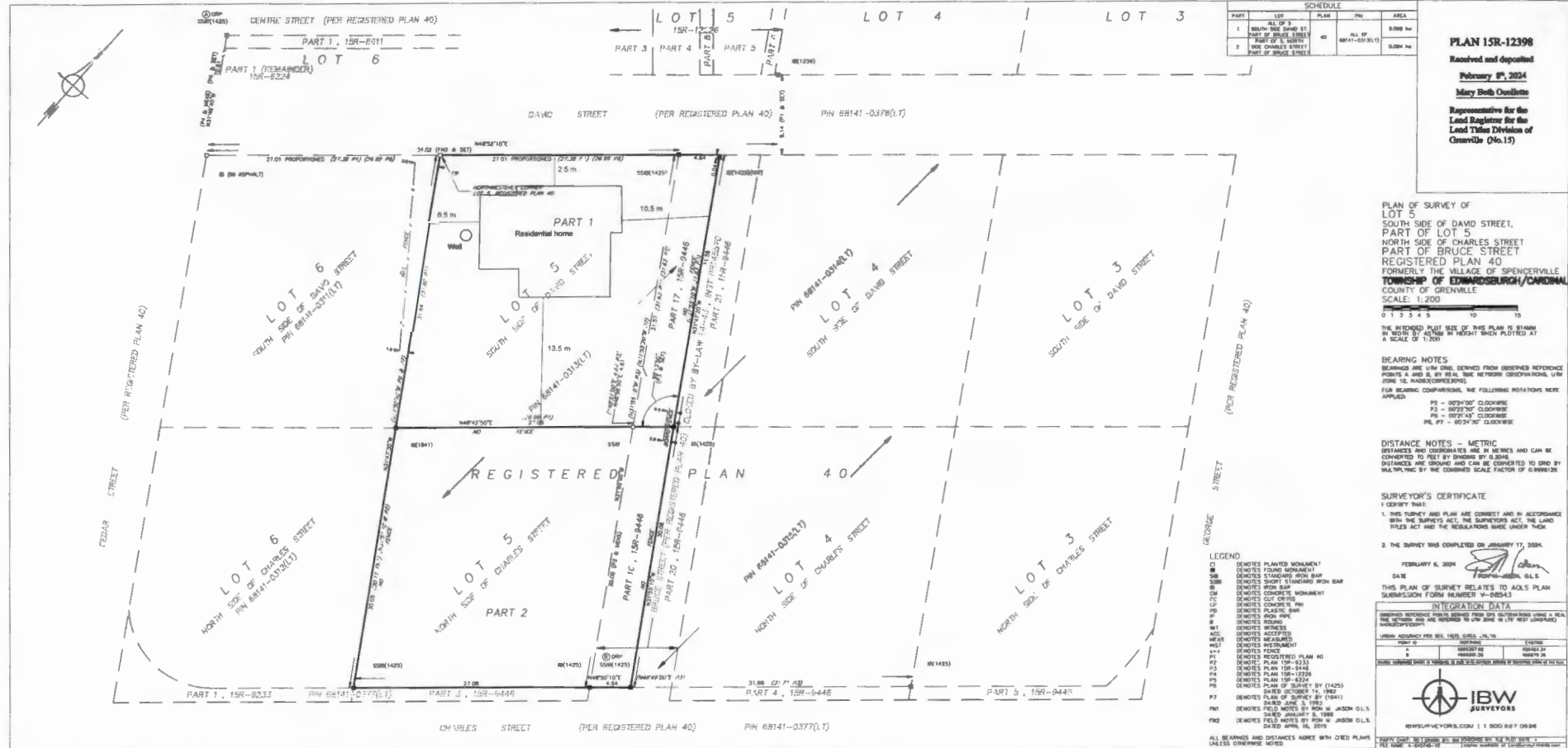
IT WILL BE NECESSARY TO SUBMIT PRELIMINARY SITE PLANS FOR THE DEVELOPMENT AT THE TIME OF THE FILING OF THIS APPLICATION.

Minimum requirements will be a sketch showing the following

- i. The boundaries and dimensions of the subject land.
- ii. The location, size and type of all existing and proposed buildings and structures on the subject land, indicating the distance of the buildings or structures from the front yard lot line, rear yard lot line and the side yard lot lines.
- iii. The approximate location of all natural and artificial features on the subject land and on land that is adjacent to the subject land that, in the opinion of the applicant, may affect the application. Examples include buildings, railways, roads, watercourses, drainage ditches, river or stream banks, wetlands, wooded areas, wells and septic tanks.
- iv. The current uses on land that is adjacent to the subject land.
- v. The location, width and name of any roads within or abutting the subject land, indicating whether it is an unopened road allowance, a public travelled road, a private road or a right-of-way.
- vi. If access to the subject land is by water only, the location of the parking and docking facilities to be used.
- vii. The location and nature of any easement affecting the subject land.

FOR OFFICE USE ONLY

Name of Owner	Address
Name of Agent	Address
Date of receipt of completed application	Checked by
Zoning By-law No.	Passed
As amended by By-law No.	Passed
And By-law No.	Passed
Sections	Zone
Official Plan Designation	
.....	
Agricultural Land Use Classification in Canada: Land Inventory	
Site visit carried out by staff or committee member:	YES <input type="checkbox"/> NO <input type="checkbox"/>
Authorization of owner received (if required)	YES <input type="checkbox"/> NO <input type="checkbox"/>
Conformity with the Agricultural Code of Practice (if applicable)	YES <input type="checkbox"/> NO <input type="checkbox"/>
Committee File No.	Committee Submission No.
Hearing Date	Adjourned Hearing Date
General comments:	
.....	





Kollaard Associates

Engineers

210 Prescott Street, Unit 1
P.O. Box 189
Kemptville, Ontario K0G 1J0

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Structural • Environmental •
Hydrogeology •

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FAX: (613) 258-0475

REPORT ON

**HYDROGEOLOGICAL
STUDY
PROPOSED RESIDENTIAL LOT SEVERANCE
27 DAVID STREET
SPENCERVILLE, ONTARIO**

Submitted to:

Ed Broniszeski
27 David Street
Spencerville, Ontario
K0E 1X0

DATE October 28, 2022

DISTRIBUTION

1 digital copy Ed Broniszeski
1 digital copy Kollaard Associates Inc.

220996



Professional Engineers
Ontario

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of Ontario to offer professional engineering services.



Kollaard Associates

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October 28, 2022

220996

Ed Broniszeski
27 David Street
Spencerville, ON
K0E 1X0

RE: HYDROGEOLOGICAL STUDY
PROPOSED RESIDENTIAL LOT SEVERANCE
27 DAVID STREET
SPENCERVILLE, ONTARIO

Kollaard Associates Inc. was retained by Mr. Ed Broniszeski to undertake a hydrogeological and terrain study for a proposed residential lot severance with frontage on Charles Street in Spencerville, Ontario (Key Plan, Figure 1).

It is understood that it is being proposed to sever one residential lot of 0.09 acres, which is currently vacant. The retained parcel consists of about 0.09 hectares and is occupied by a single residence. It is identified as 27 David Street. A Lot Development Plan is provided as Figure 2.

The purpose of the severance is to allow single family dwelling on the proposed severed lot that is to be serviced by a well and the existing municipal sewer. It is understood that all residential dwellings within 500 metres are serviced by sanitary sewer, with the exception of the rural properties that are located on the opposite side of the South Nation River.

This report consists of an evaluation of the water quality and quantity for the existing well on the property.

The assessment was carried out on an existing drilled well to ensure that the water quality and quantity is acceptable using the following guidelines; Ministry of the Environment, Conservation and Parks (MECP) Guideline D-5-5 and the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG).

HYDROGEOLOGICAL STUDY

Background

A bedrock geology map for the site area indicates the bedrock at the site consists of dolostone and sandstone of the Beekmantown Group.

The surficial geology map indicates that the proposed severed lot is located within an area of glacial till. Most of the well records for the area wells indicate that there is between 0 and 2 metres of overburden, consisting of glacial till or sand and clay.



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Ontario

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of Ontario to offer professional engineering services.



A review of topographical information from the Province of Ontario online mapping indicates that the site topography is sloped towards the south of the proposed severed lot.

No well record was available for the existing drilled well at 27 David Street. The well depth was measured to be about 59.8 metres, and the casing was indicated by the owner to extend to about 30.5 metres deep. The static water level measured at the day of the test was about 7.43 metres.

The well record and Certificate of Well Compliance for the test well and area well records are provided herein as Attachment A.

Area Well Records

It is understood from information provided by the owner that the well that services the existing dwelling was installed when the municipal sanitary system was put into place. The well was constructed with recommendations from a private well and sewage system study completed by MS Thomson and Associates in 1984. A review of three other well records also installed at this time was carried out. The well records are provided (Attachment A). The depths of the wells are indicated to be between 61 and 70 metres, obtaining water from a dolomite aquifer. Test pumping rates were between 19 and 45 litres per minute. Recommended pumping rates were between 15 and 38 litres per minute. Overburden thickness was between 1.8 and 2.1 metres of sand or clay. The wells had 31.1 metres of casing. Specific capacity was between 0.3 and 0.8 litres per minute per metre of drawdown.

A review of eleven area well records constructed not due to the installation of the municipal sanitary system was also carried out. The well records are provided (Attachment A). The depths of the wells are indicated to be between 12 and 55 metres, obtaining water from a limestone aquifer. Test pumping rates for the area wells were 24 to 76 litres per minute. Recommended pumping rates were between 11 and 46 litres per minute. One well record indicated no overburden. In the other ten well records, overburden was identified as between 0.6 to 2.0 metres of till, topsoil, sand or clay. All area wells had between 4.0 to 9.5 metres of casing below the ground surface. Specific capacity for area wells is between 5 and 1050 litres per minute per metre of drawdown.

The test well is considered to be representative of the expected well yields based on other area wells, specifically those installed due to the municipal sanitary system.

Review of MECP Report

A review of the MECP Potable Well Water Quality Survey for the Village of Spencerville, dated November 6, 2020, was carried out as a part of this report. The MECP report details an investigation completed in 2020 regarding water quality and bacteria contamination in Spencerville, and focuses on a subject property at 32 David Street.

This report contains recommendations on well construction in Spencerville, based on a previous report from 1985, due to poor water quality (from shallow contamination sources) particularly with regards to bacteria and sewage impacts from the private sewage systems. The recommended well construction was that wells should be cased to depths exceeding 25 to 32 metres. The 2020 sampling by the MOE indicated that fewer of the deeper cased wells (2 of 9 wells) had adverse bacteria results compared to some 6 of 9 wells with short casing lengths where some 67% had adverse bacteria results. The MOE indicated the following based on their 2020 well water sampling results:



Well owners with wells not conforming to the recommendations provided by Thompson (1985) and with chronic adverse water quality issues could also consider obtaining the services of a licensed well contractor to replace their existing well with one that is cased into the deeper less vulnerable aquifer. It should be noted that this recommendation is not a guarantee that potable water will be obtained; however, it would be expected to reduce the vulnerability (magnitude and frequency of adverse water quality) of the water supply and those recommendations provide above should still be followed. It should also be noted that the deeper bedrock units may produce water with elevated concentrations of iron and/or sulphur and additional treatment may be required to address them.

The well that was sampled does comply with the recommendations of the Thompson report. As such, it is highly recommended that the future well servicing the severed lot should also be constructed similarly.

Water Quantity

A pumping test was carried out on October 14, 2022, on the existing drilled well at the retained lot on the subject property (27 David Street).

The testing consisted of a 6 hour duration pumping test. During the pumping test, water level measurements were made on a regular basis to monitor the drawdown of the water level in the well in response to pumping and water levels were monitored at one minute intervals using a pressure transducer. Hourly field water quality readings were recorded for the water temperature, pH, total dissolved solids (conductivity) and turbidity. After the pump was shut off, the recovery of the water level in the well was measured until about 95% recovery of static water level had been achieved or for 24 hours.

The well was pumped for about 360 minutes at a pumping rate of about 30 litres per minute. Over the course of the pumping test, the water level in the well dropped 0.31 metres in response to that rate. At the end of pumping, 100 percent recovery of the total drawdown in the static water level created during pumping was measured after about 13 minutes.

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

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

Transmissivity was calculated using the following relationship:

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

where Q is the pump rate, m³/day
ds is the change in drawdown over one time log cycle, m
T is the transmissivity, m²/day

Based on the pumping test drawdown data, the transmissivity of the aquifer is estimated to be about 395 m²/day. Based on the recovery data from the pumping test, the transmissivity is



estimated to be about 132 m²/day. The aquifer parameters, such as transmissivity, can be determined more accurately by using a higher flow rate and a longer duration to establish hydraulic boundaries for the aquifer. The pumping rate and duration that were used were sufficient to confirm that the well yield is sufficient for the proposed use.

Based on the data obtained during the six hour pumping test, it can be concluded that the well is capable of sustaining a short term yield of at least 30 litres per minute. During the course of the pumping period, less than 1 percent of the available drawdown in the test well was utilized, based on an estimated pump depth of 56 metres and the static water level recorded the day of the pumping test (7.43 metres). The specific capacity of the well based on the pumping rate used is 81 litres per minute per metre of drawdown.

The typical residential peak demand rate is 22.5 litres per minute for a five bedroom dwelling. It is considered that the pumping rate used was sufficient to meet peak residential demands.

Based on the above noted assessment of the test well and what is known about the aquifer from adjacent wells, it is considered that future wells constructed in the same aquifer (to similar depths) on the proposed severed lots will provide sufficient water for domestic use for a residential dwelling.

Water Quality

During the pumping test, hourly field readings of pH, temperature, turbidity and total dissolved solids (conductivity) were recorded.

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

Groundwater samples were prepared and preserved in the field using appropriate techniques. Chlorine residuals were measured prior to obtaining water samples for lab submission and free chlorine was measured to be zero. The water samples were submitted to Eurofins Environmental Laboratory in Ottawa, Ontario, for the chemical, physical and bacteriological analyses listed in the MECP guideline entitled Procedure D-5-5, Technical Guideline for Private Wells: Water Supply Assessment, August 1996.

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 hardness, hydrogen sulphide, turbidity, iron and TDS. Sodium is above the medical advisory level of 20 milligrams per litre for those who require a sodium reduced diet. The sodium level is about 57 milligrams per litre. When sodium levels exceed 20 mg/l, the local Medical Officer of Health should be informed so that the information can be relayed to local physicians.

Hardness

The water is considered to be moderately hard by water treatment standards. Water with hardness above 80 to 100 milligrams per litre as CaCO₃ is often softened for domestic use. The hardness at the well is 417 to 420 milligrams per litre, which is considered poor but tolerable. Treatment using ion exchange water softeners is effective to reduce hardness.

Water softening by conventional sodium ion exchange may introduce relatively high concentrations of sodium into the drinking water, which may contribute a significant percentage to the daily sodium



intake for a consumer on a sodium restricted diet. Where ion exchange water softeners are used, a separate unsoftened water supply could be used for drinking and culinary purposes.

Iron

Iron was measured at a level of 2.20 to 2.28 mg/l, compared to the aesthetic objective of 0.3 mg/l. Excessive iron levels may cause brown or black discoloration of laundry and fixtures, affect the taste and colour of water, and iron precipitation in pipes and hot water tank can also promote the growth of iron bacteria. For iron levels of up to 5.0 mg/L, a manganese greensand iron filters (or other proprietary iron filter) is effective in removing iron from the water supply.

Turbidity

Turbidity at the well was initially recorded at less than 5 NTU (during the first two hours of the pumping test), which is acceptable for groundwater at the point of consumption. However, turbidity became elevated and even increased between about three six hours (8.0 and 20.6 NTU). The elevated turbidity measured in the field during the test was likely due to the iron deposits in the well casing and the agitation of the well surfaces created during the pumping test. Given the depth of well casing, there is significant well surface and the iron in the water and in the casing could contribute to the turbidity.

The lab based turbidity measurements for the three and six hour samples were 14.6 and 24.8 NTU, respectively. This is consistent with the field readings and also higher due to the presence of iron which can cause turbidity to exceed due to precipitation that occurs as the water sample changes temperatures and is exposed to air during storage and transportation prior to the laboratory sampling.

Water treated through an iron filter is expected to meet the required turbidity levels of less than 5 NTU in the treated water. It is considered that the untreated water has a turbidity level of less than 5 NTU (based on the first two hours of water tested using field equipment) and that treatment to reduce iron will also cause the turbidity to be less than 5 NTU in the treated water.

Sulphide

Sulphide was measured at levels of 0.09 and 0.12 mg/L as hydrogen sulphide, compared to the aesthetic objective of 0.05 mg/L. Excessive sulphide levels may produce black deposits on pipes and fixtures and black stains on laundered items. The sulphide can be removed using the same manganese filter that is needed for iron reduction. Proprietary filters for iron and sulphide removal as well as manganese greensand filters are effective at reducing sulphide levels of up to 1.0 and 2.5 mg/L.

Total Dissolved Solids

Total dissolved solids (TDS) were elevated above the aesthetic objective of 500 mg/l, about 607 to 610 mg/l. The Ryznar Stability Index (RSI) and Langelier Saturation Index (LSI) were calculated for both water samples. The RSI values for the water samples were 6.81 and 6.67 for the three and six hour samples, respectively. The LSI values for the water samples were 0.32 and 0.44 for the three and six hour samples, respectively. RSI values less than 6 indicate that the scale potential increases and values greater than 7 indicate that a calcium carbonate formation does not lead to a protective corrosion inhibiting film. In this case, the water is mildly scale forming and not corrosive. Positive values for LSI indicate that scale can form and calcium carbonate precipitation may occur, while values close to zero indicate borderline scale potential. In this case, the LSI values are positive, indicating borderline scale potential. Combined with the RSI values, it is likely that the water is slightly scale forming and is not corrosive. According to the Support Document for the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG), the palatability of drinking water with a TDS level less than 500 mg/l is generally considered to be good. The effect of



elevated TDS levels on drinking water 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 water samples had high hardness. Sodium and chloride are both well within the aesthetic objectives and are unlikely to significantly affect the taste of the water. Hardness generally increases the mineral deposition. However, in this case, the water is not indicated to be scale forming. Based on the above noted information, it is considered that treatment to reduce hardness will reduce the potential for scale forming as it affects TDS.

Total Coliforms

The water samples obtained after 3 and 6 hours of pumping on October 14, 2022 both had total coliforms of 4 counts/ 100 mL with E. Coli and faecal coliforms absent.

MECP Procedure D-5-5 states the following with regards to total coliforms:

While the stated ODWS for Total Coliforms is 0 counts per 100 ml of sample, it is recognized that the objective had been set as an indicator of inadequate disinfection within the distribution systems associated with water works. For private water wells not subject to approval under the OWRA, the MOEE and Health Units have historically used the limit of <5 counts per 100 ml in the absence of a chlorine residual as indicating acceptable water quality.

As the total coliforms were within the wells allowed for existing wells and E. Coli was absent, the presence of total coliforms is considered acceptable. The owner was informed and recommendations were provided to test at least quarterly for bacteria through the public health unit.

RECOMMENDATIONS

The following is recommended for the construction of the future well to service the proposed severed lot with frontage on Charles Street:

- The well construction should conform with the recommended construction in the Thomson report from 2005 that was supported through the MOE report from 2020, as follows:
 - well should be cased to a depth of at least 25 to 32 metres; AND
 - the annulus of the well shall be sealed using suitable grouting and sealant for its entire length to the ground surface.

The following should be considered for expected water quality and well construction for the future well on the severed lot.

- The water is considered to be hard by water treatment standards. Water with hardness above 80 to 100 milligrams per litre as CaCO₃ is often softened for domestic use. The hardness at the well is ~420 milligrams per litre. Treatment using ion exchange water softeners is effective to reduce hardness. Water softening by conventional sodium ion exchange may introduce relatively high concentrations of sodium into the drinking water, which may contribute a significant percentage to the daily sodium intake for a consumer on a sodium restricted diet. Where ion exchange water softeners are used, a separate unsoftened water supply could be used for drinking and culinary purposes. Sodium level in the untreated water is 57 mg/L, which is above the 20 mg/l medical advisory limit and well within the aesthetic objective of 200 mg/L. When sodium levels exceed 20 mg/l, the local Medical Officer of Health should be informed so that the information can be relayed to local physicians.



- Total dissolved solids (TDS) may be present above the aesthetic objective of 500 mg/l in the future well. It is likely that the water is slightly scale forming. According to the Support Document for the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG), the palatability of drinking water with a TDS level less than 500 mg/l is generally considered to be good. There is no treatment recommendation for TDS. Treatment to reduce hardness will reduce scale potential associated with elevated TDS.
- Iron was measured at between 2.2 and 2.28 mg/L, compared to the aesthetic objective of 0.3 mg/L. Sulphide was measured at a level of 0.09 to 0.12 mg/L, compared to the aesthetic objective of 0.05 mg/L. Excess iron and sulphide levels may produce coloured deposits on pipes and fixtures and stains on laundered items. It also produces an unpleasant taste and odour. Both iron and sulphide may be reduced using manganese greensand filters or other proprietary filter at iron levels up to 5.0 mg/L and sulphide levels of up to 1.0 to 2.5 mg/L.

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

Regards,

Kollaard Associates Inc.



Colleen Vermeersch, P. Eng.

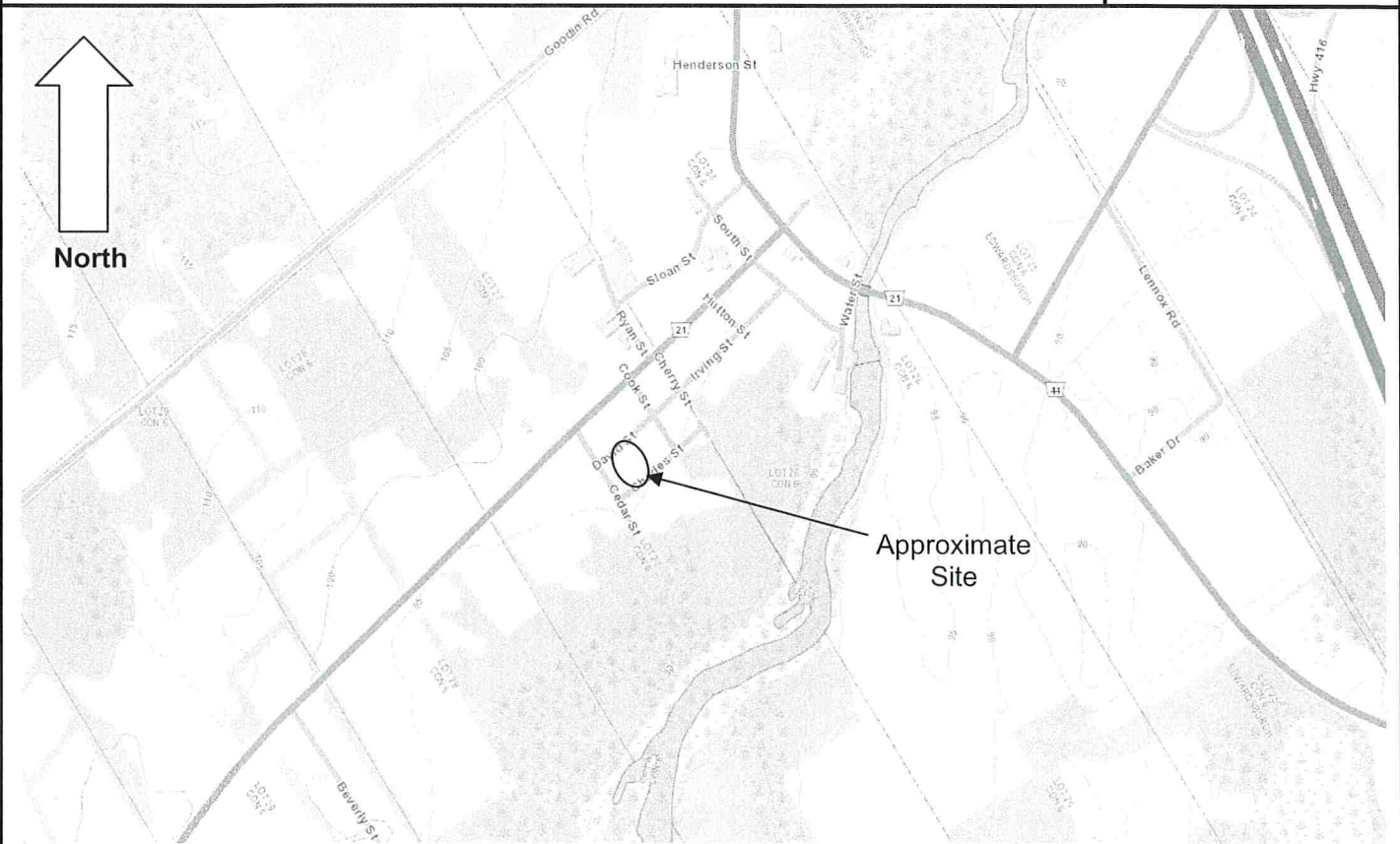
Attachments:	Table I	Summary of Hourly Field Water Quality
	Figure 1	Key Plan
	Figure 2	Site Plan Sketch
	Attachment A	Well Records
	Attachment B	TW1-Pumping Test Data
	Attachment C	TW1-Laboratory Water Testing Results

TABLE I
FIELD WATER QUALITY MEASUREMENTS
FOR TEST WELL 1

Time Since Pumping Test Started (min)	Temperature (°C)	pH	Turbidity (NTU)	Total Dissolved Solids (ppm)	Conductivity (µS)	Free Chlorine (ppm)
60	10.4	6.84	4.81	515	1034	0.00
120	10.8	7.18	4.61	498	996	-
180	11.3	7.35	8.05	488	966	-
240	11.8	7.43	15.0	476	950	-
300	11.4	7.60	13.2	481	960	-
360	12.1	7.58	20.6	490	978	-

KEY PLAN

FIGURE 1



NOT TO SCALE



Project No. 220996

Date October 2022



DRAWING NUMBER:
FIGURE 2

LEGEND:



Approximate well location

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

REFERENCE: PLAN SUPPLIED BY CITY OF OTTAWA EMAPS

REV.	NAME	DATE	DESCRIPTION

Kollard Associates
 Engineers

PO BOX 188 240 PRESOTT ST (613) 860-0923
 100 COLLEGE AVE. #2000 (613) 860-0923
 100 COLLEGE AVE. #2000 (613) 860-0923
 KOC 1 10 FAX (613) 258-0475
<http://www.kollard.ca>

CLIENT: ED BRONISZESKI

TITLE: SITE PLAN SKETCH

LOCATION: 27 DAVID STREET
 SPENCERVILLE, ONTARIO

DESIGNED BY: — DATE: OCTOBER 2022
 DRAWN BY: CV SCALE: AS SHOWN

KOLLARD FILE NUMBER: 220996

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ATTACHMENT A
MECP AREA WELL RECORDS



WATER RESOURCES
DIVISION
24 No 01096
JAN 19 1965
ONTARIO WATER
RESOURCES COMMISSION

UTM 18 Z 11 E

C06 R4 1 N
The Ontario Water Resources Commission Act

Elev. 495 77 0 3 1 5 **WATER WELL RECORD**

Basin 25 1 Greenville Township, Village, Town or City Edwardsburgh

Con. 6 Lot Part 27 Date completed 1 OCT 64
(day month year)

Address Spencerville, Ontario.

Casing and Screen Record

Inside diameter of casing 6 3/16"
Total length of casing 13 feet
Type of screen None
Length of screen -
Depth to top of screen -
Diameter of finished hole 6"

Pumping Test

Static level 20 feet
Test-pumping rate 3 1/2 G.P.M.
Pumping level 35 feet
Duration of test pumping 1 hour
Water clear or cloudy at end of test clear
Recommended pumping rate 3 G.P.M.
with pump setting of 35 feet below ground surface

Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>Grey limestone</u>	<u>0</u>	<u>40</u>	<u>38</u>	<u>fresh</u>

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

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

Drilling or Boring Firm J.B. Dufresne & Co. Ltd.,
1014 Maitland Ave.,
Address OTTAWA 5, Ont.

Licence Number 1307

Name of Driller or Borer R. Leniel
Address Ironside, Quebec.

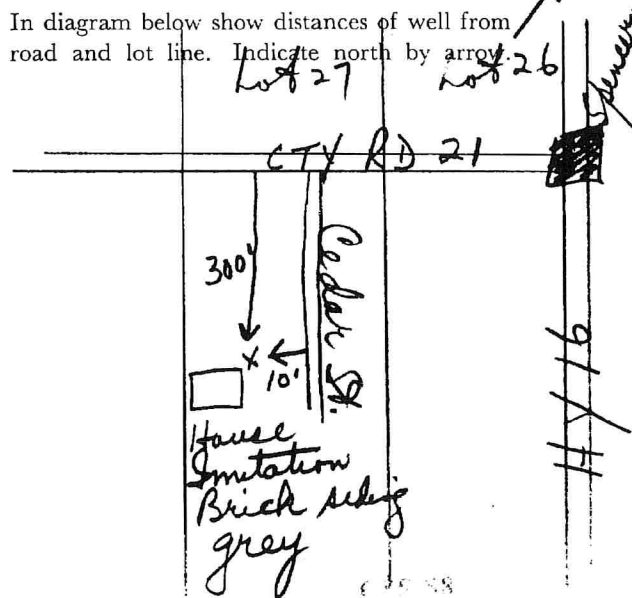
Date 5 October, 1964

(Signature of Licensed Drilling or Boring Contractor)
R. Leniel
J.B. Dufresne

Form 7 10M-62-1152

OWRC COPY

Location of Well





Ministry
of the
Environment
Ontario

2406531

The Ontario Water Resources Act
WATER WELL RECORD

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

11 ~~2404967/18.~~ MUNICIPAL 240002 CON. 06
COUNTY OR DISTRICT Greenville TOWNSHIP, BOROUGH CITY, TOWN, VILLAGE Edwardsburg CON. BLOCK TRACT SURVEY Cont. # 6 Lot # 4
DATE COMPLETED DAY 11 MO 9 YR 91
File # 2-18

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Clay	Sand Gravel	Soft	0	6
Black	Dolomite	Fractured	Hard	6	151
Grey	Sandstone	Dolomite	Hard	151	202

31
32

41 WATER RECORD

WATER FOUND AT FEET	KIND OF WATER		
48	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	
89	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	
153	<input checked="" type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	
190	<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
8 1/2	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC		0	102
6 1/4	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC	188	0	102
6 1/8	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC		102	202

SCREEN

SIZE-S. OF OPENING (SIDE NO.) 31-33 DIAMETER 34-38 LENGTH 39-40
MATERIAL AND TYPE DEPTH TO TOP OF SCREEN 41-44 30

61 PLUGGING & SEALING RECORD

DEPTH SET AT FEET	MATERIAL AND TYPE	CEMENT GROUT LEAD PACKER ETC.
102	0	Cement Grout

71 PUMPING TEST

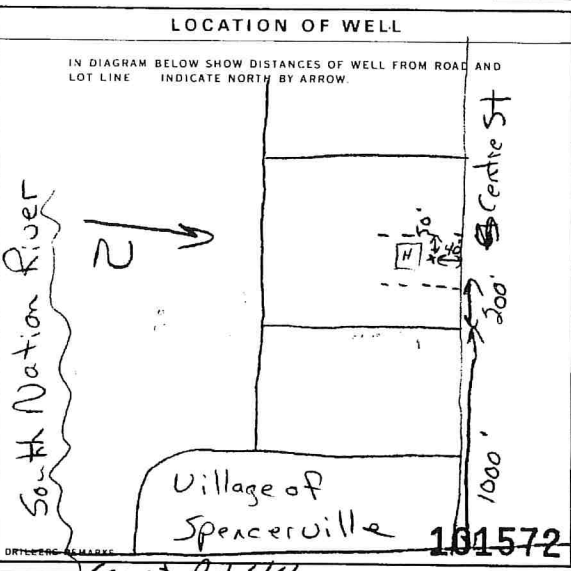
PUMPING TEST METHOD 1 DIRECT 2 BAILEY

PUMPING RATE 8 GPM DURATION OF PUMPING 1 30 HOURS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING			
30	190	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
		190	190	190	190

IF FLOWING GIVE RATE 190 GPM PUMP INTAKE SET AT 190 FEET WATER AT END OF TEST 1 CLEAR 2 CLOUDY

RECOMMENDED PUMP TYPE SHALLOW DEEP RECOMMENDED PUMP SETTING 190 FEET RECOMMENDED PUMPING RATE 7 GPM



54 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 8 DEWATERING

55-56 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

57 METHOD OF CONSTRUCTION

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

CONTRACTOR

NAME OF WELL CONTRACTOR Splash Well Drilling
WELL CONTRACTOR'S LICENCE NUMBER 4877
ADDRESS Box 1083 Prescott
NAME OF WELL TECHNICIAN Todd Ferguson
WELL TECHNICIAN'S LICENCE NUMBER 150478
SIGNATURE OF TECHNICIAN/CONTRACTOR [Signature]
SUBMISSION DATE 05/06/91

OFFICE USE ONLY

DATA SOURCE 4877 CONTRACTOR 52 DATE RECEIVED OCT 11 1991 43-48 80
DATE OF INSPECTION INSPECTOR
REMARKS
CSS.ES



Ministry
of the
Environment
Ontario

2406532

The Ontario Water Resources Act
WATER WELL RECORD

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~~2405219~~ AP. 24,002

MUNICIP.

24,002

CON.

CON.

106

COUNTY OR DISTRICT: Fredericton
 TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Edwardsburg
 CON. BLOCK TRACT SURVEY ETC.: CONC. #6 Part Lot #4
 DATE COMPLETED: DAY 22 MO 4 YR 92

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Clay	Wood Fragments	Packed	0	5
Brown	Shale	Fractured	Hard	5	6.5
Black	Dolomite		Hard	6.5	231

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
57	1 FRESH 3 SULPHUR 14 2 SALTY 4 MINERALS 6 GAS
163	1 FRESH 3 SULPHUR 19 2 SALTY 4 MINERALS 6 GAS
221	1 FRESH 3 SULPHUR 24 2 SALTY 4 MINERALS 6 GAS
23-28	1 FRESH 3 SULPHUR 29 2 SALTY 4 MINERALS 6 GAS
30-33	1 FRESH 3 SULPHUR 34 2 SALTY 4 MINERALS 6 GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
8 1/2	1 STEEL 12 2 GALVANIZED 12 3 CONCRETE 12 4 OPEN HOLE 12 5 PLASTIC 12		0	102
6 1/4	1 STEEL 19 2 GALVANIZED 19 3 CONCRETE 19 4 OPEN HOLE 19 5 PLASTIC 19	0.188	0	102
6 1/8	1 STEEL 26 2 GALVANIZED 26 3 CONCRETE 26 4 OPEN HOLE 26 5 PLASTIC 26		102	231

SCREEN

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

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	CEMENT GROUT LEAD PACKER ETC.
102	0	Cement Grout

71 PUMPING TEST

PUMPING TEST METHOD: AUC BAILER

PUMPING RATE: 13 GPM

DURATION OF PUMPING: 1 HOUR 0 MIN

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	RECOVERY
15 FEET	200 FEET	15 MINUTES: 25 FEET 30 MINUTES: 15 FEET 45 MINUTES: 15 FEET 60 MINUTES: 15 FEET	1 RECOVERY

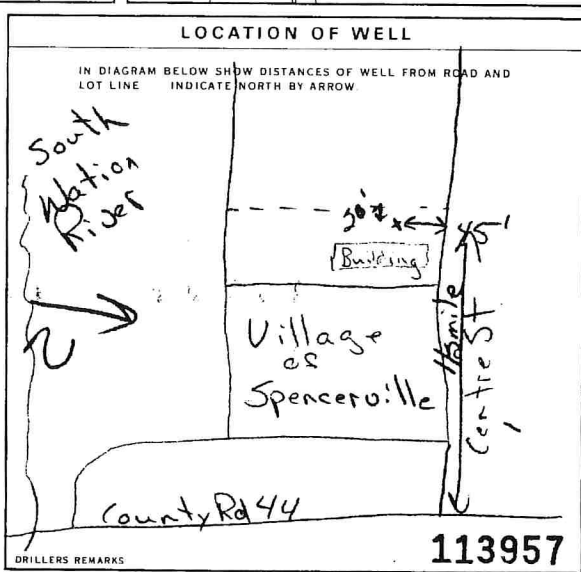
PUMP INTAKE SET AT: 220 FEET

WATER AT END OF TEST: 1 CLEAR 2 CLOUDY

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 220 FEET

RECOMMENDED PUMPING RATE: 10 GPM



84 FINAL STATUS OF WELL

WATER SUPPLY ABANDONED INSUFFICIENT SUPPLY
 OBSERVATION WELL ABANDONED POOR QUALITY
 TEST HOLE UNFINISHED
 RECHARGE WELL DEWATERING

85-86 WATER USE

DOMESTIC COMMERCIAL
 STOCK MUNICIPAL
 IRRIGATION PUBLIC SUPPLY
 INDUSTRIAL COOLING OR AIR CONDITIONING
 OTHER NOT USED

87 METHOD OF CONSTRUCTION

CABLE TOOL BORING
 ROTARY (CONVENTIONAL) DIAMOND
 ROTARY (REVERSE) JETTING
 ROTARY (AIR) DRIVING
 AIR PERCUSSION DIGGING OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: Splash Well Drilling
 WELL CONTRACTOR'S LICENCE NUMBER: 4877
 ADDRESS: Box 1683 Prescott
 NAME OF WELL TECHNICIAN: Todd Ferguson
 WELL TECHNICIAN'S LICENCE NUMBER: 20478
 SIGNATURE OF TECHNICIAN/CONTRACTOR: Todd Ferguson
 SUBMISSION DATE: DAY 21 MO 4 YR 92

OFFICE USE ONLY

DATA SOURCE: 4877 CONTRACTOR: 4877 DATE RECEIVED: APR 29 1992

DATE OF INSPECTION: _____ INSPECTOR: _____

REMARKS: _____

CSS.ES



2406534

WATER WELL RECORD

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11

~~2405181A8~~ 24002

MUNICIP

24002

CON

CON

106

COUNTY OR DISTRICT: Greenville TOWNSHIP BOROUGH CITY, TOWN, VILLAGE: Edwardsburg CON. BLOCK, TRACT, LOT, ETC.: CON. 6 LOT: 5

DATE COMPLETED: 28 48-53: 11 91

ING: Centre St ELEVATION: 119 BASIN CODE: #2

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Black	Top Soil		Soft	0	1
Brown	Clay	Stones	Packed	1	7
Grey	Dolomite	Limestone	Hard	7	202

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER		
52	<input type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERALS
79	<input type="checkbox"/> SALTY	<input type="checkbox"/> GAS	<input type="checkbox"/> MINERALS
154	<input checked="" type="checkbox"/> FRESH	<input type="checkbox"/> SULPHUR	<input type="checkbox"/> MINERALS
207	<input type="checkbox"/> SALTY	<input type="checkbox"/> GAS	<input type="checkbox"/> MINERALS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
8 1/2	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input checked="" type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC		0	102
6 1/4	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input checked="" type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC	.188	0	105
6 1/8	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input checked="" type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC		105	252

SCREEN

SIZES OF OPENING (SLOT NO. 1)	DIAMETER	LENGTH
	INCHES	FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE	CEMENT GROUP (LEAD PACKER, ETC.)
102	Cement Grout	

71 PUMPING TEST

PUMPING TEST METHOD: PUMPING RATE: 5 GPM

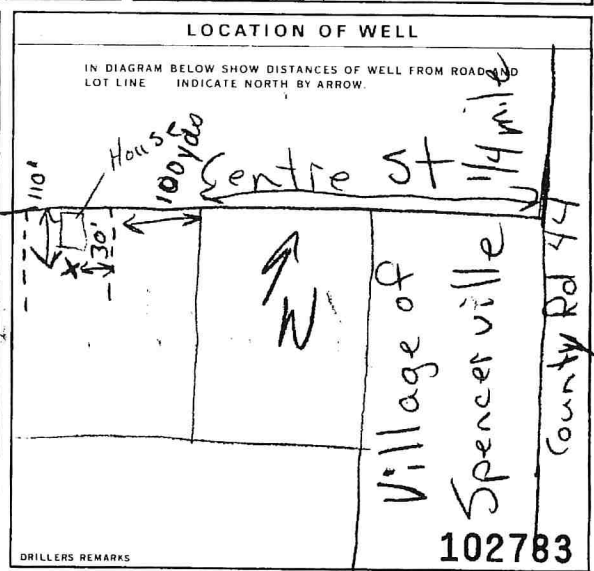
15-18 HOURS: 30 MIN

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	RECOVERY
30 FEET	210 FEET	15 MINUTES: 130 FEET 30 MINUTES: 60 FEET	45 MINUTES: 40 FEET 60 MINUTES: 30 FEET

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 310 FEET

RECOMMENDED PUMPING RATE: 4 GPM



54 FINAL STATUS OF WELL

WATER SUPPLY

55-56 WATER USE

DOMESTIC

57 METHOD OF CONSTRUCTION

CABLE TOOL

CONTRACTOR

NAME OF WELL CONTRACTOR: Splash Well Drilling

WELL CONTRACTOR'S LICENCE NUMBER: 4877

ADDRESS: Box 1083 Prescott

NAME OF WELL TECHNICIAN: Todd Ferguson

WELL TECHNICIAN'S LICENCE NUMBER: 1-0478

SIGNATURE OF TECHNICIAN/CONTRACTOR: Todd Ferguson

SUBMISSION DATE: DAY 31 NO. 01 YR. 92

OFFICE USE ONLY

DATA SOURCE: 4877 CONTRACTOR

DATE RECEIVED: FEB 03 1992

DATE OF INSPECTION: _____ INSPECTOR: _____

REMARKS: _____

CSS.ES

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.

Well Owner's Information and Location of Well Information

Ministry Use Only										
MUN								CON		LOT



RR#/Street Number/Name: **Leader Street Spencerville Edwardsburg** City/Town/Village: **Edwardsburg** Site/Compartment/Block/Tract etc.: **51 6**

RR#: **18** Zone: **18** Easting: **494494** Northing: **4965237** Unit/Make/Model: **E 112** Mode of Operation: Undifferentiated Averaged Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Metres To
			Brown Top Soil Hard Pan	0	1.8
			Gray Limestone	1.8	6.6
			Gray Limestone	6.6	44.8

Hole Diameter

Depth	Metres	Diameter
From	To	Centimetres
0	6.6	25.00

Construction Record

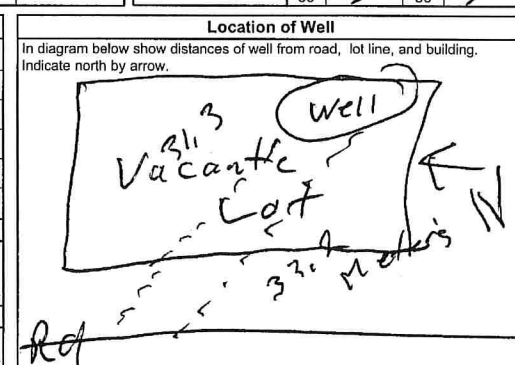
Inside diam	Material	Wall thickness	Depth	Metres
centimetres		centimetres	From	To
15.24	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized	0.48	0	6.6
	<input type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized			
	<input type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized			
Outside diam	Slot No.	No Casing or Screen		
		<input type="checkbox"/> Open hole		

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	3.2		3.9
Pumping rate - (litres/min)	1		1	3.9
Duration of pumping (hrs + min)	2	3.4	2	-
Final water level end of pumping (metres)	3	3.8	3	-
Recommended pump type	4	3.9	4	-
Recommended pump depth (metres)	5	-	5	-
Recommended pump rate (litres/min)	10	-	10	-
If flowing give rate - (litres/min)	15	-	15	-
	20	-	20	-
	25	-	25	-
	30	-	30	-
	40	-	40	-
	50	-	50	-
	60	-	60	-

Plugging and Sealing Record

Depth set at - Metres	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
From	To	



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 38136** Date Well Completed **2006 08 03**

Was the well owner's information package delivered? Yes No Date Delivered **2006 08 03**

Well Contractor/Technician Information

Name of Well Contractor: **Dave's Well Drilling** Well Contractor's Licence No.: **6565**

Business Address (street name, number, city etc.): **RR 3 North Augusta**

Name of Well Technician (last name, first name): **Dave Fisher** Well Technician's Licence No.: **TD-147**

Signature of Technician/Contractor: *[Signature]* Date Submitted: **2006 08 03**

Ministry Use Only

Data Source: Contractor **6565**

Date Received: **01 1 2006** Date of Inspection: **2006 08 03**

Remarks: _____ Well Record Number: _____

Instructions for Completing Form

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

Well Owner's Information and Location of Well Information

Ministry Use Only										
MUN								CON		LOT

OB CHARLES ST. SPENCERVILLE Edwardsburg

RR#/Street Number/Name: **RR 3 Charles St Spencerville** City/Town/Village: **Spencerville** Site/Compartment/Block/Tract etc.

GPS Reading: **181318** NAD Zone: **18** Easting: **0456614** Northing: **4960354** Unit Make/Model: **E-TRX** 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 Metres	
				From	To
	Brown Top Soil			0	1.2
	gray Limestone	Black Dolomite		1.2	6.6
	gray Limestone	Black Dolomite		6.6	54.5

Hole Diameter

Depth	Metres	Diameter
From	To	Centimetres
0	6.6	25.40

Water Record

Water found at _____ Metres / Kind of Water:

Fresh Sulphur Gas Salty Minerals Other:

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

Chlorinated Yes No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth Metres	
			From	To
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

Screen

Outside diam _____ Slot No. _____

Steel Fibreglass Plastic Concrete Galvanized

No Casing or Screen

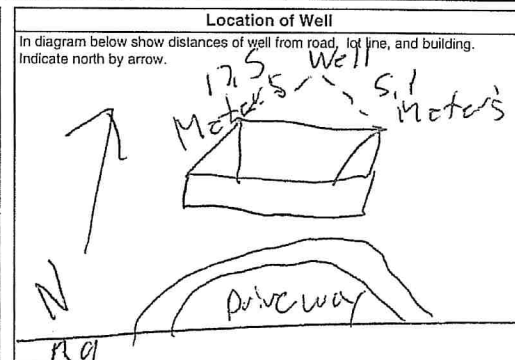
Open hole

Test of Well Yield

Pumping test method	Draw Down		Recovery	
	Time min	Water Level Metres	Time min	Water Level Metres
Pumped				
Pump intake set at - (metres)	4.6	4.6	4.9	4.9
Pumping rate - (litres/min)	1	4.6	1	4.6
Duration of pumping	2	4.8	2	4.6
Final water level end of pumping	3	4.9	3	4.5
Recommended pump type	4	-	4	4.5
Recommended pump depth	5	-	5	-
Recommended pump rate	10	-	10	-
If flowing give rate - (litres/min)	15	-	15	-
If pumping discontinued, give reason.	20	-	20	-
	25	-	25	-
	30	-	30	-
	40	-	40	-
	50	-	50	-
	60	-	60	-

Plugging and Sealing Record Annular space Abandonment

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



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 55705** Date Well Completed **2007 07 06**

Was the well owner's information package delivered? Yes No Date Delivered **2007 07 06**

Well Contractor/Technician Information

Name of Well Contractor: **Dave's Well Drilling** Well Contractor's Licence No.: **6565**

Business Address (street name, number, city etc.): **RR 3 North Augusta**

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

Signature of Technician/Contractor: *[Signature]* Date Submitted: **2007 07 06**

Ministry Use Only

Data Source _____ Contractor _____

Date Received **2007 07 06** Date of Inspection **2007 07 06**

Remarks _____ Well Record Number _____

Instructions for Completing Form

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

Well Owner's Information and Location of Well Information

Ministry Use Only										
MUN								CON		LOT

64 Charles Street Spencerville Edwardsburg 9 6
 RR#/Street Number/Name City/Town/Village Site/Compartment/Block/Tract etc.
 64 Charles Street Spencerville
 GPS Reading NAD 83 Zone Easting Northing UTM Make/Model Mode of Operation: Undifferentiated Averaged
 Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Metres To
				0	1.3
				1.2	6.6
				6.6	38.7

Handwritten notes:
 Brown Top Soil
 Gray Limestone Black Dolomite
 Gray Limestone Black Dolomite

Hole Diameter

Depth From	Metres To	Diameter Centimetres
0	6.6	25.4

Water Record

Water found at 2 metres / Kind of Water

m Fresh Sulphur
 Gas Salty Minerals
 Other:

m Fresh Sulphur
 Gas Salty Minerals
 Other:

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

Chlorinated Yes No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	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

Screen

Outside diam	Material	Slot No.
	<input type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input type="checkbox"/> Plastic <input type="checkbox"/> Concrete <input type="checkbox"/> Galvanized	

No Casing or Screen

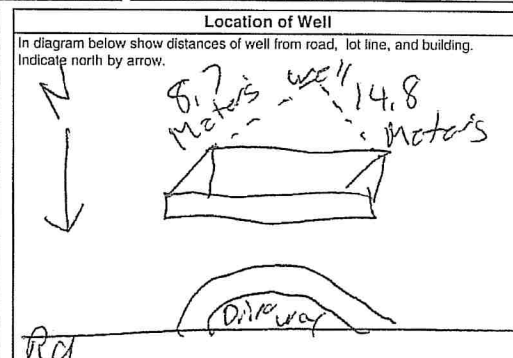
Open hole

Test of Well Yield

Pumping test method	Draw Down Time min	Water Level Metres	Recovery Time min	Water Level Metres
Pump	40	4.6	51	51
Pump intake set at (metres)	1	4.8	1	4.8
Pumping rate - (litres/min)	2	4.7	2	4.5
Duration of pumping	3	4.8	3	4.4
Final water level end of pumping (metres)	4	4.9	4	-
Recommended pump type	5	5.1	5	-
Recommended pump depth (metres)	10	-	10	-
Recommended pump rate (litres/min)	15	-	15	-
If flowing give rate - (litres/min)	20	-	20	-
0 (litres/min)	25	-	25	-
If pumping discontinued, give reason.	30	-	30	-
	40	-	40	-
	50	-	50	-
	60	-	60	-

Plugging and Sealing Record Annular space Abandonment

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



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 55703** Date Well Completed **2007 01 06**

Was the well owner's Information package delivered? Yes No Date Delivered **2007 01 06**

Well Contractor/Technician Information

Name of Well Contractor **Dave's Well Drilling** Well Contractor's Licence No. **6563**
 Business Address (Street name, number, city etc.) **123 North Augusta**

Name of Well Technician (last name, first name) **Dave L 154** Well Technician's Licence No. **10-144**
 Signature of Technician/Contractor **[Signature]** Date Submitted **2007 01 06**

Ministry Use Only

Data Source Contractor

Date Received **4 2008** MM DD Date of Inspection **YYYY MM DD**

Remarks Well Record Number

Measurements recorded in: Metric Imperial

Page _____ of _____

Well Owner's Information

 First Name: **1504107 Ontario Inc** Last Name / Organization: **of Lockwood Brothers Construction** E-mail Address: _____
 Mailing Address (Street Number/Name): **2010 Totem Ranch Rd West** Municipality: **Oxford Mills** Province: **ON** Postal Code: **K0G 1T0** Telephone No. (inc. area code): **613 258 4225**
Well Location

 Address of Well Location (Street Number/Name): **12 Cedar St** Township: **Edwardsburg** Lot: _____ Concession: **6**
 County/District/Municipality: **Grenville** City/Town/Village: **Spencerville** Province: **Ontario** Postal Code: **K0E 1X0**
 UTM Coordinates: Zone: _____ Easting: _____ Northing: _____ Municipal Plan and Sublot Number: _____
 NAD 83: **1845646749652877 Part 3 on Plan 15R 10841**
Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)
				From To
Brown	Clay		Soft	0 0.91
Grey	Limestone		Hard	0.91 24.69

Annular Space			Results of Well Yield Testing			
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)	Draw Down		Recovery	
From To			Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
6.25 ϕ	Cement Pressure Grouted	0.16	1	5.04	1	5.15
			2	5.07	2	5.13
			3	5.09	3	5.12
			4	5.10	4	5.11
			5	5.10	5	5.10
			10	5.11	10	5.09
			15	5.12	15	5.08
			20	5.12	20	5.04
			25	5.13	25	
			30	5.14	30	
			40	5.14	40	
			50	5.14	50	
			60	5.15	60	

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"/> Not used
<input checked="" type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Municipal	<input type="checkbox"/> Dewatering
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Drilling	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole	<input type="checkbox"/> Monitoring
<input type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning	
<input 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)	Well Thickness (cm/in)	Depth (m/ft)	From To	
25.40	Open Hole		ϕ	6.25	<input checked="" type="checkbox"/> Water Supply
15.88	Steel	0.48	ϕ	6.25	<input type="checkbox"/> Replacement Well
15.55	Open Hole		6.25	24.69	<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

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

Water Details			Hole Diameter		
Water found at Depth (m/ft)	Kind of Water	Fresh <input type="checkbox"/> Untested <input checked="" type="checkbox"/>	Depth (m/ft)	From To	Diameter (cm/in)
14.63	Gas		ϕ	6.25	25.40
21.03	Gas		6.25	24.69	15.55

Well Contractor and Well Technician Information
 Business Name of Well Contractor: **Splash Well Drilling** Well Contractor's Licence No.: **4877**
 Business Address (Street Number/Name): **PO Box 1083** Municipality: **Pewscott**
 Province: **ON** Postal Code: **K0E 1T0** Business E-mail Address: _____

 Bus Telephone No. (inc. area code): **613 925 4885** Name of Well Technician (Last Name, First Name): **Ferguson, Todd**
 Well Technician's Licence No.: **T 478** Signature of Technician and/or Contractor: *Todd Ferguson* Date Submitted: **20100121**

Map of Well Location			
Please provide a map below following instructions on the back.			
County Rd #21			
Cedar Street			

 Comments: _____
 Well owner's information package delivered: Yes No
 Date Package Delivered: **20100126**
 Date Work Completed: **20100121**
Ministry Use Only
 Audit No: **Z 104993**
 Date: **MAR 24 2010**

Measurements recorded in: Metric Imperial

Page _____ of _____

Well Owner's Information

First Name: 1504107 Ontario Inc. Last Name / Organization: Cedar Lockwood Brothers Construction E-mail Address: _____
 Mailing Address (Street Number/Name): 2010 Totem Ranch Rd West Municipality: Oxford Hills Province: ON Postal Code: K0G 1T0 Telephone No. (inc. area code): 6132584225

Well Location

Address of Well Location (Street Number/Name): 14 Cedar Street Township: Argentea Lot: 6
 County/District/Municipality: Grenville City/Town/Village: Spencerville Province: Ontario Postal Code: K0E 1X0
 UTM Coordinates Zone, Easting, Northing: NAD 83 18456460/4965301 Municipal Plan and Sublot Number: Part of Plan 15R-10841

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From To
Brown	Clay		Soft	0 1.07
Grey	Limestone		Hard	1.07 24.69

Annular Space

Depth Set at (m/ft) Front To	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
6.25 ϕ	Cement Pressure Grouted	0.16

Results of Well Yield Testing

After test of well yield, water was: <input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: Pump intake set at (m/ft): 21.34 Pumping rate (l/min / GPM): 6825 Duration of pumping: 1 hrs + 0 min Final water level end of pumping (m/ft): 5.335 If flowing give rate (l/min / GPM): _____	Static Level	5.27		5.335
	1	5.29	1	5.31
	2	5.29	2	5.30
	3	5.295	3	5.245
	4	5.30	4	5.29
	5	5.30	5	5.29
10	5.31	10	5.285	
15	5.32	15	5.28	
20	5.32	20	5.275	
25	5.32	25	5.27	
30	5.325	30		
40	5.33	40		
50	5.33	50		
60	5.335	60		

Method of Construction

<input type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not used
<input checked="" type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input checked="" type="checkbox"/> Domestic	<input type="checkbox"/> Municipal	<input type="checkbox"/> Dewatering
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Boring	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole	<input type="checkbox"/> Monitoring
<input type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning	
<input checked="" type="checkbox"/> Air percussion		<input type="checkbox"/> Industrial		
<input type="checkbox"/> Other, specify		<input type="checkbox"/> 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	
25.40	Open Hole		ϕ	6.25	<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 <input type="checkbox"/> Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other specify <input type="checkbox"/> Other, specify
15.88	Steel	0.48	ϕ	6.25	
15.55	Open Hole		6.25	24.69	

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:	Fresh	Untested
13.72	Gas Other, specify	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19.20	Gas Other, specify	<input type="checkbox"/>	<input checked="" type="checkbox"/>

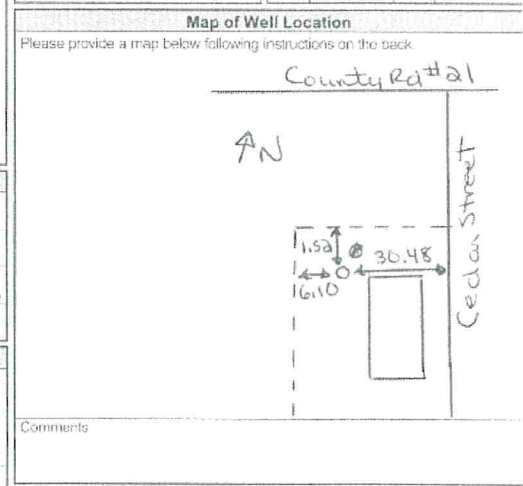
Hole Diameter

Depth (m/ft)	Diameter (cm/in)	
	From	To
ϕ	6.25	25.40
6.25	24.69	15.55

Well Contractor and Well Technician Information

Business Name of Well Contractor: Splash Well Drilling Well Contractor's Licence No.: 4877
 Business Address (Street Number/Name): PO BOX 1083 Municipality: Prescott
 Province: ON Postal Code: K0E1T0 Business E-mail Address: _____

Bus. Telephone No. (inc. area code): 613254885 Name of Well Technician (Last Name, First Name): Ferguson, Todd
 Well Technician's Licence No.: T 4 7 8 Signature of Technician and/or Contractor Date Submitted: 20100127



Well owner's information package delivered: Yes No Date Package Delivered: 20100127
 Date Work Completed: 20100127

Ministry Use Only

Audit No.: Z104994
 Date: MAR 22 2010

Address of Well Location (Street Number/Name) 1 Cedar Street Township Edwardsburgh Lot 5+6 Concession _____
 County/District/Municipality Grenville City/Town/Village Spencerville Province Ontario Postal Code K0E1X0
 UTM Coordinates Zone 18 Easting 4565711 Northing 4365189 Municipal Plan and Sublot Number Plan 40
 NAD 83

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
Red	Sand Fill		Soft	0' 5'
Brown	Sandy Clay		Packed	5' 6'6"
Grey	Limestone		Broken Soft	6'6" 25'
Grey	Limestone		Hard	25' 101'

Annular Space

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
From To		
31' 0'	Cement Pressure Grouted	20.31

Method of Construction

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

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	
10"	Open Hole		0' 31'	<input checked="" type="checkbox"/> Water Supply
6 1/4"	Steel	0.188	0' 31'	<input type="checkbox"/> Replacement Well
6 1/8"	Open Hole		31' 101'	<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 _____

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	Status of Well
			From To	
				<input type="checkbox"/> Abandoned, Insufficient Supply
				<input type="checkbox"/> Abandoned, Poor Water Quality
				<input type="checkbox"/> Abandoned, other, specify _____
				<input type="checkbox"/> Other, specify _____

Water Details

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Hole Diameter
		Depth (m/ft) Diameter (cm/in)
		From To
15' (m/ft)	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	0' 31' 10"
91' (m/ft)	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	31' 101' 6 1/8"
	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	

Well Contractor and Well Technician Information

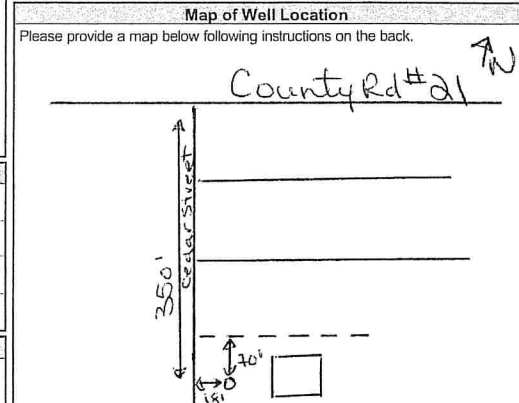
Business Name of Well Contractor 1435486 Ontario Ltd Well Contractor's Licence No. 4877
aka splash well drilling Municipality Prescott
 Business Address (Street Number/Name) PO BOX 1083
 Province ON Postal Code K0E1T0 Business E-mail Address _____

Bus. Telephone No. (inc. area code) 613 925 4825 Name of Well Technician (Last Name, First Name) Ferguson, Todd
 Well Technician's Licence No. T 478 Signature of Technician and/or Contractor Todd Ferguson Date Submitted 2013 04 22

Results of Well Yield Testing

After test of well yield, water was: <input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason: Pump intake set at (m/ft) <u>90'</u> Pumping rate (l/min / GPM) <u>20</u> Duration of pumping <u>1 hrs + 0 min</u> Final water level end of pumping (m/ft) <u>23.4</u> If flowing give rate (l/min / GPM) _____	Static Level	7.8		23.4
	1	15	1	14
	2	18	2	10.7
	3	19.7	3	9.4
	4	20.7	4	8.8
	5	21.4	5	8.5
10	22.6	10	8.1	
15	22.9	15	8	
20	23.1	20	7.9	
25	23.2	25	7.9	
30	23.3	30	7.8	
40	23.4	40		
50	23.4	50		
60	23.4	60		

Recommended pump depth (m/ft) 80'
 Recommended pump rate (l/min / GPM) 10
 Well production (l/min / GPM) _____
 Disinfected? Yes No 160



Comments: 160 chlorine after Drilling
0 chlorine after field test

Well owner's information package delivered Yes No

Date Package Delivered 2013 04 18

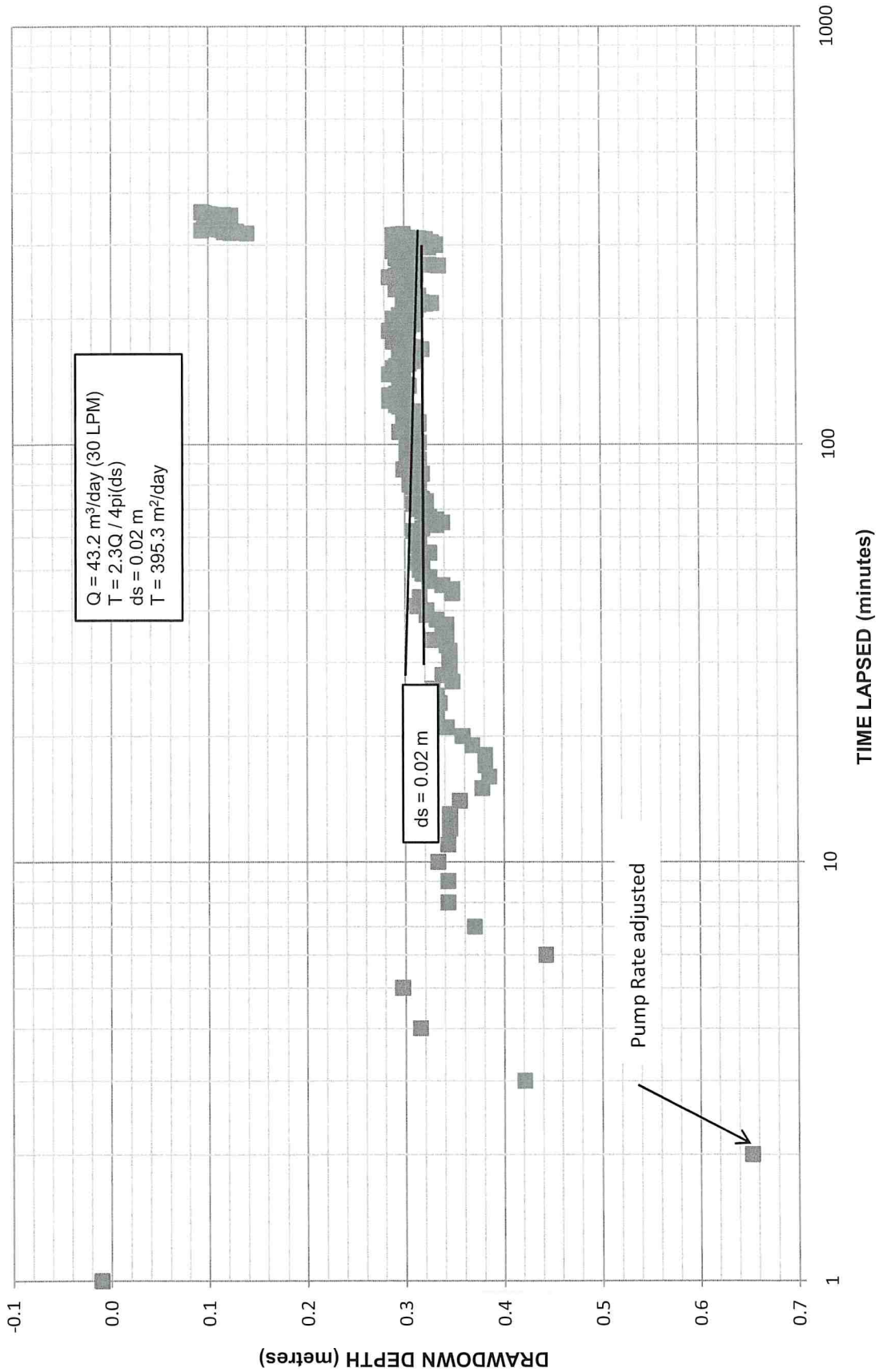
Date Work Completed 2013 04 11

Ministry Use Only

Audit No. Z 167094

Received 2013 04 11

TW1-WELL DRAWDOWN VS. TIME-KOLLAARD FILE 220996



DRAWDOWN DATA TW1

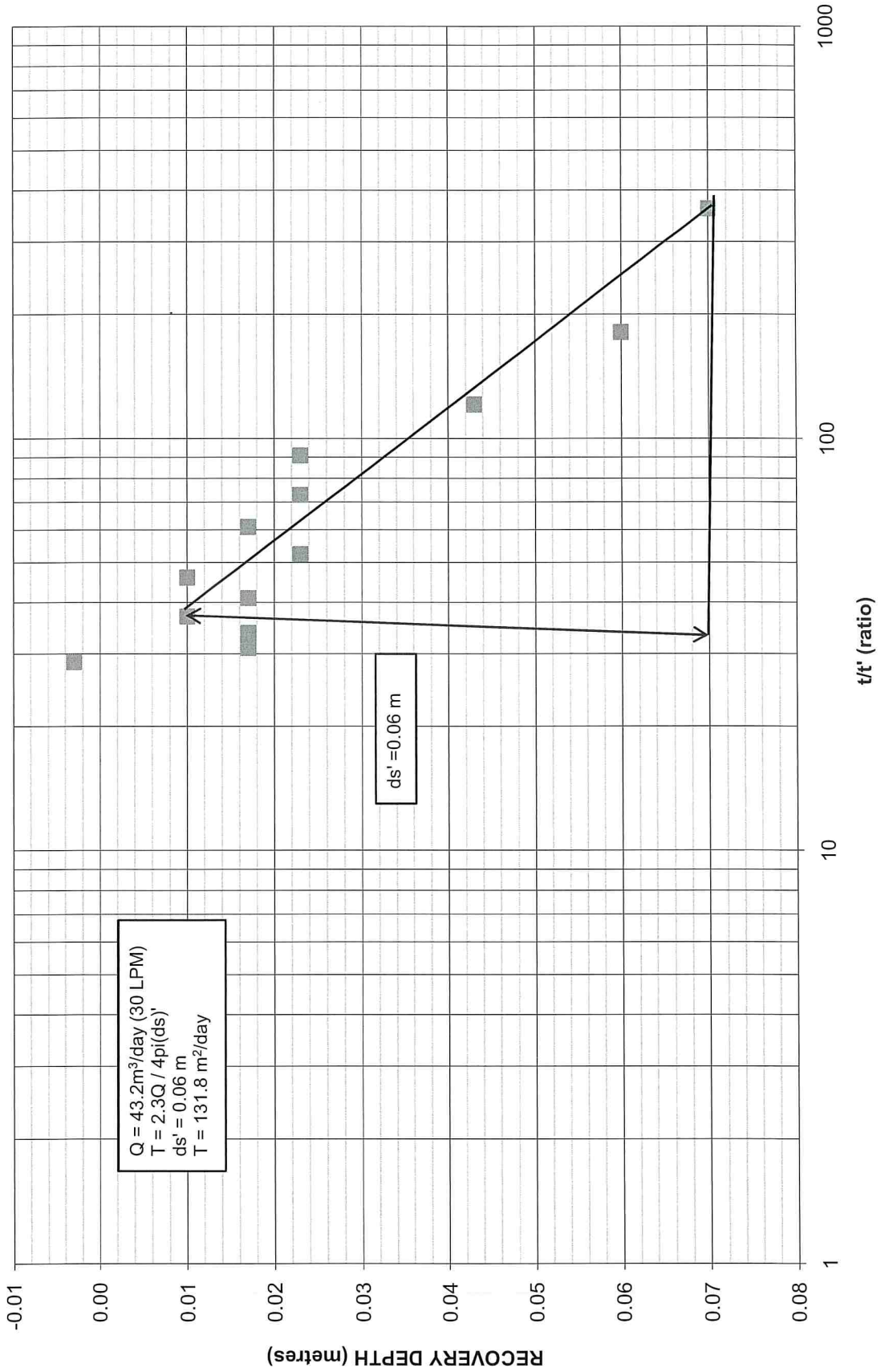
Time Lapsed (minutes)	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)
0	397.747	9.275	-7.412	0.00
1	397.844	9.275	-7.402	-0.01
2	391.342	9.275	-8.065	0.65
3	393.618	9.275	-7.833	0.42
4	394.658	9.275	-7.727	0.32
5	394.835	9.176	-7.709	0.30
6	393.405	9.176	-7.855	0.44
7	394.12	9.176	-7.782	0.37
8	394.38	9.176	-7.755	0.34
9	394.38	9.176	-7.755	0.34
10	394.478	9.176	-7.745	0.33
11	394.38	9.176	-7.755	0.34
12	394.363	9.077	-7.757	0.35
13	394.363	9.077	-7.757	0.35
14	394.265	9.077	-7.767	0.36
15	394.038	9.077	-7.79	0.38
16	393.973	9.077	-7.797	0.39
17	394.005	9.077	-7.793	0.38
18	394.005	9.077	-7.793	0.38
19	394.135	9.077	-7.78	0.37
20	394.233	9.077	-7.77	0.36
21	394.395	9.077	-7.754	0.34
22	394.493	9.077	-7.744	0.33
23	394.525	9.077	-7.74	0.33
24	394.46	9.077	-7.747	0.34
25	394.493	9.077	-7.744	0.33
26	394.525	9.077	-7.74	0.33
27	394.33	9.077	-7.76	0.35
28	394.428	9.077	-7.75	0.34
29	394.363	9.077	-7.757	0.35
30	394.363	9.077	-7.757	0.35
31	394.363	9.077	-7.757	0.35
32	394.363	9.077	-7.757	0.35
33	394.395	9.077	-7.754	0.34
34	394.525	9.077	-7.74	0.33
35	394.428	9.077	-7.75	0.34
36	394.395	9.077	-7.754	0.34
37	394.395	9.077	-7.754	0.34
38	394.493	9.077	-7.744	0.33
39	394.59	9.077	-7.734	0.32
40	394.59	9.077	-7.734	0.32
41	394.688	9.077	-7.724	0.31
42	394.655	9.077	-7.727	0.32
43	394.655	9.077	-7.727	0.32
44	394.33	9.077	-7.76	0.35
45	394.33	9.077	-7.76	0.35
46	394.428	9.077	-7.75	0.34
47	394.558	9.077	-7.737	0.33
48	394.558	9.077	-7.737	0.33
49	394.623	9.077	-7.73	0.32
50	394.655	9.077	-7.727	0.32
51	394.623	9.077	-7.73	0.32
52	394.688	9.077	-7.724	0.31
53	394.655	9.077	-7.727	0.32
54	394.655	9.077	-7.727	0.32
55	394.558	9.077	-7.737	0.33
56	394.655	9.077	-7.727	0.32
57	394.688	9.077	-7.724	0.31
58	394.655	9.077	-7.727	0.32
59	394.655	9.077	-7.727	0.32
60	394.655	9.077	-7.727	0.32
61	394.688	9.077	-7.724	0.31
62	394.72	9.077	-7.721	0.31
63	394.623	9.077	-7.73	0.32
64	394.493	9.077	-7.744	0.33
65	394.428	9.077	-7.75	0.34
66	394.493	9.077	-7.744	0.33
67	394.558	9.077	-7.737	0.33
68	394.59	9.077	-7.734	0.32
69	394.623	9.077	-7.73	0.32
70	394.655	9.077	-7.727	0.32
71	394.655	9.077	-7.727	0.32
72	394.72	9.077	-7.721	0.31
73	394.59	9.077	-7.734	0.32
74	394.623	9.077	-7.73	0.32
75	394.655	9.077	-7.727	0.32
76	394.688	9.077	-7.724	0.31
77	394.688	9.077	-7.724	0.31
78	394.688	9.077	-7.724	0.31
79	394.72	9.077	-7.721	0.31
80	394.753	9.077	-7.717	0.31
81	394.688	9.077	-7.724	0.31
82	394.655	9.077	-7.727	0.32
83	394.655	9.077	-7.727	0.32
84	394.655	9.077	-7.727	0.32
85	394.623	9.077	-7.73	0.32
86	394.753	9.077	-7.717	0.31
87	394.818	9.077	-7.711	0.30
88	394.72	9.077	-7.721	0.31

89	394.72	9.077	-7.721	0.31
90	394.753	9.077	-7.717	0.31
91	394.72	9.077	-7.721	0.31
92	394.655	9.077	-7.727	0.32
93	394.72	9.077	-7.721	0.31
94	394.785	9.077	-7.714	0.30
95	394.72	9.077	-7.721	0.31
96	394.72	9.077	-7.721	0.31
97	394.753	9.077	-7.717	0.31
98	394.785	9.077	-7.714	0.30
99	394.785	9.077	-7.714	0.30
100	394.785	9.077	-7.714	0.30
101	394.655	9.077	-7.727	0.32
102	394.688	9.077	-7.724	0.31
103	394.72	9.077	-7.721	0.31
104	394.753	9.077	-7.717	0.31
105	394.753	9.077	-7.717	0.31
106	394.785	9.077	-7.714	0.30
107	394.85	9.077	-7.707	0.30
108	394.785	9.077	-7.714	0.30
109	394.818	9.077	-7.711	0.30
110	394.785	9.077	-7.714	0.30
111	394.72	9.077	-7.721	0.31
112	394.655	9.077	-7.727	0.32
113	394.655	9.077	-7.727	0.32
114	394.72	9.077	-7.721	0.31
115	394.72	9.077	-7.721	0.31
116	394.818	9.077	-7.711	0.30
117	394.785	9.077	-7.714	0.30
118	394.818	9.077	-7.711	0.30
119	394.785	9.077	-7.714	0.30
120	394.72	9.077	-7.721	0.31
121	394.818	9.077	-7.711	0.30
122	394.818	9.077	-7.711	0.30
123	394.85	9.077	-7.707	0.30
124	394.883	9.077	-7.704	0.29
125	394.85	9.077	-7.707	0.30
126	394.883	9.077	-7.704	0.29
127	394.948	9.077	-7.697	0.29
128	394.85	9.077	-7.707	0.30
129	394.785	9.077	-7.714	0.30
130	394.85	9.077	-7.707	0.30
131	394.948	9.077	-7.697	0.29
132	394.883	9.077	-7.704	0.29
133	394.85	9.077	-7.707	0.30
134	394.818	9.077	-7.711	0.30
135	394.85	9.077	-7.707	0.30
136	394.818	9.077	-7.711	0.30
137	394.85	9.077	-7.707	0.30
138	394.753	9.077	-7.717	0.31
139	394.785	9.077	-7.714	0.30
140	394.85	9.077	-7.707	0.30
141	394.818	9.077	-7.711	0.30
142	394.818	9.077	-7.711	0.30
143	394.818	9.077	-7.711	0.30
144	394.85	9.077	-7.707	0.30
145	394.85	9.077	-7.707	0.30
146	394.85	9.077	-7.707	0.30
147	394.948	9.077	-7.697	0.29
148	394.818	9.077	-7.711	0.30
149	394.818	9.077	-7.711	0.30
150	394.915	9.077	-7.701	0.29
151	394.85	9.077	-7.707	0.30
152	394.915	9.077	-7.701	0.29
153	394.883	9.077	-7.704	0.29
154	394.883	9.077	-7.704	0.29
155	394.785	9.077	-7.714	0.30
156	394.753	9.077	-7.717	0.31
157	394.753	9.077	-7.717	0.31
158	394.72	9.077	-7.721	0.31
159	394.72	9.077	-7.721	0.31
160	394.753	9.077	-7.717	0.31
161	394.818	9.077	-7.711	0.30
162	394.818	9.077	-7.711	0.30
163	394.688	9.077	-7.724	0.31
164	394.753	9.077	-7.717	0.31
165	394.785	9.077	-7.714	0.30
166	394.85	9.077	-7.707	0.30
167	394.753	9.077	-7.717	0.31
168	394.753	9.077	-7.717	0.31
169	394.623	9.077	-7.73	0.32
170	394.688	9.077	-7.724	0.31
171	394.72	9.077	-7.721	0.31
172	394.753	9.077	-7.717	0.31
173	394.85	9.077	-7.707	0.30
174	394.818	9.077	-7.711	0.30
175	394.85	9.077	-7.707	0.30
176	394.915	9.077	-7.701	0.29
177	394.915	9.077	-7.701	0.29
178	394.785	9.077	-7.714	0.30
179	394.818	9.077	-7.711	0.30
180	394.85	9.077	-7.707	0.30
181	394.883	9.077	-7.704	0.29
182	394.883	9.077	-7.704	0.29
183	394.883	9.077	-7.704	0.29

184	394.85	9.077	-7.707	0.30
185	394.85	9.077	-7.707	0.30
186	394.85	9.077	-7.707	0.30
187	394.948	9.077	-7.697	0.29
188	394.883	9.077	-7.704	0.29
189	394.915	9.077	-7.701	0.29
190	394.785	9.077	-7.714	0.30
191	394.85	9.077	-7.707	0.30
192	394.753	9.077	-7.717	0.31
193	394.818	9.077	-7.711	0.30
194	394.72	9.077	-7.721	0.31
195	394.883	9.077	-7.704	0.29
196	394.818	9.077	-7.711	0.30
197	394.883	9.077	-7.704	0.29
198	394.915	9.077	-7.701	0.29
199	394.883	9.077	-7.704	0.29
200	394.915	9.077	-7.701	0.29
201	394.818	9.077	-7.711	0.30
202	394.818	9.077	-7.711	0.30
203	394.85	9.077	-7.707	0.30
204	394.85	9.077	-7.707	0.30
205	394.785	9.077	-7.714	0.30
206	394.753	9.077	-7.717	0.31
207	394.753	9.077	-7.717	0.31
208	394.753	9.077	-7.717	0.31
209	394.785	9.077	-7.714	0.30
210	394.688	9.077	-7.724	0.31
211	394.753	9.077	-7.717	0.31
212	394.753	9.077	-7.717	0.31
213	394.818	9.077	-7.711	0.30
214	394.785	9.077	-7.714	0.30
215	394.785	9.077	-7.714	0.30
216	394.655	9.077	-7.727	0.32
217	394.59	9.077	-7.734	0.32
218	394.525	9.077	-7.74	0.33
219	394.623	9.077	-7.73	0.32
220	394.655	9.077	-7.727	0.32
221	394.72	9.077	-7.721	0.31
222	394.72	9.077	-7.721	0.31
223	394.753	9.077	-7.717	0.31
224	394.785	9.077	-7.714	0.30
225	394.753	9.077	-7.717	0.31
226	394.818	9.077	-7.711	0.30
227	394.655	9.077	-7.727	0.32
228	394.785	9.077	-7.714	0.30
229	394.753	9.077	-7.717	0.31
230	394.753	9.077	-7.717	0.31
231	394.785	9.077	-7.714	0.30
232	394.818	9.077	-7.711	0.30
233	394.818	9.077	-7.711	0.30
234	394.818	9.077	-7.711	0.30
235	394.883	9.077	-7.704	0.29
236	394.72	9.077	-7.721	0.31
237	394.72	9.077	-7.721	0.31
238	394.785	9.077	-7.714	0.30
239	394.85	9.077	-7.707	0.30
240	394.785	9.077	-7.714	0.30
241	394.818	9.077	-7.711	0.30
242	394.85	9.077	-7.707	0.30
243	394.85	9.077	-7.707	0.30
244	394.883	9.077	-7.704	0.29
245	394.785	9.077	-7.714	0.30
246	394.753	9.077	-7.717	0.31
247	394.85	9.077	-7.707	0.30
248	394.85	9.077	-7.707	0.30
249	394.85	9.077	-7.707	0.30
250	394.818	9.077	-7.711	0.30
251	394.948	9.077	-7.697	0.29
252	394.818	9.077	-7.711	0.30
253	394.883	9.077	-7.704	0.29
254	394.85	9.077	-7.707	0.30
255	394.688	9.077	-7.724	0.31
256	394.72	9.077	-7.721	0.31
257	394.753	9.077	-7.717	0.31
258	394.818	9.077	-7.711	0.30
259	394.785	9.077	-7.714	0.30
260	394.85	9.077	-7.707	0.30
261	394.85	9.077	-7.707	0.30
262	394.85	9.077	-7.707	0.30
263	394.85	9.077	-7.707	0.30
264	394.72	9.077	-7.721	0.31
265	394.72	9.077	-7.721	0.31
266	394.818	9.077	-7.711	0.30
267	394.72	9.077	-7.721	0.31
268	394.46	9.077	-7.747	0.34
269	394.558	9.077	-7.737	0.33
270	394.72	9.077	-7.721	0.31
271	394.818	9.077	-7.711	0.30
272	394.818	9.077	-7.711	0.30
273	394.72	9.077	-7.721	0.31
274	394.72	9.077	-7.721	0.31
275	394.818	9.077	-7.711	0.30
276	394.818	9.077	-7.711	0.30
277	394.85	9.077	-7.707	0.30
278	394.785	9.077	-7.714	0.30

279	394.883	9.077	-7.704	0.29
280	394.818	9.077	-7.711	0.30
281	394.85	9.077	-7.707	0.30
282	394.85	9.077	-7.707	0.30
283	394.785	9.077	-7.714	0.30
284	394.818	9.077	-7.711	0.30
285	394.818	9.077	-7.711	0.30
286	394.883	9.077	-7.704	0.29
287	394.85	9.077	-7.707	0.30
288	394.883	9.077	-7.704	0.29
289	394.85	9.077	-7.707	0.30
290	394.915	9.077	-7.701	0.29
291	394.883	9.077	-7.704	0.29
292	394.72	9.077	-7.721	0.31
293	394.818	9.077	-7.711	0.30
294	394.85	9.077	-7.707	0.30
295	394.72	9.077	-7.721	0.31
296	394.558	9.077	-7.737	0.33
297	394.558	9.077	-7.737	0.33
298	394.818	9.077	-7.711	0.30
299	394.818	9.077	-7.711	0.30
300	394.493	9.077	-7.744	0.33
301	394.493	9.077	-7.744	0.33
302	394.655	9.077	-7.727	0.32
303	394.688	9.077	-7.724	0.31
304	394.655	9.077	-7.727	0.32
305	394.525	9.077	-7.74	0.33
306	394.623	9.077	-7.73	0.32
307	394.72	9.077	-7.721	0.31
308	394.85	9.077	-7.707	0.30
309	394.59	9.077	-7.734	0.32
310	394.59	9.077	-7.734	0.32
311	394.655	9.077	-7.727	0.32
312	394.753	9.077	-7.717	0.31
313	394.818	9.077	-7.711	0.30
314	394.883	9.077	-7.704	0.29
315	394.85	9.077	-7.707	0.30
316	394.883	9.077	-7.704	0.29
317	394.915	9.077	-7.701	0.29
318	394.85	9.077	-7.707	0.30
319	394.818	9.077	-7.711	0.30
320	396.378	9.077	-7.551	0.14
321	396.541	9.077	-7.535	0.12
322	396.606	9.077	-7.528	0.12
323	396.476	9.077	-7.541	0.13
324	396.541	9.077	-7.535	0.12
325	396.833	9.077	-7.505	0.09
326	396.638	9.077	-7.525	0.11
327	396.671	9.077	-7.522	0.11
328	396.703	9.077	-7.518	0.11
329	396.573	9.077	-7.532	0.12
330	396.703	9.077	-7.518	0.11
331	396.736	9.077	-7.515	0.10
332	396.736	9.077	-7.515	0.10
333	396.736	9.077	-7.515	0.10
334	396.768	9.077	-7.512	0.10
335	396.671	9.077	-7.522	0.11
336	396.736	9.077	-7.515	0.10
337	396.768	9.077	-7.512	0.10
338	396.768	9.077	-7.512	0.10
339	396.768	9.077	-7.512	0.10
340	396.801	9.077	-7.508	0.10
341	396.606	9.077	-7.528	0.12
342	396.541	9.077	-7.535	0.12
343	396.703	9.077	-7.518	0.11
344	396.606	9.077	-7.528	0.12
345	396.671	9.077	-7.522	0.11
346	396.736	9.077	-7.515	0.10
347	396.736	9.077	-7.515	0.10
348	396.768	9.077	-7.512	0.10
349	396.736	9.077	-7.515	0.10
350	396.768	9.077	-7.512	0.10
351	396.736	9.077	-7.515	0.10
352	396.606	9.077	-7.528	0.12
353	396.541	9.077	-7.535	0.12
354	396.606	9.077	-7.528	0.12
355	396.736	9.077	-7.515	0.10
356	396.768	9.077	-7.512	0.10
357	396.801	9.077	-7.508	0.10
358	396.801	9.077	-7.508	0.10
359	396.833	9.077	-7.505	0.09
360	396.833	9.077	-7.505	0.09

TW1 - WELL RECOVERY VS. TIME - KOLLAARD FILE 220996



RECOVERY DATA TW-1

t'	t / t'	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)	Recovery (%)
1	361	397.061	9.077	-7.482	0.07	25%
2	181.0	397.158	9.077	-7.472	0.06	35%
3	121.0	397.321	9.077	-7.455	0.04	54%
4	91.0	397.516	9.077	-7.435	0.02	75%
5	73.0	397.516	9.077	-7.435	0.02	75%
6	61.0	397.581	9.077	-7.429	0.02	82%
7	52.4	397.516	9.077	-7.435	0.02	75%
8	46.0	397.646	9.077	-7.422	0.01	89%
9	41.0	397.581	9.077	-7.429	0.02	82%
10	37.0	397.646	9.077	-7.422	0.01	89%
11	33.7	397.581	9.077	-7.429	0.02	82%
12	31.0	397.581	9.077	-7.429	0.02	82%
13	28.7	397.776	9.077	-7.409	0.00	103%



ATTACHMENT C
WATER QUALITY RESULTS



Environment Testing

Certificate of Analysis

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: 1988079
Date Submitted: 2022-10-14
Date Reported: 2022-10-21
Project: 220996
COC #: 901489

Page 1 of 7

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:

Emma-Dawn Ferguson
2022.10.21 15:58:23
-04'00'

APPROVAL: _____
Emma-Dawn Ferguson, Chemist

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.
Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALLA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <https://directory.cala.ca/>.
Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.
Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.
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. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.



Certificate of Analysis

Environment Testing

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

Report Number: 1988079
 Date Submitted: 2022-10-14
 Date Reported: 2022-10-21
 Project: 220996
 COC #: 901489

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
Nutrients	N-NH3	0.020	mg/L		1656461 Water
	Total Kjeldahl Nitrogen	0.100	mg/L		2022-10-14 TW1-3 hrs
Subcontract	Tannin & Lignin	0.1	mg/L		
					0.159 0.508 1.0

* = Guideline Exceedence

Guideline = ODWSOG

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

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



Environment Testing

Certificate of Analysis

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

Report Number: 1988079
Date Submitted: 2022-10-14
Date Reported: 2022-10-21
Project: 220996
COC #: 901489

QC Summary

Table with columns: Analyte, Analysis/Extraction Date, Blank, QC % Rec, QC Limits. Rows include Escherichia Coli, Heterotrophic Plate Count, Total Coliforms, Turbidity, Iron, Manganese, N-NO2, N-NO3.

* = Guideline Exceedence

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

Guideline = ODWSOG

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



Environment Testing

Certificate of Analysis

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

Report Number: 1988079
Date Submitted: 2022-10-14
Date Reported: 2022-10-21
Project: 220996
COC #: 901489

Invoice to: Kollaard Associates Inc.

QC Summary

Analyte	Blank	QC % Rec	QC Limits
SO4	<1 mg/L	95	90-110
Run No 431504 Method C SM2120C	Analysis/Extraction Date 2022-10-18	Analyst ACG	
Colour (True)	<2 TCU	100	90-110
Run No 431520 Method M SM3120B-3500C	Analysis/Extraction Date 2022-10-18	Analyst Z S	
Calcium	<1 mg/L	104	90-110
Potassium	<1 mg/L	110	87-113
Magnesium	<1 mg/L	102	76-124
Sodium	<1 mg/L	107	82-118
Run No 431556 Method SM 4110	Analysis/Extraction Date 2022-10-19	Analyst AaN	
Chloride	<5 mg/L		90-110
Run No 431558 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2022-10-18	Analyst ACG	
Alkalinity (CaCO3)	<5 mg/L	98	90-110
Conductivity	<5 uS/cm	100	90-110
F	<0.10 mg/L	104	90-110
pH		99	90-110

* = Guideline Exceedence

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

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



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Report Number: 1988079
Date Submitted: 2022-10-14
Date Reported: 2022-10-21
Project: 220996
COC #: 901489

Attention: Ms. Colleen Vermeersch
PO#: Kollaard Associates Inc.
Invoice to:

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 431595 Method EPA 350.1	Analysis/Extraction Date 2022-10-19	Analyst SKH	
N-NH3	<0.020 mg/L	111	80-120
Run No 431627 Method C SM5310C	Analysis/Extraction Date 2022-10-18	Analyst ACG	
DOC	<0.5 mg/L	102	84-116
Run No 431628 Method EPA 351.2	Analysis/Extraction Date 2022-10-19	Analyst ML	
Total Kjeldahl Nitrogen	<0.100 mg/L	110	70-130
Run No 431652 Method C SM2340B	Analysis/Extraction Date 2022-10-20	Analyst AET	
Hardness as CaCO3 Ion Balance TDS (COND - CALC)			
Run No 431683 Method SUBCONTRACT-A	Analysis/Extraction Date 2022-10-19	Analyst AET	
Tannin & Lignin	<0.10 mg/L	102	
Run No 431738 Method SM5530D/EPA420.2	Analysis/Extraction Date 2022-10-21	Analyst IP	

* = Guideline Exceedence

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

Guideline = ODWSOG

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



Environment Testing

Certificate of Analysis

Client: Kollaard Associates Inc.
210 Prescott St., Box 189
Kemptville, ON
K0G 1J0
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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Phenols	<0.001 mg/L	104	50-120

* = Guideline Exceedence

Guideline = ODWSOG

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

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

Ryznar Stability Index

$$RSI = 2(pH_s) - pH$$

RSI << 6 → the scale tendency increases as the index decreases

RSI >> 7 → the calcium carbonate formation probably does not lead to a protective corrosion inhibitor film

RSI >> 8 → mild steel corrosion becomes an increasing problem

Langelier Saturation Index

$$LSI = pH - pH_s$$

If LSI is negative → no potential to scale, the water will dissolve $CaCO_3$

If LSI is positive → scale can form and $CaCO_3$ precipitation may occur

If LSI is close to zero → borderline scale potential, water quality or temperature change or evaporation could change the index

where pH measured from sample

pH_s = pH at saturation in calcite or calcium carbonate

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

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

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

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

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

	TW1-3hr	TW1-6hr
pH	7.45	7.55
hardness [mg/l as $CaCO_3$]	417	420
Alkalinity [mg/l as $CaCO_3$]	304	307
total dissolved solids [mg/l]	607	610
temperature ($^{\circ}C$)	11.3	12.1
→→ RSI	6.81	6.67
→→ LSI	0.32	0.44