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engineering limited
CONSULTING ENGINEERS • INGENIEURS CONSEILS
GAËTAN H. LASCELLES ING. P.ENG.
MANON C. RODRIGUE ING. P.ENG.

REÇU
18 MARS 2005
CITÉ CLARENCE-ROCKLAND

04-315
March 17, 2005

South Nation Conservation
15 Union Street
Berwick, Ontario
K0C 1G0

REÇU
21 MARS 2005
AMÉNAGEMENT DU TERRITOIRE

Attention: Sandra Mancini, Water Resources Engineer

Dear Ms. Mancini:

Re: Hydrogeological Study (Ronald Rochon),
Part Lot D, Concession 5, Part 1, Plan 50R-1439, City of Clarence-Rockland

The following report was prepared in response to the letter from the South Nation Conservation dated February 21, 2005.

1. Water well testing:

The site is vacant and no wells are constructed at the site. Wells exist on the adjacent lots to the proposed severance. In the area of the severance the existing wells located at 2029 Clark Road and 2061 Clark Road were sampled. They are located within 200 feet of the proposed lot severance and therefore can represent the proposed well conditions at the site. The sampled wells are described as follows:

2029 Clark Road: drilled well owned by Mr.. Rochon located at GPS coordinates referencing location 5044148mNorth and 481723m East. According to the water well record the well is 6" diameter steel casing built in 1981 by Gilles Bourgeois Well Drilling Ltd . The ground elevation at the site is 75.0 masl (OBM maps) and the well was drilled to a depth of 18.3 m from ground level to the grey bedrock to elevation 56.7 m. Water well record attached.

2061 Clark Road: drilled well owned by Denise Corbeil located at GPS location 5044169m North and 481898m East. According to the water well record the well is 6" diameter steel casing built in 1991 by D&R Water Well Drilling. The ground elevation at the site is 85.0 masl (OBM maps) and the well was drilled to a depth of 25.6 m in 1991 and redug to a depth of 42.7 m from ground level to the grey bedrock to elevation 42.3 m. Water well record attached.

From the review of other water wells in the area, water was found at elevations 40 masl to 60 masl. The two wells have been sampled and they are both adequate for drinking water purposes. They are both representative of water that can be found at the site because of their proximity to the site.

870 JAMES ST., HAWKESBURY, ONTARIO K6A 2W8 Tel.: (613) 632-0241 Fax: (613) 632-1669 e-mail: lascelles@bellnet.ca

The results from the water well testing performed in November 2002 at 2029 Clark Road and on January 10, 2005 at 2061 Clark Road are enclosed.

The parameters analysed for the well at 2029 Clark road are within the guidelines except for iron and manganese which are higher than the aesthetic objectives. The sodium level was 22 mg/L while a level exceeding 20 mg/L must be reported to the local health unit medical officer. The turbidity and hardness levels are also higher than the norm which is related to the iron and manganese levels in the water. The water quality is acceptable as drinking water and water treatment is available for the treatment and removal of manganese and iron from the water. Samples were obtained bypassing the water softener installation.

The parameters analysed for the well at 2061 Clark road are within the guidelines except for TDS and turbidity which are slightly than the aesthetic objectives and are related to the iron and manganese levels. The sodium level in that well was 20 mg/L which is at the limit. The hardness levels are also higher than the operational guidelines and is related to the calcium levels in the water which are 109 mg/L. The water quality is acceptable as drinking water and water treatment is available for the treatment and removal of manganese and iron from the water and for the removal of TDS. Hardness can be treated with a water softener. The test at 2061 Clark Road was obtained from the tap at the sink with bypass of the filter turned on. The results of the bacterial analysis showed that the well water at 2061 Clark Road had ten total coliforms per 100 ml and overgrowth of background bacteria. The owner was advised and the well was resampled at the tap in the basement prior to the filter installation and forwarded to the Eastern Ontario Health Unit for analysis. The results are attached and show no significant bacterial contamination with 0 Total Coliform per 100 ml and 0 E.coli per 100 ml. The owner was further informed to change the filter. Nitrates levels in the well were 1.29 mg/L may be attributable to the recent drilling activities on the well which occurred in late September 2004.

2. Nitrate Assessment:

The diluted concentration of nitrate at the site can be calculated by simple dilution as follows:

C diluted = Mass nitrates / Volume for dilution where
Mass nitrates = number houses x C effluent x V effluent
= 1 house x 40 mg/L x 1000 L/day/house
= 40000 mg as NO_3
and V total = V infiltration + V effluent
Since V Infiltration = A x Infiltration
And A = 3483.9m^2 ,

Infiltration for a flat site with uplands sand group A soil with water surplus for the Ottawa Airport from Environment Canada :
of which:- 160 m^2 impervious per lot at 0 infiltration
- 400 m^2 urban lawns with water surplus 372.2 mm/year x infiltration factor of (flat land 0.3 + open sandy loam 0.4 + cultivated land 0.1) = 0.8 results in infiltration of 0.30 m/year
- 2923.9 m^2 of forest with water surplus 372.2 mm/year x infiltration factor of (flat land 0.3 + open sandy loam 0.4 + woodland 0.2) = 0.9 results in infiltration of 0.335 m/year

Therefore V Infiltration $= 160 \times 0 + 400 \times 0.30 + 2923.9 \times 0.335 = 1099.5\ m^3/yr = 3.01\ m^3/day$
V total $= 3.01 + 1 = 4.01\ m^3/day$

Then the Nitrate concentration is calculated as
C d = Mn/ Vt
= 40000 mg as NO_3 / (4.01 m^3/day x 1000 L/m^3)
= 9.975 mg/L < 10.0 mg/L

The site is adequate for the dilution, with infiltration water only, to accept the effluent from one three-bedroom house.

6. Well construction

The water well construction must be at depth exceeding 45 feet with a drilled well sealed for a minimum depth of 25 feet and drilled to meet the ministry of the environment's guidelines. New wells will be disinfected prior to use. Minimum steel casing length for future well shall extend into the bedrock interface to a minimum depth of 25 feet (8 m) below ground.

Bedrock aquifer wells shall be constructed with proper construction techniques as per regulation 903 with a watertight casing extending more than ten feet into the bedrock formation and the capped casing extending 0.3 m above ground level. The well shall be constructed in a manner as to prevent the accumulation of any runoff to the area surrounding the well. Drilled well shall be located at a minimum distance of 15 m from septic system installation and preferably upgradient from the septic system installations.

Conclusions:

We can therefore conclude that the nature of the soil and the dimensions of the detached and retained lots can accommodate the proposed land use and that development shall be made on the use of drilled well with casing extending into the bedrock interface.

We trust the enclosed is to your satisfaction and we remain,

Yours truly,

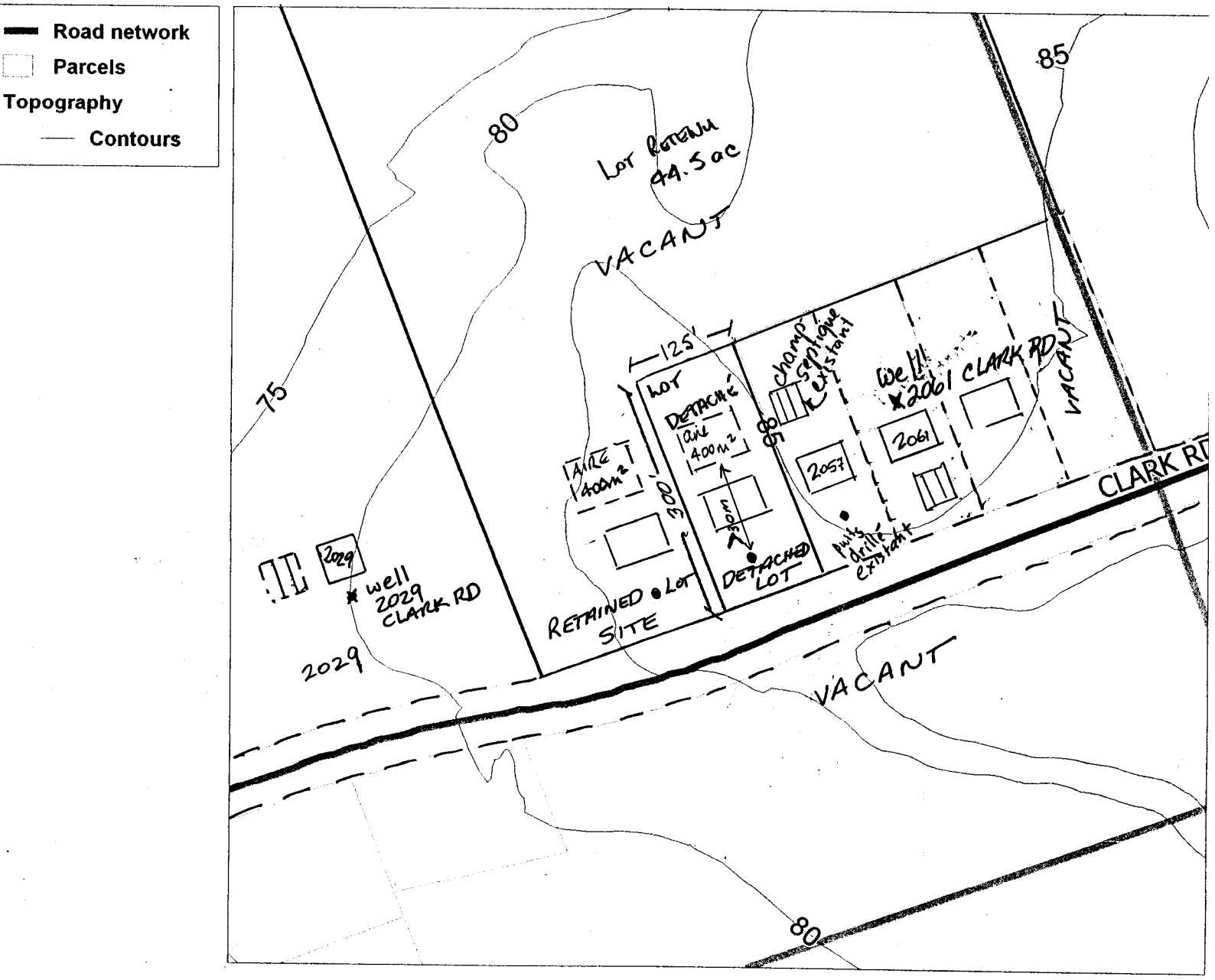
L'ingénierie
LASCELLES
engineering limited

per: _____
Manon C. Rodrigue, P.Eng.

LICENCED PROFESSIONAL ENGINEER
M.C.M. RODRIGUE
PROVINCE OF ONTARIO

encl.
cc: Ronald Rochon
François Loiselle, Director of Porperty Management, City of Clarence-Rockland

...ited Cou...ies of Presc...tt & Russell



PLAN DÉMONTRANT
DEVELOPPEMENT POSSIBLE.

Ontario

000756735

m Care
ns de longue durée
es laboratoires

Date Received/Reçu le

Laboratory No./N° du laboratoire

004244 MAR17'05 10:44

Bacteriological . . ater for Private Citizen, SINGLE HOUSEHOLD ONLY

Analyse bactériologique de l'eau potable – Particuliers, MÉNAGES UNIFAMILIAUX SEULEMENT

Your name and return address/Votre nom et adresse de retour

Name/Nom: MANON RODRIGUE	
Street, R.R., Box No./Rue, R.R., casier postal: 870 JAMES ST.	
City, Town/Ville: HAWKESBURY	
Province: ON	Postal Code/Code postal: K6A 2W8

Location of Water Source/Emplacement de la source d'eau

Street address/Adresse municipale: 2061 CLARK RD	
or Lot, Concession/ou lot, concession: LOT 0, CONC. 15	
Township/Municipality/Canton, municipalité: CLARENCE-ROCKLAND	Emergency Locator #/ N° du localisateur d'urgence *: 2061
County/Comté *: PRESCOTT & RUSSELL ON	Postal Code/Code postal *:

Date collected/Date du prélèvement	Health Unit #/N° du bureau de santé *	Your Daytime Telephone #/Votre n° tél. le jour
yyyy/aaaa mm/mm dd/jj: 2005/03/10	2258	(613)6321-1012411

☐ I will pick up report at the laboratory./Je viendrai chercher le rapport au laboratoire.

☒ Please mail to my mailing address above./Veuillez le faire parvenir à mon adresse postale indiquée ci-dessus.

Instructions – Please read instructions page carefully before sampling.
Directives – Veuillez lire attentivement les directives fournies avant de prélever votre échantillon.

WATER WILL NOT BE TESTED IF THE SHADED AREAS OF THIS FORM ARE NOT COMPLETELY AND ACCURATELY FILLED IN./
NOUS N'ANALYSERONS PAS L'ÉCHANTILLON D'EAU SI LES PARTIES OMBRÉES DE LA FORMULE N'ONT PAS ÉTÉ REMPLIES EN ENTIER ET DE FAÇON EXACTE.

* **Please assist the laboratory if possible by also providing this information. A List of the 4-digit Health Unit numbers is on the previous page./** Ces renseignements faciliteront le travail du laboratoire. La liste des numéros à quatre chiffres des bureaux de santé se trouve à la page précédente.

For Laboratory Use Only/Réservé à l'usage du laboratoire

Interpretation for this water sample/Interprétation de cet échantillon d'eau

The water sample was tested for the presence of both Total Coliform and *E.coli* bacterial indicators of contamination.
L'analyse de l' échantillon d'eau visait à déceler la présence de coliformes totaux et de colibacilles (*E.coli*), indicateurs de contamination.

☑ **NO SIGNIFICANT EVIDENCE OF BACTERIAL CONTAMINATION**
(3 consecutive samples, taken 1 to 3 weeks apart, with this designation are needed to determine the stability of the water supply).
AUCUNE PREUVE DE CONTAMINATION BACTÉRIENNE SIGNIFICATIVE
(cette désignation doit être affectée à 3 échantillons consécutifs, dont le prélèvement aura été espacé de 1 à 3 semaines, pour que la source d'approvisionnement en eau soit jugée stable).

☐ **SIGNIFICANT EVIDENCE OF BACTERIAL CONTAMINATION May be unsafe to drink.** ***(Consult local health unit for information as soon as possible).***
PREUVE DE CONTAMINATION BACTÉRIENNE SIGNIFICATIVE Peut être non potable. ***(Consultez le bureau de santé local le plus tôt possible pour plus de détails).***

☐ **UNSAFE TO DRINK Evidence of sewage contamination.** ***Consult local health unit for appropriate action as soon as possible***
EAU NON POTABLE Preuve de contamination par les égouts. ***Consultez le bureau de santé local le plus tôt possible pour de plus amples renseignements sur les mesures à prendre.***

Date Reported Stamp/
Date du rapport

OTTAWA PHL
2380 ST LAURENT BLVD
OTTAWA, ONTARIO K1G 6C8
TEL: (613) 736-8600

MAR 14 2005

Total Coliform per 100 ml/Coliformes totaux par 100 ml	*E.coli* per/par 100 ml
0	0
Date Read/Analyse effectuée le	**Checked by/Vérifié par**
MAR 14 2005	✓ MR

RECEIVED MAR 17 2005

RECEIVED

3743-44 (01/11)

ACCUTEST LABORATORIES LTD

REPORT OF ANALYSIS

Client: Lascelles Engineering Ltd.
870 James St
Hawkesbury, ON
K6A 2W8
Attention: Ms. Manon C. Rodrigue

2061 Clark Rd

Report Number: 2500419
Date: 2005-01-14
Date Submitted: 2005-01-10

Project: L04-315

P.O. Number:
Matrix: Water

								GUIDELINE		
LAB ID:		363718						MOE REG. 170/03		
Sample Date:		2005-01-10								
Sample ID:		L04-315-Well 1								
PARAMETER	UNITS	MDL						TYPE	LIMIT	UNITS
Alkalinity as CaCO3	mg/L	5	319					OG	500	mg/L
Chloride	mg/L	1	58					AO	250	mg/L
Colour	TCU	2	2					AO	5	TCU
Conductivity	uS/cm	5	836							TCU
Dissolved Organic Carbon	mg/L	0.5	1.5					AO	5	mg/L
Fluoride	mg/L	0.10	0.25					MAC	1.5	mg/L
Hydrogen Sulphide	mg/L	0.01	<0.01					AO	0.05	mg/L
N-NH3 (Ammonia)	mg/L	0.02	0.20							mg/L
N-NO2 (Nitrite)	mg/L	0.10	<0.10					MAC	1.0	mg/L
N-NO3 (Nitrate)	mg/L	0.10	1.29					MAC	10.0	mg/L
pH			7.47					AO	6.5-8.5	
Phenols	mg/L	0.001	<0.001							
Sulphate	mg/L	1	37					AO	500	mg/L
Tannin & Lignin	mg/L	0.1	<0.1							mg/L
TDS (COND - CALC)	mg/L	5	543					AO	500	mg/L
Total Kjeldahl Nitrogen	mg/L	0.05	0.32							mg/L
Turbidity	NTU	0.1	1.4					AO	1.0	NTU
Hardness as CaCO3	mg/L	1	396					OG	100	mg/L
Ion Balance		0.01	0.99							mg/L
Calcium	mg/L	1	109							mg/L
Magnesium	mg/L	1	30							mg/L
Potassium	mg/L	1	2							mg/L
Sodium	mg/L	2	20					AO	20	mg/L
Iron	mg/L	0.01	0.16					AO	0.3	mg/L
Manganese	mg/L	0.01	0.01					AO	0.05	mg/L

MDL = Method Detection Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

RECEIVED JAN 14 2005

APPROVAL

Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Client: Lascelles Engineering Ltd.
870 James St.
Hawkesbury, ON
K6A 2W8
Attention: Ms. Manon C. Rodrigue

Report Number: 2500415
Date: 2005-01-12
Date Submitted: 2005-01-10

Project: L04-315

P.O. Number:
Matrix: Water

	LAB ID:	363709					GUIDELINE		
	Sample Date:	2005-01-10					MOE REG. 170/03		
	Sample ID:	L04-315-Well 1							
PARAMETER	UNITS	MDL					TYPE	LIMIT	UNITS
Total Coliforms	ct/100mL		10				MAC	0	ct/1[redacted]
Escherichia Coli	ct/100mL		0				MAC	0	ct/100mL
Heterotrophic Plate Count	ct/1mL		>500				MAC	500	ct/1mL
Faecal Coliforms	ct/100mL		0				MAC	0	ct/100mL
Faecal Streptococcus	ct/100mL		2						ct/100mL

MDL = Method Detection Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration
Comment:

APPROVAL: Krista Quantrill
Microbiology Analyst

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

2061 CLARK ROAD.

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC.	LOT
Prescott - Russell	Clarence	Conc. 5	10

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
PAT - mar - C, H.	R.d. - Clark	DAY 16 MO. 05 YR. 91

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Clay	Gravel	Soft	0	10
Grey	Gravel	Sand	Soft	10	12
Grey	Shale		Hard	12	22

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
20	☒ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	1.88	0	20
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		20	22
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

SLOT NO.	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD, PACKER, ETC.)
0	20	Cement Grout

PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☒ BAILER	15 GPM	1 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☐ PUMPING ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
12 FEET	16 FEET	16 FEET	16 FEET	16 FEET	16 FEET

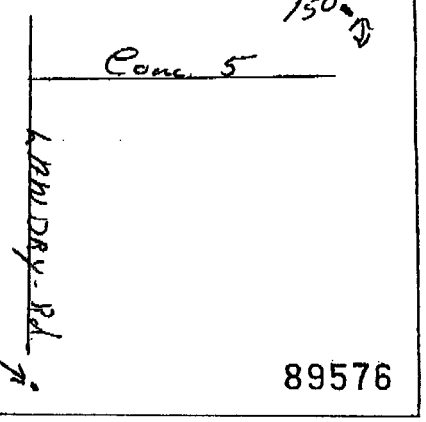
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	22 FEET	☒ CLEAR ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☒ SHALLOW ☐ DEEP	FEET	5 GPM

FINAL STATUS OF WELL	☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL	☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED ☐ DEWATERING
WATER USE	☒ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER	☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF CONSTRUCTION	☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION	☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

LOCATION OF WELL

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



89576

DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
D & R - WATER - Well - Drilling	6006
ADDRESS: St-Albert, ontario	
NAME OF WELL TECHNICIAN	WELL TECHNICIAN'S LICENCE NUMBER
Louis - Desnoyers	7-0625
SIGNATURE OF TECHNICIAN/CONTRACTOR	SUBMISSION DATE: DAY 25 MO. 05 YR. 91

OFFICE USE ONLY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON, BLOCK, TRACT, SURVEY, ETC.	LOT
Prescott-Russell	Clarence.	Conc. 5	
OWNER (SURNAME FIRST)	**ADDRESS**	**DATE COMPLETED**	
PAT-MARC- C.H.	Clark-Rd. Clarence Creek	DAY 20 MO 06 YR 91	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Black	SHALE	Rock.	Hard.	22	84

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
80	☒ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE ☐ PLASTIC		22	84
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

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

PLUGGING & SEALING RECORD

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

PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☒ BAILER	4 GPM	HOURS MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☐ PUMPING ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
10 FEET	78 FEET	28 FEET	28 FEET	28 FEET	28 FEET

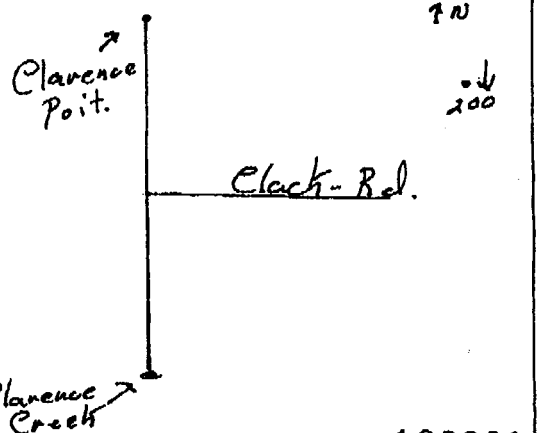
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	84 FEET	☒ CLEAR ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	80 FEET	3 GPM

FINAL STATUS OF WELL	☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL	☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED ☐ DEWATERING
WATER USE	☒ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER	☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF CONSTRUCTION	☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION	☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING ☐ DIGGING ☐ OTHER

LOCATION OF WELL

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



DRILLERS REMARKS

100202

CONTRACTOR

NAME OF WELL CONTRACTOR	WELL CONTRACTOR'S LICENCE NUMBER
D & R. WATER well Drilling	6006
ADDRESS	
St-Albert ontario	
NAME OF WELL TECHNICIAN	**WELL TECHNICIAN'S LICENCE NUMBER**
Kenneth Desnoyers	T-0625
SIGNATURE OF TECHNICIAN/CONTRACTOR	**SUBMISSION DATE**
David [illegible]	DAY 20 MO 06 YR 91

OFFICE USE ONLY

ACCUTEST LABORATORIES LTD

REPORT OF ANALYSIS

Client: Lasceiles Engineering Ltd.

ATT: Manon C. Rodrigue

Report Number: 2217030
Date: 2002-12-06
Date Submitted: 2002-11-29

Project: L02-380

2029 Clark Road.

P.O. Number:
Matrix: Water

	LAB ID:	221228
	Sample Date:	2002-11-28
	Sample ID:	L02-380

PARAMETER	UNITS	MDL	
Alkalinity as CaCO3	mg/L	5	267
Ca	mg/L	1	61
Cl	mg/L	1	42
Conductivity	uS/cm	5	637
Colour	TCU	2	2
DOC	mg/L	0.5	0.8
Escherichia Coli	ct/100mL		0
F	mg/L	0.10	0.20
Faecal Coliforms	ct/100mL		0
Faecal Streptococcus	ct/100mL		0
Fe	mg/L	0.01	0.48
H2S	mg/L	0.01	0.01
Hardness as CaCO3	mg/L	1	259
Ion Balance		0.01	0.90
Mg	mg/L	1	26
Mn	mg/L	0.005	0.138
N-NH3	mg/L	0.02	0.12
N-NO2	mg/L	0.10	<0.10
N-NO3	mg/L	0.10	<0.10
pH			7.62
Phenols	mg/L	0.001	<0.001
K	mg/L	1	5
Na	mg/L	2	22
Heterotrophic Plate Count	ct/1mL		7
SO4	mg/L	1	20
Tannin & Lignin	mg/L	0.1	<0.1
Total Coliforms	ct/100mL		1
Total Kjeldahl Nitrogen	mg/L	0.05	0.22
Turbidity	NTU	0.1	6.4
TDS (COND - CALC)	mg/L	5	414

18/12/02 mL

MDL = Method Detection Limit INC = Incomplete Method references available upon request.

Comment:

APPROVAL: _____

Ewan McRobbie
Inorganic Lab Supervisor

8-146 Colonnade Road, Ottawa, ON, K2E 7Y1

608 Norris Court, Kingston, ON, K7P 2R9

Ministry of the Environment
Ontario

WATER WELL RECORD

2029 CLARK RD

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	LOT, CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Russell	Clarence	C	D

OWNER (SURNAME FIRST): Buchan, Ronald
ADDRESS: RR#1 Rockland Ont.
DATE COMPLETED: DAY 23 MO 6 YR 81

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
red	clay		hard	0	22
grey	rock		"	22	60

WATER RECORD

WATER FOUND AT FEET	KIND OF WATER
55	☑ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL
	☑ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FEET FROM	DEPTH FEET TO
6 1/4	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.188	0	22
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE		22	60
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH SET AT FEET	

PLUGGING & SEALING RECORD

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

PUMPING TEST

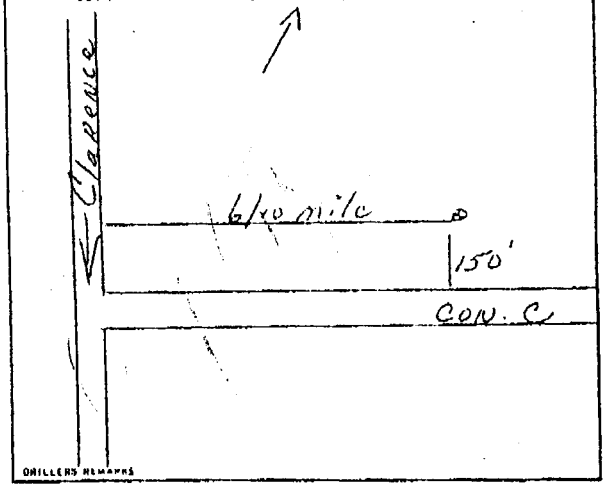
PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☑ BAILER	40 GPM	1 HOURS ✓ MIN.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING PUMPING / RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
12 FEET	25 FEET		12 FEET	15 FEET	20 FEET	25 FEET

IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	25 FEET	☐ CLEAN ☑ CLOUDY
RECOMMENDED PUMP TYPE: ☑ SHALLOW ☐ DEEP	RECOMMENDED PUMP SETTING: 25 FEET	RECOMMENDED PUMPING RATE: 5 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL	☑ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED
WATER USE	☑ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER ☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF DRILLING	☑ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Burgess, G. Bros. — LICENCE NUMBER: 1117
ADDRESS: R. Alfred Ont.
NAME OF DRILLER OR BORER: Same — LICENCE NUMBER: 1117
SIGNATURE OF CONTRACTOR: G. Burgess — SUBMISSION DATE: DAY 23 MO 6 YR 81

OWNER'S COPY

OFFICE USE ONLY

D-10-281

ingénierie
L·A·S·C·E·L·L·E·S
engineering limited

CONSULTING ENGINEERS • INGENIEURS CONSEILS

GAËTAN H. LASCELLES ING. P. ENG.
MANON C. RODRIGUE ING. P. ENG.

L04-315 ✓
February 4, 2005

REÇU
07 FEV. 2005
CITÉ CLARENCE-ROCKLAND

City of Clarence-Rockland
1560 rue Laurier
Rockland, Ontario K4K 1P7

Attention: François Loiselle, Director of Property Management

Dear Mr. Loiselle:

Re: Hydrogeological Study (Ronald Rochon),
Part Lot D, Concession 5, Part 1, Plan 50R-1439, City of Clarence-Rockland

The following report was prepared in response to the letter from the South Nation Conservation dated December 6, 2004.

1. Nitrate Assessment:

The nitrate present in the drilled well located at 2061 Clark Road was 1.29 mg/L while it was not detected in the drilled well located at 2029 Clark Road. This is below the allowable 10 mg/L drinking water standard. No nitrate levels could be measured in the overburden as no groundwater was encountered and the ditches were dry at the time of our visit.

The diluted concentration of nitrate at the site can be calculated by simple dilution as follows:

C diluted = Mass nitrates / Volume for dilution where
Mass nitrates = number houses x C effluent x V effluent
= 1 house x 40 mg/L x 1000 L/day/house
= 40000 mg as NO_3
and V total = V infiltration + V effluent

Since V Infiltration = A x Infiltration
And A = 3483.864 m^2 ,

Infiltration for a flat site with uplands sand group A soil:
of which: - 200 m^2 impervious per lot at 0 infiltration
- 800 m^2 urban lawns with water surplus of 940 mm/year - evapotranspiration of 515 m/year = 425 mm/year x infiltration factor of (flat land 0.3 + open sandy loam 0.4 + cultivated land 0.1) = 0.8 results in infiltration of 0.340 m/year

870 JAMES ST., HAWKESBURY, ONTARIO K6A 2W8 Tel.: (613) 632-0241 Fax: (613) 632-1669 e-mail: lascelles@bellnet.ca

- 2483.864 m^2 of forest with water surplus of 940 mm/year - evapotranspiration of 546 m/year = 394 mm/year x infiltration factor of (flat land 0.3 + open sandy loam 0.4 + woodland 0.2) = 0.9 results in infiltration of 0.354 m/year

Therefore V Infiltration = 200 x 0 + 800 x 0.340 + 2483.864 x 0.354 =1151.3 m^3/yr
= 3.154 m^3/day
V total = 3.154 + 1 = 4.154 m^3/day

Then the Nitrate concentration is calculated as

C d = Mn/ Vt
= 40000 mg as NO_3 / (4.154 m^3/day x 1000 L/m^3)
= 9.63 mg/L < 10.0 mg/L

The site is adequate for the dilution ,with infiltration water only, to accept the effluent from one house.

2. Downgradient Impact:.

The land immediately to the west is owned by Mr. Rochon and so is the land immediately to the south. Overburden groundwater flow is towards the Ottawa river and the wooded area which separates the proposed site development and the residential development located along County Road 17 north of the site.

3. Site Hydrogeology:

The type of bedrock at the site is Middle Ordovician Gull River Formation. The Middle Ordovician Gull Rver formation is described as a limestone and silty dolostone , interbedded light to dark grey to brownish gray lithographic to finely crystalline limestone and light greenish grey to dark brownish grey silty dolostone with shaly partings.

According to the MOE water well logs, the limestone bedrock is found at depths of up to 6 metres below ground level. According to the test pits dug on site and to the soil map of Russell County the soil at the site is a fine sand identified as Uplands fine sand now described as a St-Thomas sand.

The groundwater flow direction, according to the water well data and the maps from the Urban Geology of the National Capital Region is towards the Ottawa river drainage basin. The water supply aquifer at the site is the bedrock aquifer consisting of the Gull River Formation

The wells in the vicinity of the site as shown on the attached REIS website location map obtain their water from the bedrock aquifer at elevations 30 to 43 masl or 60 to 70 masl. The water wells tests result show that these two aquifers are very similar in chemistry with the lower level aquifer having lower iron and manganese levels.

4. Surrounding Land Use

The surrounding land use within 500 metres is residential and there is trout farm located south east of the site and the land use is described as rural. No sand pit, golf course or landfills are located within 500 metres of the proposed development.

5. Well water quality

The previous report described the well owned by Mr. Rochon and located at 2029 Clark road and the well owned by Mr. Jean-Louis Hotte located at 2057 Clark Road. Mr.Rochon's well was drilled in 1981 by Gilles Bourgeois to a depth of 60 feet (18 m) and a pumping rate of 5 gpm was recommended. The pump is set at 25 feet (8m below ground, at geodetic elevation 67m). The well owned by Mr. Hotte was drilled in 1990 by D.&R. Drilling to a depth of 45 feet (13.7 m) in the bedrock (elevation 71 m) and the pump was set at 30 feet (elevation 75.8) and a pump rate of 5 gpm was recommended. The neighbouring wells are drilled wells to depths varying from 35 to 322 feet. According to the water well records, the bedrock is at a depth of 16 to 20 feet. The well neighbouring well located at 2061 Clark Road, owned by Denise Corbeil was initially drilled to a depth of 40 feet (12.2 m, elevation 72) when built in 1992 and was recently drilled a further 100 feet to a depth of 140 feet (42.5 metres, elevation 42.5) by D&R drilling. The owner had not yet received their water well record from the driller. Sample locations and their GPS coordinates are shown on the attached REIS map.

The results from the water well testing performed in November 2002 at 2029 Clark Road were enclosed in the study. We have also sampled and tested the well located at 2061 Clark road in order to obtain a sample from a deeper part of the bedrock aquifer. The water sample was collected from the tap at 2061 Clark Road on January 10, 2005 bypassing the 5 micron big blue filter and immediately submitted to Accutest Laboratories for testing. A copy of the results is attached. The results of the bacterial analysis showed that the well water had ten total coliform per 100 ml and overgrowth of background bacteria. The owner was advised and the well is being resampled and sent to the Eastern Ontario Health Unit for bacterial analysis.

The parameters analysed for the well at 2029 Clark road are within the guidelines except for iron and manganese which are higher than the aesthetic objectives. The sodium level was 22 mg/L while a level exceeding 20 mg/L must be reported to the local health unit medical officer. The turbidity and hardness levels are also higher than the norm which is related to the iron and manganese levels in the water. The water quality is acceptable as drinking water and water treatment is available for the treatment and removal of manganese and iron from the water.

The parameters analysed for the well at 2061 Clark road are within the guidelines except for TDS and turbidity which are slightly than the aesthetic objectives and are related to the iron and manganese levels. The sodium level in that well was 20 mg/L which is at the limit. The hardness levels are also higher than the operational guidelines and is related to the calcium levels in the water which are 109 mg/L. The water quality is acceptable as drinking water and water treatment is

available for the treatment and removal of manganese and iron from the water and for the removal of TDS. Hardness can be treated with a water softener.

6. Well construction

The water well construction must be at depth exceeding 45 feet with a drilled well sealed for a minimum depth of 25 feet and drilled to meet the ministry of the environment's guidelines. New wells will be disinfected prior to use. Minimum steel casing length for future well shall extend into the bedrock interface to a minimum depth of 25 feet (8 m) below ground.

Bedrock aquifer wells shall be constructed with proper construction techniques asper regulation 903 with a watertight casing extending more than ten feet into the bedrock formation and the capped casing extending 0.3 m above ground level. The well shall be constructed in a manner as to prevent the accumulation of any runoff to the area surrounding the well. Drilled well shall be located at a minimum distance of 15 m from septic system installation and preferably upgradient from the septic system installations.

Conclusions:

We can therefore conclude that the nature of the soil and the dimensions of the detached and retained lots can accommodate the proposed land use and that development shall be made on the use of drilled well with casing extending into the bedrock interface.

We trust the enclosed is to your satisfaction and we remain,

Yours truly,

L'ingénierie
LASCELLES
engineering limited

per: _____
Manon C. Rodrigue, P.Eng.

encl.
cc: Ronald Rochon
Sandra Mancini, South Nation Conservation

Client: Lascelles Engineering Ltd.
870 James St
Hawkesbury, ON
K6A 2W8
Attention: Ms. Manon C. Rodrigue

2061 ClarkRd

Report Number: 2500419
Date: 2005-01-14
Date Submitted: 2005-01-10

Project: L04-315

P.O. Number:
Matrix: Water

								GUIDELINE		
			LAB ID:	363718						
			Sample Date:	2005-01-10						
			Sample ID:	L04-315-Well 1				MOE REG. 170/03		
PARAMETER	UNITS	MDL						TYPE	LIMIT	UNITS
Alkalinity as CaCO3	mg/L	5	319					OG	500	mg/L
Chloride	mg/L	1	58					AO	250	mg/L
Colour	TCU	2	2					AO	5	TCU
Conductivity	uS/cm	5	836							TCU
Dissolved Organic Carbon	mg/L	0.5	1.5					AO	5	mg/L
Fluoride	mg/L	0.10	0.25					MAC	1.5	mg/L
Hydrogen Sulphide	mg/L	0.01	<0.01					AO	0.05	mg/L
N-NH3 (Ammonia)	mg/L	0.02	0.20							mg/L
N-NO2 (Nitrite)	mg/L	0.10	<0.10					MAC	1.0	mg/L
N-NO3 (Nitrate)	mg/L	0.10	1.29					MAC	10.0	mg/L
pH			7.47					AO	6.5-8.5	
Phenols	mg/L	0.001	<0.001							
Sulphate	mg/L	1	37					AO	500	mg/L
Tannin & Lignin	mg/L	0.1	<0.1							mg/L
TDS (COND - CALC)	mg/L	5	543					AO	500	mg/L
Total Kjeldahl Nitrogen	mg/L	0.05	0.32							mg/L
Turbidity	NTU	0.1	1.4					AO	1.0	NTU
Hardness as CaCO3	mg/L	1	396					OG	100	mg/L
Ion Balance		0.01	0.99							mg/L
Calcium	mg/L	1	109							mg/L
Magnesium	mg/L	1	30							mg/L
Potassium	mg/L	1	2							mg/L
Sodium	mg/L	2	20					AO	20	mg/L
Iron	mg/L	0.01	0.16					AO	0.3	mg/L
Manganese	mg/L	0.01	0.01					AO	0.05	mg/L

MDL = Method Detection Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

RECEIVED JAN 14 2005

APPROVAL

Ewan McRobbie
Inorganic Lab Supervisor

REPORT OF ANALYSIS

Client: Lascelles Engineering Ltd.
870 James St.
Hawkesbury, ON
K6A 2W8
Attention: Ms. Manon C. Rodrigue

Report Number: 2500415
Date: 2005-01-12
Date Submitted: 2005-01-10

Project: L04-315

P.O. Number:
Matrix: Water

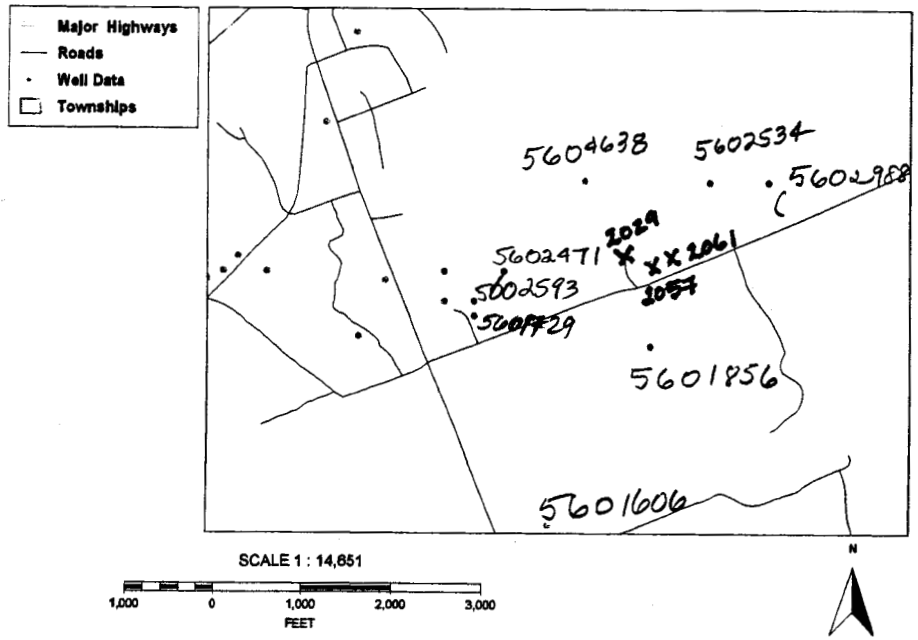
	LAB ID:	363709					GUIDELINE		
	Sample Date:	2005-01-10					MOE REG. 170/03		
	Sample ID:	L04-315-Well 1							
PARAMETER	UNITS	MDL					TYPE	LIMIT	UNITS
Total Coliforms	ct/100mL		10				MAC	0	ct/100mL
Escherichia Coli	ct/100mL		0				MAC	0	ct/100mL
Heterotrophic Plate Count	ct/1mL		>500				MAC	500	ct/1mL
Faecal Coliforms	ct/100mL		0				MAC	0	ct/100mL
Faecal Streptococcus	ct/100mL		2						ct/100mL

MDL = Method Detection Limit INC = Incomplete AO = Aesthetic Objective OG = Operational Guideline MAC = Maximum Allowable Concentration IMAC = Interim Maximum Allowable Concentration

Comment:

APPROVAL:
Krista Quantrill
Microbiology Analyst

REIS and EOWRMS



WELL #	NORTHING	EASTING	ELEVATIONS GROUND	BOREHOLE BOTTOM	REC PUMP RATE	SP. CAP.	TRANS. EST.
56D1606	5043050	481450	60.0	38.7			
5601729	5043750	481200	55.2	42.3	65.4	17.2	91.3
5601856	5043650	481800	77.4	62.1	196.1	38.7	156.
5602471	5043899	481299	60.3	41.5	32.7	23.6	113.
5602534	5044199	481999	92.9	74.7	32.7	64.4	220.
5602593	5043799	481199	57.3	42.9	32.7	53.7	195
5602988	5044199	482199	90.5	-1.8	19.6	—	—
5604638	5044204	481576	69.2	30.5	98.0	—	—
2029 CLARK	5044148	481723	75	67			
2057 CLARK	5044138	481885	85	71			
2061 CLARK	5044169	481898	85	42.5			

FROM
http://reis.agr.ca/docs/maps/reis_eowrms.mwf

Thursday, February 03, 2005 1:02 PM

L'ingénierie
L·A·S·C·E·L·L·E·S
engineering limited

CONSULTING ENGINEERS • INGENIEURS CONSEILS

GAËTAN H. LASCELLES ING. P.ENG.
MANON C. RODRIGUE ING. P.ENG.

L04-315
October 20, 2004

City of Clarence-Rockland
Planning Department
1560 Laurier Street
Rockland, ON K0B 1A0

Attention: François Loiselle, Director of Planning and Development

Dear Mr Loiselle:

Re: Hydrogeological Study, Lot Consent Application CR-008-2004
Mr. Ronald Rochon
Part of lot D, Concession 5, Part 1, plan 50R-1439

We have on September 20, 2004 visited the site in order to prepare a hydrogeological study to demonstrate that the aquifer can supply a log term sustainable water supply of acceptable quality and quantity as well as providing evidence through testing that the soil conditions can accommodate the effluent load from a septic field along with its replacement area. You will find enclosed a copy of the site plan showing the site development possibility.

The site is located on part of Lot D, concession 5, described as Part 1 of Plan 50R-1439, in the City of Clarence-Rockland, geographically in the Township of Clarence. The site is located immediately west of civic number 2057 Clark Road.

The detached lot is relatively flat with a geodetic elevation varying from 85 to 90 masl. The retained lot has a topography varying from 85 masl at Clark Road to an elevation to the north of less than 70 masl.

870 JAMES ST., HAWKESBURY, ONTARIO K6A 2W8 Tel.: (613) 632-0241 Fax: (613) 632-1669 e-mail: lascelles@bellnet.ca

The retained lot has an area of 44.50 acres while the detached lot has an area of 37500 square feet (0.86 acres / 3483 m^2). Both lots are vacant and both are wooded except for a clearing at the entrance to the retained lot..

Eats of the detached lot are four residential lots on which are built three single family houses. Each of the three lots immediately east of the detached lot has a drilled well and a septic system. The lot located immediately west of the retained lot is owned by Mr. Rochon. There is also a single family residence with outbuildings, a drilled well and septic system on Mr. Rochon's lot.

We have enclosed a copy of the water well record for the well owned by Mr. Rochon and located at 2029 Clark road and the well owned by Mr. Jean-Louis Hotte located at 2057 Clark Road. Mr.Rochon's well was drilled in 1981 by Gilles Bourgeois to a depth of 60 feet and a pumping rate of 5 gpm was recommended. The pump is set at 25 feet. The well owned by Mr. Hotte was drilled in 1990 by D.&R. Drilling to a depth of 45 feet in the bedrock and the pump was set at 30 feet and a pump rate of 5 gpm was recommended. The neighbouring wells are drilled wells to depths varying from 35 to 322 feet. According to the water well records, the bedrock is at a depth of 16 to 20 feet.

During our site visit a test hole was dug and observed to a depth of 1.2 metres. The surficial soil at the site is 0.15 m of topsoil over a brown-beige sand. According to the soils map of the County of Russell, the soil at the site is a Uplands fine sand, described as a loose, fine, red-brown sand. No water was observed in the test hole.

The proposed use of the detached lot is to enlarge the lot now owned by Mr. Hotte. We have demonstrated that a residential use for a single family residence can still be accommodated on the detached and retained lots. On a sandy Uplands soil with a percolation T time of 8 to 10 minutes per centimetre, a single family three-bedroom home with an area of 140 m^2 and a sewage design flow of 1600 litres per day requires a septic system with (L = 1600 X 10 /200 =) 80 metres of tiles.

We have also showed on the plan the envelop necessary to accommodate a septic system including a replacement area. An area of 128 m^2 is required, using the formula A= 1.6QT/200 with a T time of 10 minutes per centimetre. This area is situated in a manner that the minimum distances as described in part 8 of the Ontario Building Code are met We have demonstrated that the retained lot and the detached lot are large enough to accommodate a three-bedroom house with well and septic system.

We have utilized the results from the hydrogeological study previously prepared for Mr. Rochon for the lot consent application in 2002 in order to demonstrate the results of groundwater quality analysis. The water sample was collected from the tap at 2029 Clark Road on November 28, 2002 and a copy of the results is attached. The results of the bacterial analysis showed that the well water had one total coliform per 100 ml. The new wells will be disinfected prior to use.

The parameters analysed are within the guidelines except fo iron and manganese which are higher than the aesthetic objectives. The sodium level was 22 mg/L while a level exceeding 20 mg/L must be reported to the local health unit medical officer. The turbidity and hardness levels are also higher than the norm which is related tot he iron and manganese levels in the water. The water quality is acceptable as drinking water and water treatment is available for the treatment and removal of manganese and iron from the water.

The water well records indicate a pumping rate of 5 gpm (22 litres per minute) which is adequate for a three-bedroom house. The water well construction must be at depth exceeding 45 feet with a drilled well sealed for a minimum depth of 20 feet and drilled to meet the ministry of the environment's guidelines.

We can conclude that the nature of the soil and the dimensions of the retained and detached lots are adequate to accommodate the proposed use.

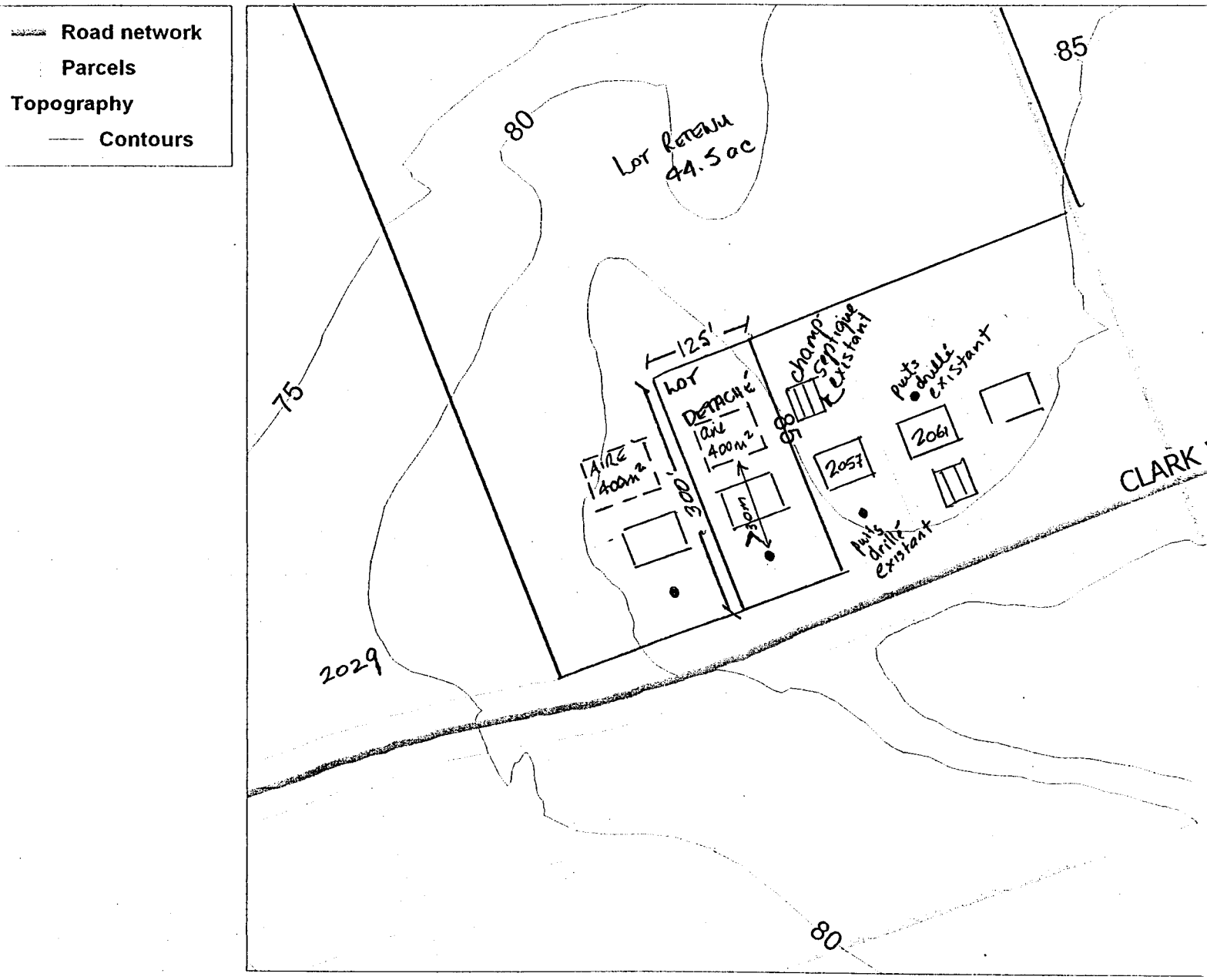
We trust you will find the enclosed to your entire satisfaction and we remain,

Yours truly,
L'ingénierie
LASCELLES
engineering limited

per: MRodrigue
Manon C. Rodrigue, P.Eng.

cc: Mr. Ronald Rochon, owner

United Counties of Prescott & Russell



SCALE 1 : 2,000

100 0 100 200 300

FEET

N

PLAN DÉMONTRANT
DEVELOPPEMENT POSSIBLE.

de:

http://www.prescott-russell.on.ca/maps/parcel_en_pu_6.mwf

Tuesday, October 19, 2004 3:57 F

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Lascelles Engineering Ltd.

ATT: Manon C. Rodrigue

Report Number: 2217030
Date: 2002-12-06
Date Submitted: 2002-11-29

Project: L02-380

P.O. Number:
Matrix: Water

			LAB ID:				
			Sample Date:				
			Sample ID:				
PARAMETER	**UNITS**	**MDL**					
Alkalinity as CaCO3	mg/L	5	267				
Ca	mg/L	1	61				
Cl	mg/L	1	42				
Conductivity	uS/cm	5	637				
Colour	TCU	2	2				
DOC	mg/L	0.5	0.8				
Escherichia Coli	ct/100mL		0				
F	mg/L	0.10	0.20				
Faecal Coliforms	ct/100mL		0				
Faecal Streptococcus	ct/100mL		0				
Fe	mg/L	0.01	0.48				
H2S	mg/L	0.01	0.01				
Hardness as CaCO3	mg/L	1	259				
Ion Balance		0.01	0.90				
Mg	mg/L	1	26				
Mn	mg/L	0.005	0.138				
N-NH3	mg/L	0.02	0.12				
N-NO2	mg/L	0.10	<0.10				
N-NO3	mg/L	0.10	<0.10				
pH			7.62				
Phenols	mg/L	0.001	<0.001				
K	mg/L	1	5				
Na	mg/L	2	22				
Heterotrophic Plate Count	ct/1mL		7				
SO4	mg/L	1	20				
Tannin & Lignin	mg/L	0.1	<0.1				
Total Coliforms	ct/100mL		1				
Total Kjeldahl Nitrogen	mg/L	0.05	0.22				
Turbidity	NTU	0.1	6.4				
TDS (COND - CALC)	mg/L	5	414				

MDL = Method Detection Limit INC = Incomplete Method references available upon request.

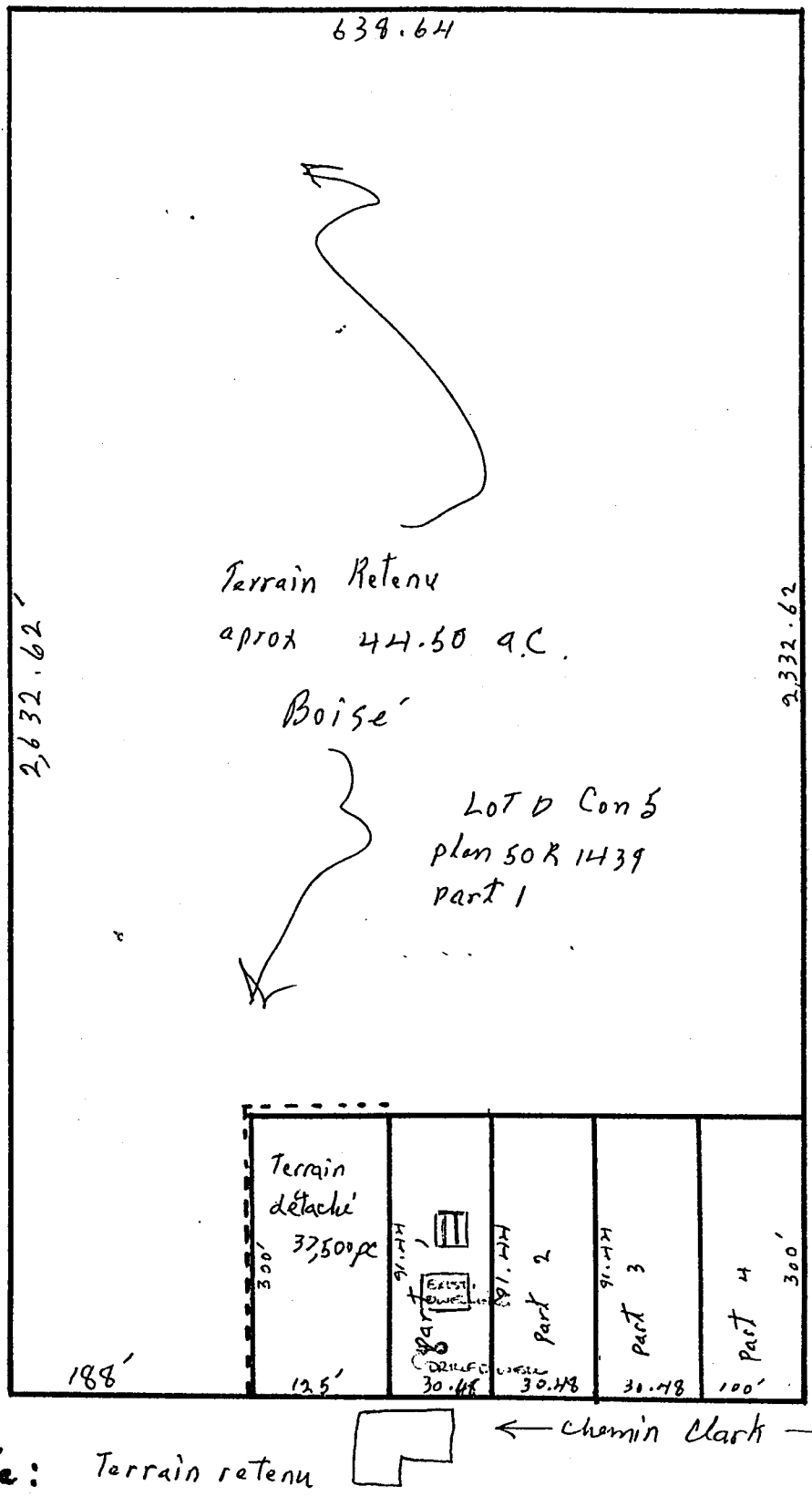
Comment:

APPROVAL: _____

Ewan McRobbie
Inorganic Lab Supervisor

8-146 Colonnade Road, Ottawa, ON, K2E 7Y1

608 Norris Court, Kingston, ON, K7P 2R9



NOTE: Terrain retenu

Terrain détaché

Ministry of the Environment

WATER WELL RECORD

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	LOT, BLOCK, TRACT, SURVEY, ETC.	LOT
Russell	Clarence	C	D

WELL OWNER'S NAME (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Boulton, Ronald	RR#1 Rockland Ont.	DAY 23 MO. Dec YR 81

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
red	clay		hard	0	22
grey	rock		"	22	60

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
55	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☑ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☑ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FEET FROM	DEPTH FEET TO
6¼	☑ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.188	0	22
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☑ OPEN HOLE		22	60
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

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

PLUGGING & SEALING RECORD

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

PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☑ BAILER	40 GPM	1 HOURS ✓ MINS

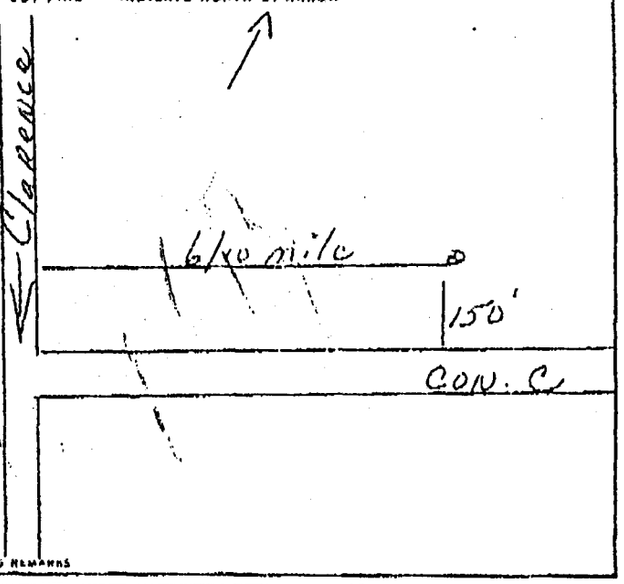
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☐ PUMPING ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
12 FEET	25 FEET	12 FEET	12 FEET	20 FEET	25 FEET

IF FLOWING GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	25 FEET	☐ CLEAR ☑ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☐ DEEP	50 FEET	5 GPM

LOCATION OF WELL

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



DRILLERS REMARKS

FINAL STATUS OF WELL	☑ WATER SUPPLY ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ OBSERVATION WELL ☐ ABANDONED, POOR QUALITY ☐ TEST HOLE ☐ UNFINISHED ☐ RECHARGE WELL
WATER USE	☑ DOMESTIC ☐ COMMERCIAL ☐ STOCK ☐ MUNICIPAL ☐ IRRIGATION ☐ PUBLIC SUPPLY ☐ INDUSTRIAL ☐ COOLING OR AIR CONDITIONING ☐ OTHER ☐ NOT USED
METHOD OF DRILLING	☑ CABLE TOOL ☐ BORING ☐ ROTARY (CONVENTIONAL) ☐ DIAMOND ☐ ROTARY (REVERSE) ☐ JETTING ☐ ROTARY (AIR) ☐ DRIVING ☐ AIR PERCUSSION

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Burgess Bros.	1111
ADDRESS: 21 Albert St.	
NAME OF DRILLER OR BORER	LICENCE NUMBER
Same	1111
SIGNATURE OF CONTRACTOR	SUBMISSION DATE
[signature]	DAY 23 MO. Dec YR 81

OWNER'S COPY

OFFICE USE ONLY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON BLOCK, TRACT, SURVEY, ETC	LOT
PRESCOTT-RUSSELL	CLARENCE	CONC. 5	12

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
HOTTE, Jean Louis	Clark Rd., CLARENCE CREEK, ONTARIO.	DAY 31 MO 10 90

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	clay	sand	soft	0	12
grey	clay	sand	soft	12	16
brown	shale	sand	porous	16	25
black	shale		hard	25	45

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
38	☑ FRESH ☐ SALTY ☑ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS
	☐ FRESH ☐ SALTY ☐ SULPHUR ☐ MINERALS ☐ GAS

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6¼	☑ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC	1.88	0	25
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC		25	45
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE ☐ PLASTIC			

SCREEN

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

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
0	20	cement grout

PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☑ BAILER	15 GPM	1 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☐ PUMPING ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
16 FEET	16 FEET	16 FEET	16 FEET	16 FEET	16 FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	45 FEET	☑ CLEAR ☐ CLOUDY

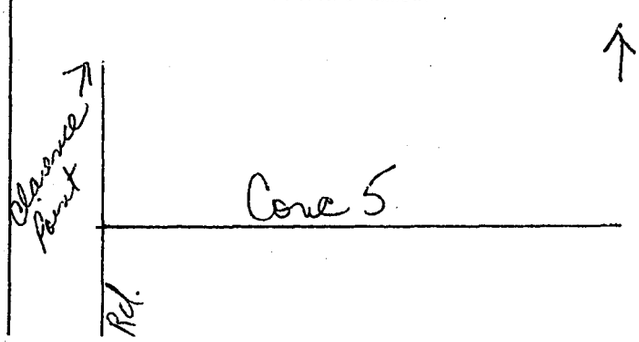
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☑ SHALLOW ☐ DEEP	30 FEET	5 GPM

FINAL STATUS OF WELL

☑ WATER SUPPLY ☐ ABANDONED, INSUFFICIENT SUPPLY
☐ OBSERVATION WELL ☐ ABANDONED, POOR QUALITY
☐ TEST HOLE ☐ UNFINISHED
☐ RECHARGE WELL ☐ DEWATERING
☑ DOMESTIC ☐ COMMERCIAL

LOCATION OF WELL

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



60

12 PARTS / MILLION

MR RICHARD PUTS 60'

YANNICK 81'

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☑ SHALLOW ☐ DEEP	30	5 GPM

Clearance Point

Zone 5

LANDRY Rd.

FINAL STATUS OF WELL

- ☑ WATER SUPPLY
- ☐ OBSERVATION WELL
- ☐ TEST HOLE
- ☐ RECHARGE WELL
- ☐ ABANDONED, INSUFFICIENT SUPPLY
- ☐ ABANDONED, POOR QUALITY
- ☐ UNFINISHED
- ☐ DEWATERING

WATER USE

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

METHOD OF CONSTRUCTION

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

83416

DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR: D. & R. WATER WELL DRILLING

WELL CONTRACTOR'S LICENCE NUMBER: 6006

ADDRESS: ST. ALBERT, ONTARIO.

NAME OF WELL TECHNICIAN: LOUIS DESNOYERS

WELL TECHNICIAN'S LICENCE NUMBER: t-0625

SIGNATURE OF TECHNICIAN/CONTRACTOR

SUBMISSION DATE: DAY 31 MO. 10 YR. 90

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FORM NO. 0506 (11/86) FORM