

Hydrogeology Summary

Final Revision 0

Hillside Subdivision
Lake Street, Picton

March 27, 2025
Jp2g Project # 23-3-6593





Table of Contents

Author and Review Panel	i
1 Summary.....	2

Appendices

Annex A: Hydrogeology Study 318 Lake Street Development Picton, Ontario

Annex B: Investigation of Hydrogeologic Conditions to Support the Design of Storm Water Management at 287 Lake Street, Picton



Author and Review Panel

Prepared by:

Peter Zandbergen, P.Eng.
Project Manager



1 Summary

Greer Galloway completed hydrogeologic studies for the properties forming the Hillside development (Lot 23, Concession 3, Military Tract, and Lot 23, Concession 2, Military Tract).

As adjacent properties, they share bedrock geology of the Lindsay and Verulam Formations. Bedrock is encountered between 6 to 19 ft (1.8 to 5.9 m) below local grade. Water is encountered at depths from 13 to 91 ft (4 to 28 m) below local grade.

South Property Summary (Lot 23, Concession 2, Military Tract):

1. Groundwater recharge under post-development conditions is predicted to be comparable to pre-development conditions. Any changes are expected to be evenly distributed across the site and no significant alterations in groundwater flow directions are anticipated.
2. Enhanced infiltration measures are recommended for lots adjacent to the identified wetland at the eastern side of the property to mitigate any local effects on groundwater recharge.
3. Groundwater elevation was observed to be below bedrock between the months of May and July in the well located in the location of the proposed stormwater management pond.

North Property Summary (Lot 23, Concession 3, Military Tract):

1. This property is characterized by thin bedrock derived thin alkaline topsoil, overlying limestone bedrock.
2. Although the geology underlying the property has been mapped as showing a junction of fault trends forming part of the St. Lawrence graben system no recorded seismic activity has been noted for this location, with limited seismic activity reported elsewhere in the region.
3. The water table is below 6 metres below ground surface, and was observed on August 8th, 2024 at 19.83 metres below ground surface.
4. The Unified Soil Classification soil type is SM to SW, with medium to low permeability, and hydraulic conductivity of 10-2 cm/sec to 10-5 cm/sec.
5. Drainage on the site is primarily through vertical infiltration and subsurface flow, with no defined watercourses identified.
6. The presence of Verulam Formation interbedded limestone and shale underlying the property permits more rapid infiltration of precipitation than the surrounding Lindsay Formation limestone.

Detailed reports are included as Annex A and Annex B to this cover.

End of report.



Annex A: Hydrogeology Study
318 Lake Street Development
Picton, Ontario



Hydrogeology Study 318 Lake Street Development Picton, Ontario



Prepared for:

Homes First Development Corporation
315 Oak Street
Richmond Hill, Ontario
L4C 6R5

Submitted by:

The Greer Galloway Group Inc.
1620 Wallbridge Loyalist Road Belleville,
Ontario
K8N 4Z5

May 2024



G R E E R
G A L L O W A Y
C O N S U L T I N G
E N G I N E E R S

May 22, 2024

Project 22-3-6559

Ms. Kelly Graham, MPI, RPP
Associate
SvN Architects + Planners
110 Adelaide Street East, 4th Floor
Toronto, Ontario
M5C 1K9

**Hydrogeology Study
318 Lake Street Development
Picton, Ontario**

Dear Kelly,

We are pleased to submit this Hydrogeology Study for your client's proposed development at 318 Lake Street in Picton, Ontario.

We trust that this report is complete within our terms of reference and sufficient for your requirements. Please call us if you have any questions about the report or any areas that require clarification. Once you have had the chance to review this draft, we will make any edits required and issue a final document.

Yours very truly,

**THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS**

Kirby Magee-Dittburner, E.I.T.
Junior Hydrogeologist

1620 Wallbridge Loyalist Road

R.R. #5

Belleville, Ontario

K8N 4Z5

Telephone

(613) 966-3068



Consulting
Engineers
of Ontario



Professional Engineers
Ontario

Table of Contents

1. INTRODUCTION	1
2. INVESTIGATION METHODS.....	1
2.1 Information Sources.....	1
2.2 Subsurface Investigation	1
2.3 Water Level Monitoring.....	2
3. SUMMARIZED FINDINGS	2
3.1 Project Description.....	2
3.2 Site Description.....	2
3.3 Climate and Water Balance	3
3.4 Geology	3
3.5 Hydrogeology.....	5
4. DISCUSSION	7
4.1 Water Balance	7
4.2 Infiltration Maintenance	10
4.3 Stormwater Pond	10
4.4 Construction Dewatering	11
5. SUMMARY	11
6. REFERENCES	12

Figures (in-text)

Figure 1: Conceptual geological section

Drawings and Figures (appended after text)

Drawing 1: Test Hole Locations and Overburden Thickness Map

Drawing 2: Site Plan With Interpreted Groundwater Flow Direction

Tables

Table 1: Summary of well depths and yields within 750 m radius of the property

Table 2: Precipitation Data

Table 3: Estimated Infiltration Factor – Pre-development

Table 4: Pre-development Water Balance

Table 5: Post-development Assumptions

Table 6: Post-development Water Balance

Appendices

APPENDIX A Geotechnical Investigation Attachments

APPENDIX B MECP Water Well Records Within 300 m

1. Introduction

The Greer Galloway Group was retained by Homes First Development Corporation to complete a hydrogeological investigation for the proposed development at 318 County Road 10 (Lake Street) in the Town of Picton.

This report presents the methodology and findings of the investigation at the Site and addresses requirements and constraints for the design and construction of the building development.

2. Investigation Methods

The investigation included a review of water well records, a review of available geologic and hydrogeologic information for the area, and water level monitoring. The investigation methods are described further in the following subsections.

2.1 Information Sources

A review of published information sources was carried out for the site and adjacent lands where activities may affect or influence groundwater conditions. Information sources included topographic and geologic mapping, aerial photography and MECP Water Well Records, precipitation and climatic data, and site-specific reports prepared by others. Specific geological/hydrogeological characteristics included topography and drainage, surficial geology, bedrock geology, groundwater elevations, groundwater flow patterns, location of water wells and permitted water takings, and potential recharge and discharge areas (including springs/seepage).

2.2 Subsurface Investigation

Fieldwork for the hydrogeological investigation was integrated with the geotechnical investigation of the site (see the attachments from the Geotechnical Investigation Report included as Appendix A). A soils investigation was conducted for the property on March 20, 2023, at which time ten exploratory boreholes were drilled to depths of between 1.4 and 7.6 m using a track-mounted drill rig equipped with solid stem augers. Standard Penetration Testing (SPT) and sampling were carried out at regular intervals of depth in the boreholes using conventional 35 mm internal diameter split spoon sampling equipment advanced using an automatic hammer in accordance with ASTM D1586 99¹.

Additional test pits were placed on May 3, 2023 to further define subsoil conditions, and an additional three boreholes were advanced to bedrock in selected locations to provide additional groundwater level information. These wells were placed to correspond with the location of the proposed stormwater management pond and the building footprint of the proposed 5-storey apartment building.

¹ ASTM D1586-11 – Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.

Monitoring wells consisted of 50 mm diameter PVC pipe, with a slotted screen sealed at a selected depth within the boreholes. The borehole and annulus surrounding the piezometer pipe above the screen sand pack was backfilled to the ground surface with bentonite pellets/grout, in accordance with Ontario Regulation 903 Borehole and test pit logs are provided in Appendix A.

2.3 Water Level Monitoring

Water level measurements were taken at 3 monitoring well locations to determine the stabilized depth to groundwater. Longer term fluctuations in water levels and temperatures were obtained for selected locations using calibrated transducer/data logger assemblies (Solinst Model 3001) to assess the response of groundwater levels to seasonal climatic changes and to precipitation events.

3. Summarized Findings

3.1 Project Description

The proposed development will incorporate 285 residential units, including a combination of single-family, semi-detached, townhouse, and apartment units. Included in the proposal is a five-storey, 131-unit affordable apartment building with an attached 1,000 sq. ft commercial area.

A series of roads are labelled on the site plan. Streets “A” and “B” will provide access into the subdivision, while Street “C” and Lane “A” are fully internal roads.

Note: It is likely that the exact distribution of residential units may vary as the development design process moves forward and only significant changes to the proposed land uses sufficient to affect the conclusions provided herein will warrant a revision to this document.

3.2 Site Description

The property covers an area of 13.6 ha located on the east side of County Road 10, between County Road 1 (Sandy Hook Road) and County Road 22. The gross area of the parcel, northwest of County Road 10/ County Road 22, is 13.6 hectares (33.6 acres), but only the 9.8 ha portion zoned “FD” for “Future Development” is being considered for development at this time.

Currently, the subject lands comprise of a combination of farmland, woodlot, and wetland. As shown on the Land Use Map from the Prince Edward County Secondary Plan (see the excerpt, below), the subject lands lie within the Town of Picton urban Planning Area Boundary and are identified with Town Residential and Environmental Protection areas. The area has gently undulating topography with an overall decrease in elevation towards the southwest. Local land use is predominantly agricultural. The site itself is about 116 m above mean sea level (mASL) along the northeastern edge and 112 mASL along the southwestern edge. Except for the northwest corner, the property’s current land use is agricultural.

The subject lands are zoned Future Development (FD) and Environmentally Protected (EP), with the EP lands generally relating to a large stand of trees and the Marsh Creek wetlands on the east side. The development will be limited to the future development zone, and an environmental assessment

has been completed to confirm the limits of the environmentally sensitive / wetlands area and ensure that development does not encroach upon these areas.

3.3 Geology

The surface physiography of the area has resulted primarily from glacial activity that took place during the Late Wisconsinan Substage of the Quaternary period (circa 23,000 to 10,000 BP). During this time, there were repeated advances and retreats of glacial ice lobes removing much of any pre-existing overburden and leaving the bedrock surface exposed or covered by only a thin mantle of unconsolidated sandy-loam textured material overlying Paleozoic bedrock.

The site is part of the Prince Edward Peninsula (Chapman and Putnam, 1984). This region is separated from the mainland by the Bay of Quinte and is characterized by low relief and shallow soils. The geology consists of upper Middle Ordovician rocks that unconformably overlie Precambrian basement rocks of the Grenville Province. Overburden thickness is variable but generally thin, and large portions of the County have less than 1 m of overburden.

The bedrock consists of limestones and shales laid down over older Precambrian-age rock beginning in the middle Ordovician (approximately 460 million years ago) as part of a continent-wide marine transgression. This transgression (a period of increasing sea levels) deposited, in order, the Shadow Lake, Gull River, Bobcaygeon, Verulam, and Lindsay Formations (Armstrong and Carter, 2010). The lower member of the Lindsay Formation is the uppermost bedrock unit beneath the property.

The lower member of the Lindsay Formation consists mainly of medium grey and blueish grey, finely to medium crystalline limestone, uniformly bedded with subequal thickness of and separated by thin shaley seams (Experimental Farms Service, 1947). These strata dip shallowly to the west. A conceptual geological section for the area is shown in Figure 1.

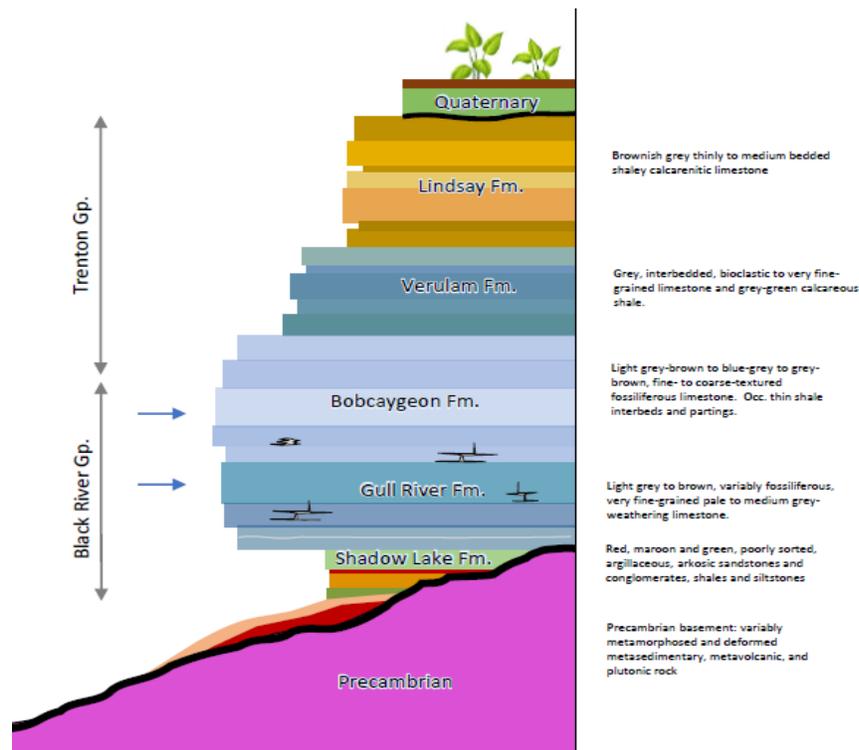


Figure 1 – Conceptual geological Section

The overburden geology is composed of unconsolidated deposits resulting primarily from glacial activity. The Soils Map of Prince Edward County, Ontario, Report No. 10, indicates that Ameliasburg loam is the dominant soil on the site, with some imperfectly drained Ameliasburg clay loam occurring in the southern corner. Ameliasburg soil is moderately shallow as it ranges from 0.3 to 1 m in depth. The Ameliasburg series is noted as having good drainage and being stony at the surface. The loam is grey-brown in colour with limestone fragments within the first 10 to 15 cm.

The project site is currently undeveloped and is used for growing crops such as corn. There is a forested area on the high ground which generally covers the east side of the property. The topsoil depths were generally 100 to 150 mm thick. The underlying clay subsoils were generally in a moist and very stiff condition. The silt subsoils were relatively dry and typically in a loose to compact condition. The silt was generally non-plastic. There was occasional perched water within the sandy clay subsoils, hence, these soils can readily become spongy when disturbed, even when recompacted. The susceptibility to frost action for all subsoils was generally rated as medium to high.

Refusal was encountered at various locations on site, due to underlying limestone bedrock, and also due to very dense till materials. Bedrock was encountered in boreholes 1, 2, 4, 5, 9, 10, 11. The limestone bedrock condition is typically 'broken' on the initial contact surface.

For the three additional boreholes drilled in May 2023, bedrock refusal was encountered at 4.0 m bgs at the southern portion of the property corresponding to the stormwater management pond, 5.9 m bgs at the northwestern corner of the property, and 3.4 m bgs near the centre of the property (see Drawing 1).

3.4 Hydrogeology

The fractured limestone bedrock forms the primary source of exploitable groundwater in the area. A search of the Ministry of Environment, Conservation and Parks (MECP) Well Record Database returned many wells within a 750 m radius of the site (see Drawing 2, appended). The records suggest the groundwater table in the area is encountered within the limestone bedrock at depths between 4 and 28 m, and that yields range from 4 to an excess of 550 L/min, with a median well yield of 22.7 L/min. The subject lands are located outside any mapped WHPA.

A summary of water well records for the site and immediately surrounding lands is provided in Table 1.

Table 1: Summary of well depths and yields within 750 m radius of the property

Well No.	Static Level (m)	Yield (L/min)	Overburden Depth (m)	Hole Depth (m)	Aquifer	Easting	Northing	Appx. Elevation (masl)
5301019	6.7	22.7	12.8	16.1	Overburden	326414	4873194	92
5301020	6.4	15.2	1.8	29.6	Bedrock	326901	4872739	96
5301021	3.0	19.0	4.3	21.3	Bedrock	327041	4872488	113
5301070	15.2	19.0	17.1	46.6	Bedrock	326893	4873127	102
5301072	4.6	19.0	20.8	21.9	Overburden	327237	4873554	107
5301073	2.7	19.0	7.6	9.1	Overburden	327100	4873551	98
5301074	7.6	19.0	15.2	18.9	Overburden	327192	4873487	98
5301076	9.1	19.0	10.4	15.2	Bedrock	327052	4873120	103
5301077	6.7	15.2	12.8	24.4	Overburden	327110	4873568	97
5301078	4.6	22.7	19.2	21.6	Overburden	326759	4873153	98
5301079	8.5	11.4	14.6	22.9	Overburden	327033	4873083	105
5301081	1.8	19.0	13.7	14.6	Overburden	327285	4873555	96
5301083	15.8	11.4	4.3	22.9	Bedrock	327101	4873063	105
5301925	6.1	3.8	1.2	39.6	Bedrock	326878	4872483	102
5302173	9.1	19.0	15.2	24.4	Overburden	327009	4873057	105
5302575	22.9	19.0	2.4	35.1	Bedrock	327266	4872624	119
5303000	9.1	30.3	9.8	29.0	Bedrock	327126	4873167	104
5303054	6.4	30.3	13.7	16.9	Overburden	326766	4873110	100
5303131	6.1	115.0	13.7	14.9	Overburden	327189	4873567	98
5303138	21.3	94.8	23.2	27.4	Bedrock	326770	4872818	110
5303229	3.7	37.9	4.9	10.7	Bedrock	326670	4872378	98
5303345	9.8	37.9	12.8	38.1	Bedrock	326985	4873119	104
5303357	22.9	26.5	25.3	31.1	Bedrock	326749	4872738	109
5303424	2.4	37.9	1.8	24.4	Bedrock	327165	4873300	100
5303541	11.0	37.9	2.4	12.4	Overburden	327202	4873399	98
5303546	27.1	19.0	28.0	29.3	Bedrock	326528	4872700	113
5303753	8.5	115.0	16.3	17.1	Overburden	326825	4873120	100
5303780	5.5	37.9	15.8	38.1	Overburden	327008	4873059	105
5303901	12.2	15.2	2.7	45.7	Bedrock	327227	4872678	116
5303903	17.4	22.7	3.7	48.8	Bedrock	327226	4872717	115
5303971	10.7	37.9	13.7	38.1	Bedrock	327029	4873222	102
5304052	12.8	19.0	17.4	45.7	Overburden	326728	4872718	109
5304054	12.2	75.8	16.2	21.3	Bedrock	326726	4872720	109

Well No.	Static Level (m)	Yield (L/min)	Overburden Depth (m)	Hole Depth (m)	Aquifer	Easting	Northing	Appx. Elevation (masl)
5304066	16.8	37.9	22.9	36.6	Bedrock	326426	4872615	113
5304190	1.8	30.3	1.5	12.2	Bedrock	327028	4873019	104
5304195	4.6	22.7	3.0	21.9	Bedrock	327030	4873020	105
5304293	3.4	3.8	3.0	21.6	Bedrock	326826	4872541	98
5304401	13.7	19.0	15.8	33.2	Bedrock	327051	4873403	102
5304402	11.3	3.8	2.4	32.0	Bedrock	326843	4872133	113
5304497	12.2	136.4	16.2	58.2	Bedrock	326906	4873200	101
5304499	7.0	37.9	6.1	11.6	Bedrock	327073	4873459	95
5304566	13.7	11.4	17.7	32.0	Bedrock	327098	4873444	102
5304571	13.7	11.4	14.3	25.3	Bedrock	326855	4872863	103
5304573	16.8	11.4	20.7	38.1	Bedrock	326857	4872816	106
5304574	10.7	30.3	6.7	21.3	Bedrock	327115	4873195	102
5304582	9.1	11.4	3.0	30.5	Bedrock	327108	4873207	101
5304733	12.2	53.1	17.7	21.3	Overburden	326935	4873085	103
5304754	5.5	3.8	3.4	19.2	Bedrock	326698	4872329	98
5304757	4.6	102.3	4.0	11.6	Bedrock	326713	4872362	98
5304768	12.2	9.4	13.7	24.7	Bedrock	326980	4872928	105
5304965	6.1	75.8	11.3	11.9	Overburden	327018	4873345	97
5304987	7.6	15.2	13.1	15.5	Overburden	327039	4873272	105
5305132	14.9	113.7	16.8	25.6	Bedrock	326854	4873113	101
5305173	11.3	94.8	9.4	17.4	Bedrock	327062	4873181	103
5305174	12.2	94.8	12.8	21.3	Bedrock	327075	4873262	103
5305216	35.1	15.2	1.2	137.2	Bedrock	327807	4872920	144
5305220	7.9	75.8	14.3	14.5	Overburden	327080	4873083	108
5305235	9.1	98.5	16.2	18.6	Overburden	327311	4873560	96
5305236	9.1	37.9	13.4	22.6	Bedrock	327078	4873284	103
5305280	12.2	7.6	13.4	30.5	Bedrock	326871	4872835	105
5305619	10.7	19.0	6.1	20.4	Bedrock	327095	4873572	97
5305620	12.2	94.8	12.5	16.2	Bedrock	327132	4873587	96
5305676	12.2	1.9	1.8	61.0	Bedrock	327347	4872638	123
5305749	9.1	94.8	14.6	15.8	Overburden	326632	4873274	90
5306028	7.0	37.9	3.7	15.2	Bedrock	327263	4873567	96
5306064	10.7	37.9	6.1	22.9	Bedrock	327268	4873572	97
5306381	9.1	22.7	16.5	28.3	Overburden	326832	4873088	102
5306903	7.9	22.7	4.3	16.8	Bedrock	327275	4873574	96
5307659	9.8	113.0	3.7	22.4	Bedrock	327169	4873250	103
7138246	5.2	56.9	5.7	15.2	Bedrock	327264	4873461	98
7163408	22.3	45.5	26.2	32.0	Bedrock	326669	4872696	110
7242585	14.2	56.9	12.5	24.7	Bedrock	327174	4872742	111
7313343	18.6	37.9	2.7	21.3	Overburden	327201	4873185	108
7321903	2.7	11.4	5.8	18.3	Bedrock	327390	4872833	116

Based on the recorded static levels and the topographic setting, local groundwater flow is in a predominately western direction at the subject site, though the dominant regional groundwater flow

direction is predicted to be in a northern direction, roughly following Marsh Creek, and ultimately discharging into Picton Bay (Lake Ontario). See Drawing 2.

Groundwater inflow was not encountered on the site, except within the wetland area located at borehole 10 where it seepage was observed at a depth of 2.13 m bgs. A monitoring well was installed at this location consisting of 1.5 m of slotted screen with clean sand fill, and 3.95 m of pipe casing, sealed with bentonite fill, and fitted with a lockable steel monument cap. The well pipe material consisted of 50 mm diameter flush threaded schedule 40 PVC pipe, with rubber O-ring seals to prevent leakage. The water level was measured later in the day and found to have risen in the well to 0.305 m below ground surface. On May 3, the water level remained at 0.305 m below ground surface.

Two additional monitoring wells were constructed in the same manner on May 25, 2023. No groundwater was observed in the southern well (MW1) located in the area corresponding to the proposed stormwater management pond over approximately two months of monitoring. Groundwater was found in the northern well (MW2), and was monitored from May 25, 2023 to July 17, 2023. The water level was found to vary from 5.2 m bgs to 5.8 m bgs.

4. Discussion

4.1 Water Balance

A water balance was prepared for the site to assess the distribution of rainfall, run-off, and infiltration for existing and post- development conditions. We note that this water balance analysis is to provide input into the stormwater management design for the proposed development, but it is not intended to substitute for the stormwater management design, nor should the assumptions and estimates provided take precedence over the stormwater management design should they differ.

The water balance is determined according to:

$$I = P - R - AET \quad [1]$$

Where,

I = Infiltration

P = Precipitation

R = Surface runoff

AET = Evapotranspiration losses

The estimation of values for these parameters is described in the following subsections.

Precipitation data was obtained from the three closest Environment Canada weather stations having at least 15 years of consecutive annual data within the past 30 years. The measured values for precipitation were weighted according to the inverse distance from the subject site to calculate an

average annual precipitation of 1019 mm.

Table 2: Precipitation Data

Location	Mountainview (STN ID 615EMR7)	Cressy (STN ID 61519JM)	Belleville (STN ID 6150689)
P (mm)	948.3	945.8	911.6
Distance (km)	13.6	27.5	26.3
Weight (inv. Distance)	1.0	0.49	0.52
Weighted Average (mm)	938		

Environment Canada data gives an average annual actual evapotranspiration of about 500 mm for this region of Ontario. The subject site has deeper soils than average so AET will be higher than would be typical for a shallow soil environment, so we have selected 570 mm/a as a reasonable site-specific pre-development estimate for AET. We note that AET will be reduced post-development, and this should be considered in estimating the site-specific post-development water balance.

Infiltration may be estimated by taking the annual water surplus (P-AET, or 368 mm) and multiplying this value by an infiltration factor which refers to the fraction of the water surplus (P-AET) that infiltrates into the ground. The pre-development infiltration factor for the proposed development area is calculated in Table 3.

Table 3: Estimated Infiltration Factor – Pre-development

Site Characteristic	Infiltration Factor	Fraction of Site	Weighted Average
Topography			
Flat Land	0.3	70	0.21
Rolling Land	0.2	30	0.06
Hilly Land	0.1	0	0
Soils			
Tight impervious clay	0.1	0	0
Medium combinations of clay and loam	0.2	100	0.20
Open Sandy loam	0.4	0	0
Cover			
Cultivated Land	0.1	70	0.07
Woodland	0.2	30	0.06
Sum of Infiltration Factors			0.60

Based on these infiltration factors we estimate an infiltration of 220 mm/a (P * weighted average infiltration factor) as the average value for the entire site.

Table 4: Pre-development Water Balance

Land Use	Area (ha)	Water balance components (m ³ /a)			
		P	AET	I	R
Field and forest	9.8	91,920	55,860	21,640	14,420

The estimated pre-development infiltration (21,640 m³/a) corresponds to a total of 59,290 L/day.

Under post-development conditions, some of the site will be converted to impervious surfaces where infiltration will be negligible while other surfaces (e.g., roofs) will direct runoff onto natural surfaces having ample infiltration capacity. Assumptions made for the post-development water balance have been included in Table 5. The areas of each land use are approximate and may change with the design for the project.

Table 5: Post-development Assumptions

Land Use	Area (ha)	Assumptions
Roof Area	2.6	Run-off from residential roofs will be available for infiltration over lawn areas. AET of 20% is assumed from the wetted surface.
Paved roads	1.4	Run-off from hard paved surfaces will be captured in the unlined stormwater pond. AET of 20% is assumed.
Paved driveway	1.1	Treated the same as hard pavement unless there is some enforcement mechanism to prevent subsequent hard paving.
Sidewalks	0.3	Infiltration and ET similar to pre-development conditions
Storm Water Management Pond	0.3	High initial infiltration in the unlined pond. Long term-infiltration similar to that of clay soils
Landscaped/Grassed Area	4.1	Infiltration and ET similar to pre-development conditions
Total	9.8	

Based on these assumptions, our calculated post-development water balance is included in Table 6.

Table 6: Post-development Water Balance

Land Use	Area (ha)	Water balance components (m ³)			
		P	AET	I	R
Roof Area	2.6	24,390	2,960	12,850	8,570
Hard Surface Paving	2.8	26,260	3,190	0	23,070
Landscaped/Grassed Area	4.1	38,460	23,370	9,050	6,040
Storm Water Management Pond	0.3	2,810	1,710	660	440
Total	9.8	91,920	31,230	22,560	38,130

A comparison of the pre- and post-development water balance indicates that the annual actual evapotranspiration will decrease due to the loss of vegetated surfaces, run-off will increase, and infiltration will be roughly comparable to pre-development infiltration.

4.2 Infiltration Maintenance

Groundwater flow directions are not predicted to change significantly throughout the site as a result of the development, though changes in infiltration local to the areas of identified wetland should be minimized. A plan to restore the ecological function of the wetland was recommended in the Environmental Impact Study for this development, and the wetland has potential to be sensitive to changes in groundwater recharge.

For the lots adjacent to the wetland area identified on the eastern side of the development, we recommend the use of enhanced infiltration measures to infiltrate clean roof runoff for each lot. Direct infiltration avoids water losses to evapotranspiration and runoff, and it is possible, in principle, for lot level infiltration to offset infiltration losses resulting from impervious paved areas. Direct infiltration of roof water would always be predicted to have its maximum benefit during the summer months when evapotranspiration losses are at their highest and when wetlands would be under the greatest stress.

The percolation rates of the subsoil types have been estimated to range from 25 to 30 min/cm for silty sand and sandy silt soil types and 40 min/cm for silt with sand. At source infiltration of clean roof runoff is considered feasible for the silty sand and sandy silt soil types.

Soakaway pits may be constructed of clear stone (50 mm diameter) placed on the surface of the subsoil. Non-woven filter cloth should be used to line the trench to prevent the pore spaces between the stones from being filled by the surrounding native material. The size of the pits may be estimated using the following equation:

$$A = \frac{V}{Pn\Delta t} \quad [1]$$

Where,

A is the basal area in m^2

V is the volume of water to be infiltrated

P is the infiltration rate (m/h)

n is the porosity of the storage media (1.0 for fabricated storage chamber, 0.4 for 50 mm diameter clear stone)

Δt is the design retention time (typically 24 hours)

4.3 Stormwater Pond

Well MW1 was drilled in the vicinity of the proposed stormwater pond in May of 2023. This well encountered brown silty sand with gravel until a bedrock refusal depth of 4.0 m bgs (approximately 101 mASL). No water was encountered when drilling the well, and water level monitoring between May 25 and July 17, 2023 showed that no water was present in the well at any time.

Based on this information, a wet pond could be constructed to 4.0 m bgs (101 mASL) without dewatering requirements exceeding the quantities permissible through the Environmental Activity and Sector Registry (EASR) under O.Reg. 63/16 provided that the work is carried out in the dry summer months. We note that any pond liner should be designed to resist hydrostatic uplift on the liner should

the need to empty the wet pond be contemplated during transient high groundwater levels that occur during the spring snow melt.

4.4 Construction Dewatering

The groundwater table was found to be lower than typical excavations for foundations or servicing trenches across most of the subject property. High groundwater elevations were only observed close to the identified wetland, and development is not planned in this location. Provided that construction is carried out during the dry summer and early autumn months, construction dewatering is expected to be minimal although seepage from perched groundwater may be encountered and provision to manage accumulation of surface water runoff is required. Higher groundwater levels should be expected during the winter and early spring. Dewatering exceeding 50,000 L/day but below 400,000 L/day under normal circumstances (i.e. excluding heavy rainfall events) requires registration under the MECP Environmental Activity and Sector Registry (EASR). Dewatering exceeding 400,000 L/day (which would require a Permit to Take Water (PTTW) is not anticipated.

5. Summary

The purpose of the work was to determine soil and groundwater conditions at the site. The following points summarize the key elements of this report, along with recommendations:

1. Groundwater recharge under post-development conditions is predicted to be comparable to pre-development conditions. Any changes are expected to be evenly distributed across the site and no significant alterations in groundwater flow directions are anticipated.
2. Enhanced infiltration measures are recommended for lots adjacent to the identified wetland at the eastern side of the property to mitigate any local effects on groundwater recharge.
3. Groundwater elevation was observed to be below bedrock between the months of May and July in the well located in the location of the proposed stormwater management pond.

All of which is respectfully submitted.

**THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS**



Kirby Magee-Dittburner, E.I.T.
Junior Hydrogeologist



Charles Mitz, M.Eng., Ph.D., P.Geo
Senior Project Manager

6. References

Armstrong, D.K. and Carter, T.R. 2006. An updated guide to the subsurface Paleozoic stratigraphy of southern Ontario; Ontario Geological Survey, Open File Report 6191, 214p

Chapman, L.J. and Putnam, D.F. 1984. The Physiography of Southern Ontario. Third Edition. Ontario Geological Survey, Map 2556, scale 1:1 000 000.

Environment Canada, 2020

https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?stnID=4859&autofwd=1

Experimental Farms Service, 1947: Soil Map of Prince Edward County, Ontario. Soil Survey Report No. 10, Scale 1:63 360.

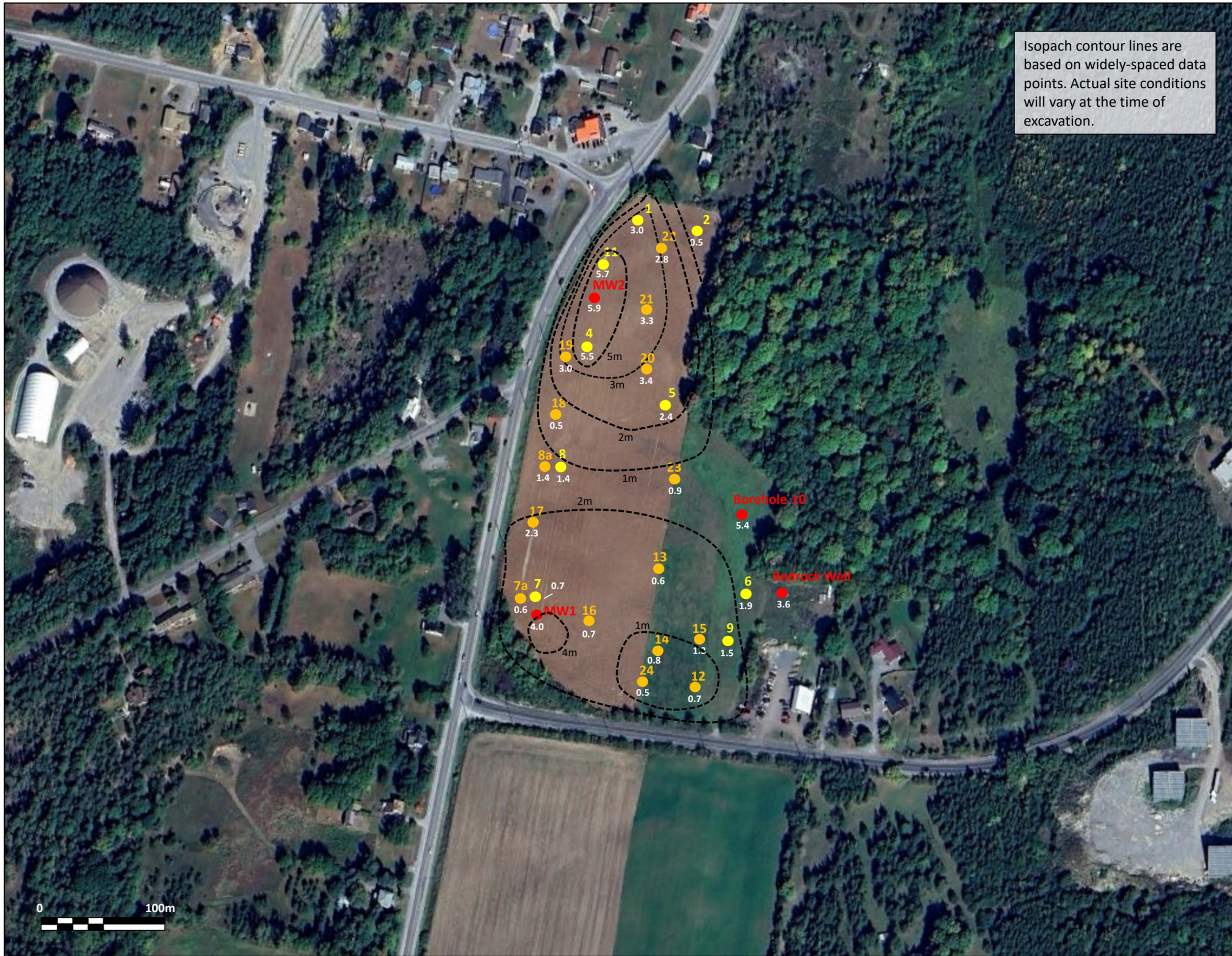
MECP (Ministry of Environment Conservation and Parks) 1996: D-5-5 Private Wells: Water Supply Assessment, updated March 15, 2016.

MECP (Ministry of Environment Conservation and Parks) 1996: D-5-4 Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment, updated April 14, 2016.

MECP (Ministry of Environment Conservation and Parks) 2008. Design Guidelines for Sewage Works <https://www.ontario.ca/document/design-guidelines-sewage-works/large-subsurface-sewage-disposal-systems>

Ontario Geological Survey 2011. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV

Stats Canada, 2017 <https://www150.statcan.gc.ca/n1/pub/16-201-x/2017000/sec-2/m-c/m-c-2.5-eng.htm>



Isopach contour lines are based on widely-spaced data points. Actual site conditions will vary at the time of excavation.

- NOTES:**
- 1) Base drawing and information obtained from Google Earth
 - 2) Overburden thickness values are in metres

- LEGEND:**
- Monitoring Well
 - Borehole
 - Test Pit



PROJECT 2236559:
HYDROGEOLOGY STUDY
318 LAKE STREET
PICTON, ONTARIO

DRAWING 1:
TEST HOLE LOCATIONS AND OVERBURDEN THICKNESS MAP



GREER GALLOWAY
CONSULTING ENGINEERS
PETERBOROUGH
BELLEVILLE
KINGSTON
1620 WALLBRIDGE LOYALIST ROAD
BELLEVILLE, ONTARIO, K8N 4Z5
PHONE: 613-966-3068
FAX: 613-966-3087

NOTES:

- 1) Base drawing and information obtained from Google Earth
- 2) Groundwater elevation data taken from MECP Water Well Records
- 3) Values are approximate as Well Records are recorded at different times of the year and in varying precipitation conditions

LEGEND:

-  MECP Well Record
-  Groundwater Flow Direction
-  Groundwater Contour Line

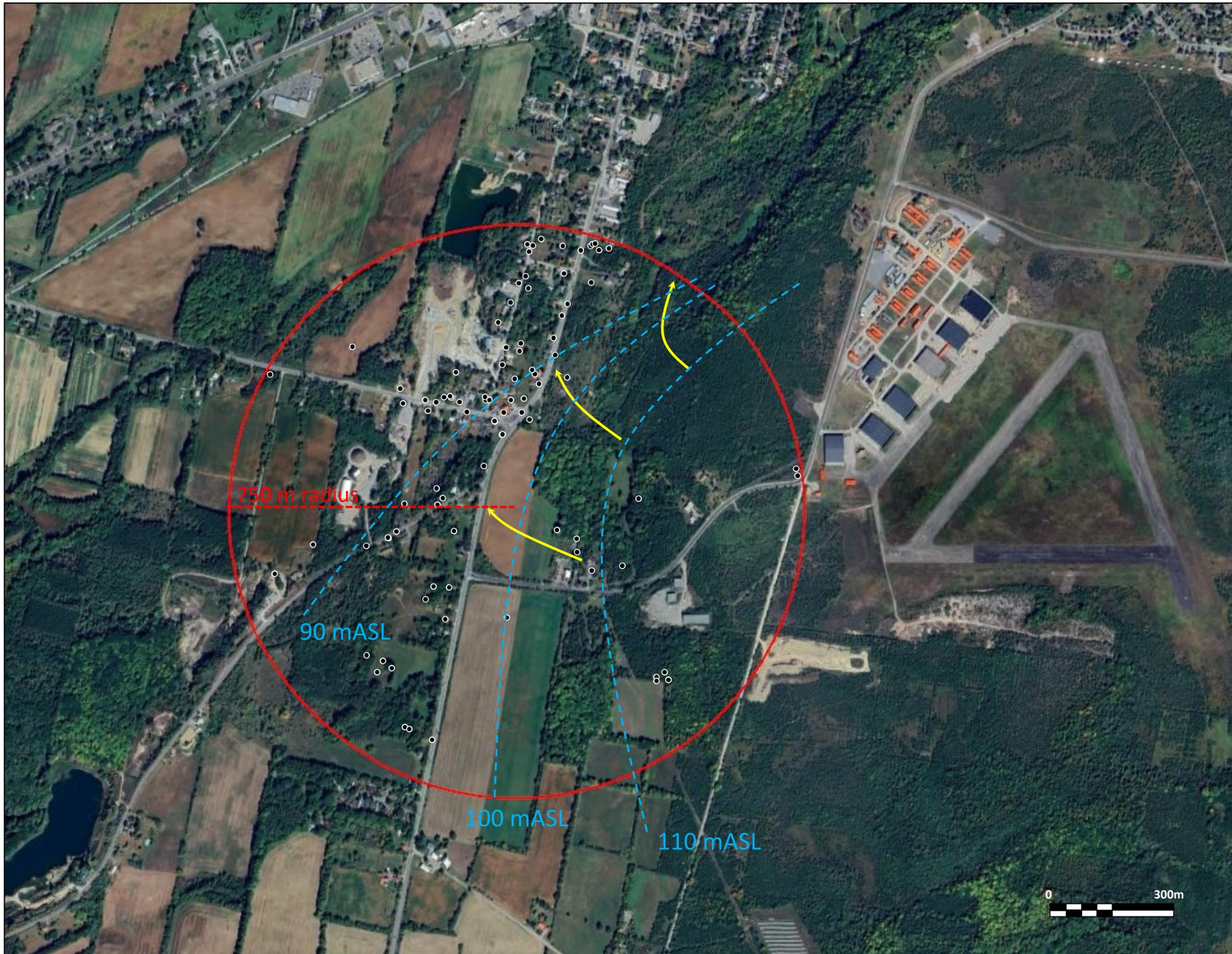


PROJECT 2236559:

HYDROGEOLOGY STUDY
318 LAKE STREET
PICTON, ONTARIO

DRAWING 2:

SITE PLAN WITH INTERPRETED GROUNDWATER
FLOW DIRECTION



Appendix A

Geotechnical Investigation Attachments

Borehole Data
March 20, 2023

Notes

1. Soil types, strata, and groundwater conditions have been established only at test hole locations.
2. Soils are described according to the MTO Soils Classification System and OPSD 100.06.
3. Dimensions are in millimetres up to 1 metre, then in metres thereafter.

Abbreviations

asph	-	asphalt	&	-	and
blds	-	boulders	w	-	with
blk	-	black	so	-	some
br	-	brown	tr	-	trace
BR	-	bedrock			
cl	-	clay(ey)	S	-	soil sample
cob	-	cobbles	Su	-	vane shear strength (kPa)
conc	-	concrete	N	-	estimated blow counts per 0.3m
cr	-	crushed			
f	-	fine			
gr	-	gravel(ly)			
gry	-	grey			
med	-	medium			
NFP	-	no further progress			
org	-	organics			
RF	-	rock fill			
sa	-	sand(y)			
si	-	silt(y)			
tps	-	topsoil			

1

0	-	50	br si tps	
50	-	2.10	br si -moist, loose	S4 at 0.5m
-compact at 910mm				
2.10	-	3.05	br si -moist, compact	Type 3 / Type 4 when wet
3.05			NFP, BR	

2

0	-	180	br cl tps
180	-	500	br si cl -moist, stiff
500			NFP, BR

11

0 - 90 br si tps
 90 - 4.72 br si -moist, loose
 At 1.5m N=5
 -compact at 3m
 At 4.6m N=11
 4.72 - 5.75 gry/br si -moist, compact
 5.75 NFP, BR inferred
 -water not encountered

4

0 - 60 br si tps
 60 - 4.88 br si -moist, loose S5 at 1.2m
 At 1.2m N=8
 -compact at 1.5m
 At 1.8m N=9
 4.88 - 5.45 br si -moist, compact
 -so gr at 5.18m
 5.45 NFP, BR
 -trace water seepage at 5.32m

5

0 - 200 br cl tps
 200 - 2.44 br cl si -moist, very stiff S3 at 0.5m
 At 1.2m Su=120 kPa
 At 1.8m Su=150 kPa
 2.44 NFP, BR

8

0 - 50 br si tps
 50 - 1.37 br si so gr -dry, compact
 At 0.9m N=20
 1.37 NFP, very dense till

10

0 - 100 br cl tps
 100 - 2.13 br si cl -moist, very stiff S2 at 1.0m
 At 1.5m N=10
 2.13 - 3.86 br si cl so gr -moist, very stiff
 At 3.0m N=7
 3.86 - 5.45 br si cl sa w gr till -wet, dense
 At 4.5m Su=200 kPa
 5.45 NFP, BR
 -water encountered at 2.13m

Monitoring Well installed:

5.45 - 3.93m 10slot screen

5.45 - 3.35m well sand fill

3.35 - 0m bentonite seal

-water rose to 0.305m below ground surface

7

0	-	50	br si tps
50	-	450	br si so gr -dry, dense
450	-	760	gry si so gr -dry, dense
760			NFP, very dense till

6

0	-	150	br cl tps
150	-	1.50	br si cl -moist, very stiff

At 1.2m Su=150 kPa

1.50	-	1.90	br si cl w gr till -moist, very stiff to hard
1.9			NFP, very dense till

9

0	-	70	br cl tps
70	-	1.52	br si cl sa w gr till -moist, compact S1 at 1.2m
1.52			NFP, BR

Laboratory Test Data

Soil Sample	S1	S2	S3	
Sieve	% Passing			
26.5mm	100	100	100	grain size
19.0mm	97.8	100	100	
13.2mm	96.9	100	100	
9.50mm	90.7	100	100	
4.75mm	74.3	99.2	99.5	
2.00mm	62.7	98.7	99.3	
850um	56.9	98.3	99.0	
425um	51.5	97.8	98.6	
250um	46.4	97.1	98.4	
106um	37.1	94.2	97.2	
75um	34.3	92.4	96.5	
ASTM	SC-SM	CL	ML	soil classification
frost rating	Low	Med	High	susceptibility to frost heave
liquid limit	25.7	38.1	24.7	
plastic limit	17.9	21.8	24.7	
plastic index	7.8	16.3	0.0	
% moisture	13.4	25.3	20.2	moisture content

Soil Sample	S4	S5		
Sieve	% Passing			
4.75mm	100	100	grain size	
2.36mm	100	100		
1.18mm	100	100		
600um	100	99.9		
300um	99.9	99.7		
150um	96.8	95.0		
75um	61.6	55.1		
ASTM	ML	ML		soil classification
frost rating	High	High		susceptibility to frost heave
% moisture	17.0	15.6		moisture content

**Test Pit Data
March 20, 2023**

22

0	-	100	br si tps	
100	-	2.80	br si -moist, compact	Type 3
2.80			NFP, flat limestone BR	

21

0	-	130	br si tps	
130	-	3.35	br si -moist, loose to compact	Type 3

19

0	-	110	br si tps	
110	-	3.05	br si -moist, loose	Type 3/Type 4 if disturbed or wet
			-not plastic	

20

0	-	150	br si tps	
150	-	3.35	br si -moist, loose	Type 3/Type 4 if disturbed or wet
			-collapsing at 2m	

18

0	-	100	br si tps	
100	-	450	br si -moist, loose	
450			NFP, flat limestone BR	

8a

0	-	150	br si tps	
150	-	1.50	br si -moist, loose	Type 3/Type 4 if disturbed or wet
1.50			NFP, flat limestone BR	
			-slight perched water seepage over BR surface	

23

0	-	150	br si tps	
150	-	850	br fractured limestone w si sa -moist, compact	
850			NFP, flat limestone BR	

17

0	-	150	br si tps	
150	-	700	br si -moist, loose to compact	
700	-	2.33	lt br si so gr/cob -moist, compact	
			-so blds after 1.5m	
2.33			NFP, flat limestone BR	

13

0 - 100 br cl tps
100 - 620 br si cl -moist, stiff
620 NFP, flat limestone BR
-some fractures on BR surface

6

0 - 150 br cl tps
150 - 600 br si cl sa -moist, compact
600 - 850 br si cl sa -moist, stiff
850 - 1.60 lt br si cl w fractured limestone -moist, stiff
-some perched water seepage from upper soils at 800mm

7a

0 - 100 br cl tps
100 - 600 br si sa w fractured limestone -moist, compact
600 NFP, flat limestone BR

16

0 - 130 br cl tps
130 - 700 br si sa w fractured limestone -moist, compact
700 NFP, flat limestone BR

14

0 - 120 br cl tps
120 - 720 br si cl -moist, very stiff
720 - 800 fractured limestone BR
800 NFP, flat limestone BR
-slight perched water on top of BR surface

15

0 - 150 br cl tps
150 - 610 br si cl sa -moist, compact
610 - 1.30 br fractured limestone w si sa -moist, compact to dense
-blds up to 610mm diameter
1.30 NFP, dense blds

24

0 - 180 br cl tps
180 - 500 br fractured limestone w si sa -moist, compact
500 NFP, flat limestone BR

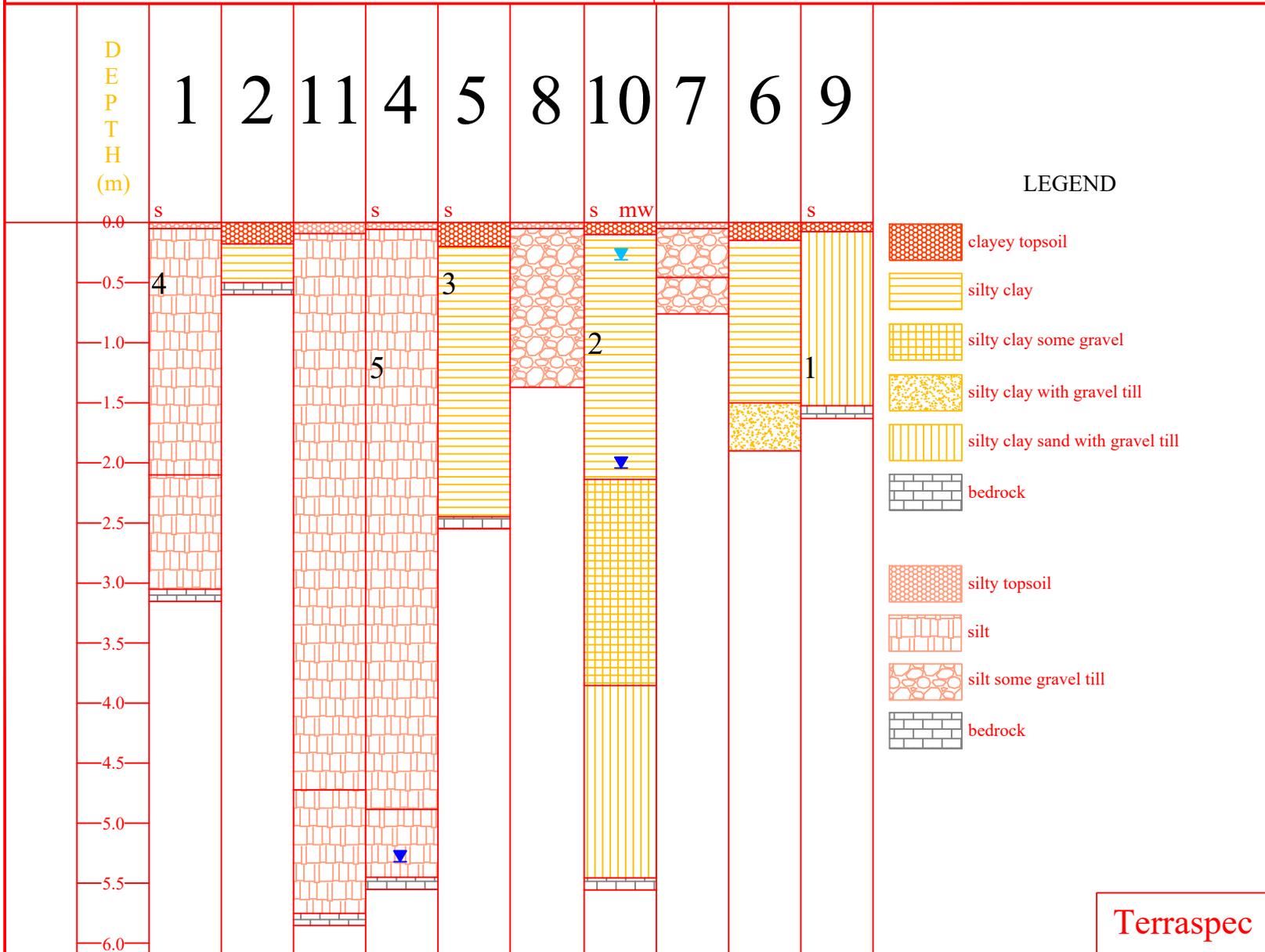
12

0	-	110	br si tps
110	-	400	br si sa -moist, compact
400	-	700	br si cl sa -moist, compact
700			NFP, flat limestone BR

BOREHOLE LOG DATA

PROJECT No.: 22-3-6559
 CLIENT: High Street Acquisitions
 PROJECT: 318 Lake Street, Picton
 DATE: March 20, 2023

SOIL DATA
 METHOD: 130mm solid stem auger
 s = sample
 mw = monitoring well
 ▼ encountered water elevation



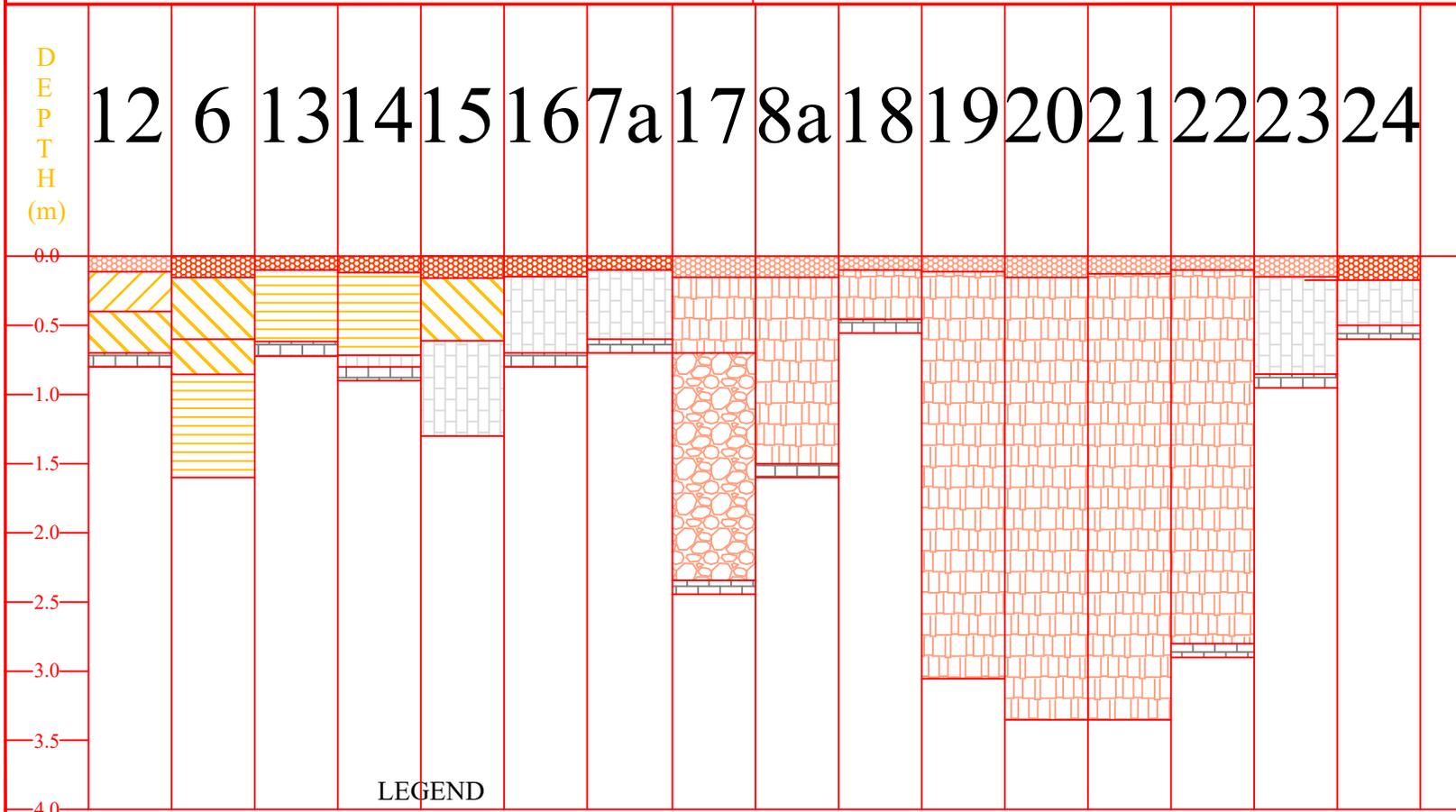
Terraspec

TEST HOLE LOG DATA

PROJECT No.: 22-3-6559
 CLIENT: High Street Acquisitions
 PROJECT: 318 Lake Street, Picton
 DATE: May 3, 2023

SOIL DATA
 METHOD: Excavation

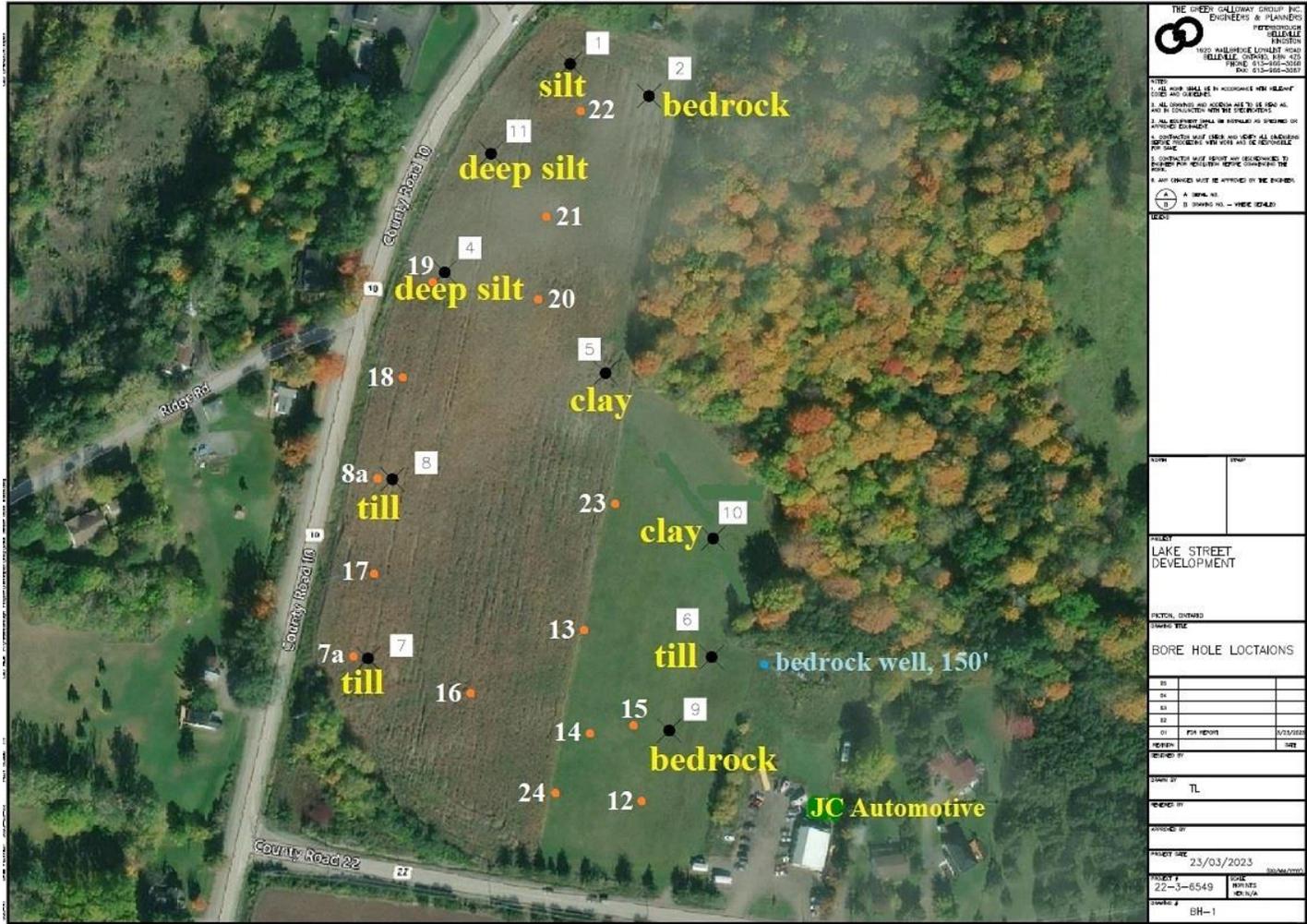
▼ encountered water elevation



LEGEND

- | | |
|---|---|
|  clayey topsoil |  silty topsoil |
|  silty sand |  silt |
|  silty clay sand |  silt some gravel/cobble |
|  silty clay |  bedrock |
|  fractured limestone with silty sand | |

Terraspec



Site Plan with Test Hole Locations



Photo of Test Pit 6



Photo of Test Pit 16



Photo of Test Pit 17

Appendix B

MECP Water Well Records Within 300m



30N149

UTM 18Z 326874E

M 5R 4872520N

Con. 11R 0330

Basin 24 Prince Edward

County District Lot 2 M.T. Lot 22

The Ontario Water Resources Commission Act

WATER WELL RECORD

53 No 1020
 WATER RESOURCES DIVISION
 DEC 7 1965
 Hallowell
 ONTARIO WATER RESOURCES COMMISSION

Township, Village, Town or City: Hallowell
 Date completed: August 13, 1965 (day month year)

Address: RR#3, Picton, Ont.

Casing and Screen Record

Inside diameter of casing 8"
 Total length of casing 6 ft.
 Type of screen
 Length of screen
 Depth to top of screen
 Diameter of finished hole 8"

Pumping Test

Static level 21 ft.
 Test-pumping rate 4 G.P.M.
 Pumping level 80 ft.
 Duration of test pumping 1 hr.
 Water clear or cloudy at end of test clear
 Recommended pumping rate 4 G.P.M.
 with pump setting of 94 ft. 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)
coarse sand	0	6	90 ft.	fresh
grey limestone	6	97		

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

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

Drilling or Boring Firm L.H. McClennon & Son

Address Wellington, Ont.

Licence Number 1688

Name of Driller or Borer L.H. McClennon

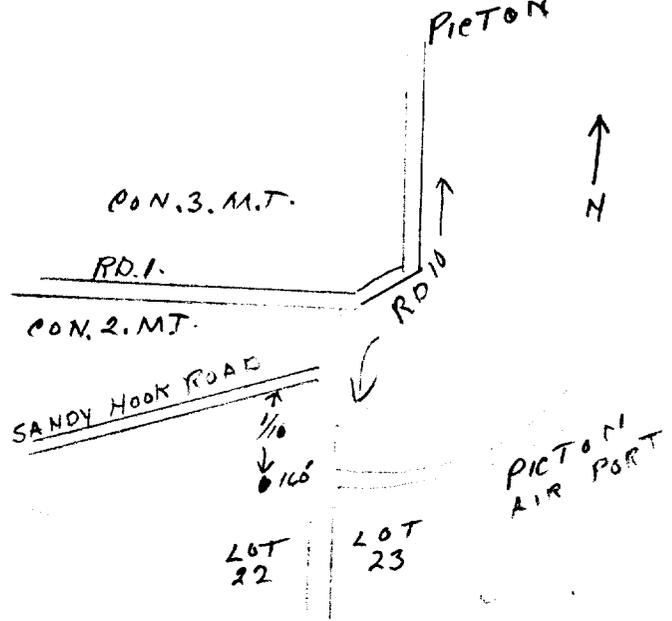
Address Wellington, Ont.

Date August 31, 1965

(Signature of Licensed Drilling or Boring Contractor)

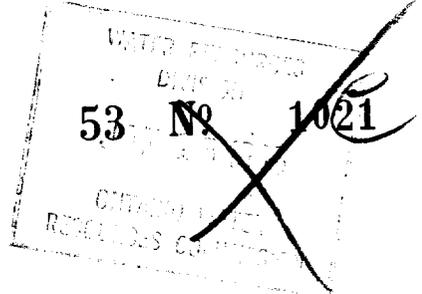
Location of Well

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





30N149



UTM 118^z 312710116^E

Well ID: 18722165^N

Elev. 10370

Basin 24³ County or District Prince Edward

Con. 2 M T Lot 23

The Ontario Water Resources Commission Act

WATER WELL RECORD

Township, Village, Town or City - Hallowell

Date completed Nov. 25, 1964 (day month year)

Address RR#3, Picton, Ont.

Casing and Screen Record

Inside diameter of casing 8"

Total length of casing 14 ft.

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 8"

Pumping Test

Static level 10ft.

Test-pumping rate 5 G.P.M.

Pumping level 60 ft.

Duration of test pumping 2 hr.

Water clear or cloudy at end of test clear

Recommended pumping rate 5 G.P.M.

with pump setting of 65 ft. feet below ground surface

Well Log

Overburden and Bedrock Record

existing dug well

clay gravel and boulders

grey limestone

Water Record

From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
0	9	14 ft.	fresh
9	14		
14	70		

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

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

Drilling or Boring Firm L.H. McClennon & Son

Address Wellington, Ont.

Licence Number 1329

Name of Driller or Borer Ken McClennon

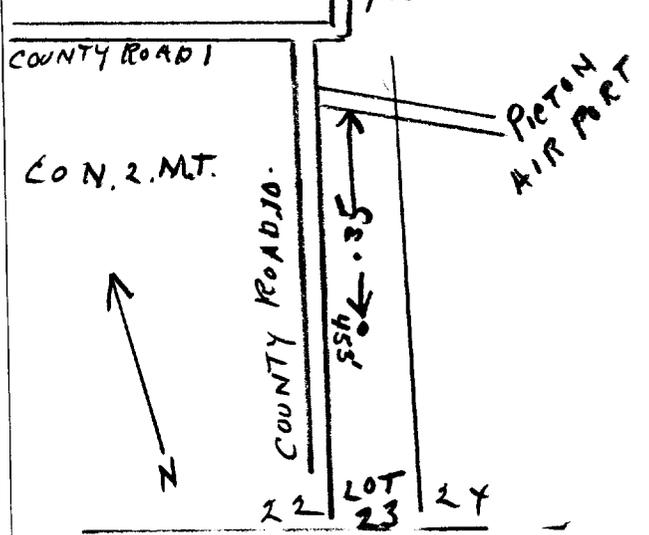
Address Wellington, Ont.

Date Nov. 30, 1964

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



UTM 18 13 27 07 4^E
5^R 48 72 84 13^N



30 N. 148

53 No. 1089
 JUN 1 1967
 ONTARIO WATER RESOURCES COMMISSION

Elev. 79^R 0357
 Basin 24 PRINCE EDWARD Township, Village, Town or City HOLLOWELL
 County or District
 Con. 11 3 MT Lot 24 23 Date completed 28 7 66
 (day month year)
 Address PICTON

WATER WELL RECORD

Casing and Screen Record

Inside diameter of casing 6 1/4"
 Total length of casing 14'
 Type of screen
 Length of screen
 Depth to top of screen
 Diameter of finished hole 6"

Pumping Test

Static level 52'
 Test-pumping rate 6 G.P.M.
 Pumping level 67'
 Duration of test pumping 4 1/2 hr.
 Water clear or cloudy at end of test CLEAR
 Recommended pumping rate 3 G.P.M.
 with pump setting of 70' feet below ground surface

Well Log

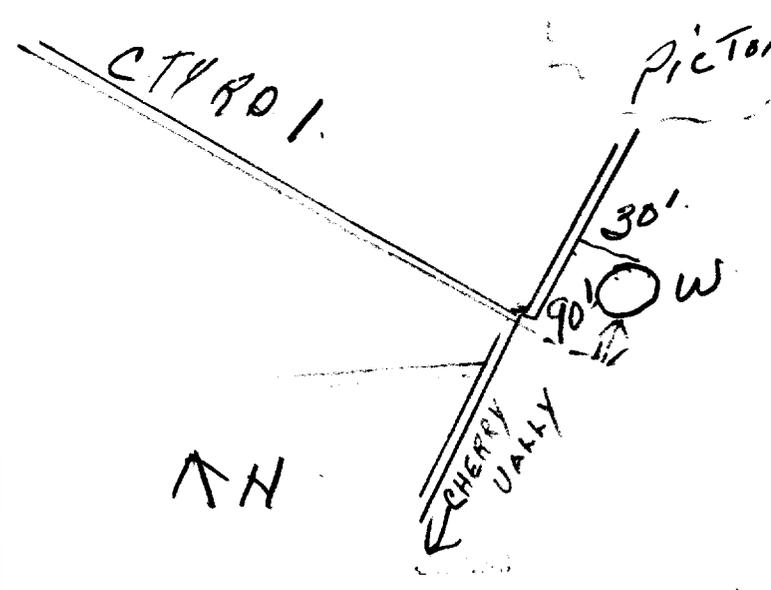
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>SAND</u>	<u>0</u>	<u>14</u>		
<u>LIMESTONE</u>	<u>14</u>	<u>75</u>	<u>73'</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 RALPH POLSTON
 Address BLOOMFIELD
 Licence Number 2006
 Name of Driller or Borer SAME
 Address
 Date 19/12/66
Ralph Polston
 (Signature of Licensed Drilling or Boring Contractor)

Location of Well

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





WATER WELL RECORD

30N/146

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

11

5302575

MUNICIP. 530003

CON. MT

22 23 24 02

COUNTY OR DISTRICT: PRINCE EDWARD TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: HALLOWELL
 OWNER (SURNAME FIRST): OAKLEY-NORTH CONSTR. ADDRESS: BOX 324 PICTON, ONT.
 DATE COMPLETED: DAY 29 MO 09 YR 1999

ZONE: 11 EASTING: 1327240 NORTHING: 4872410 RC: 4 ELEVATION: 0398 BASIN CODE: 24

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	SAND	GRAVEL		0	8
GREY	LIMESTONE			8	115

31 000862811 0115215
 32

41 WATER RECORD

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

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
08	<input checked="" type="checkbox"/> STEEL	188	0	115
17-18	<input type="checkbox"/> STEEL		10	115
24-25	<input type="checkbox"/> STEEL			

SCREEN

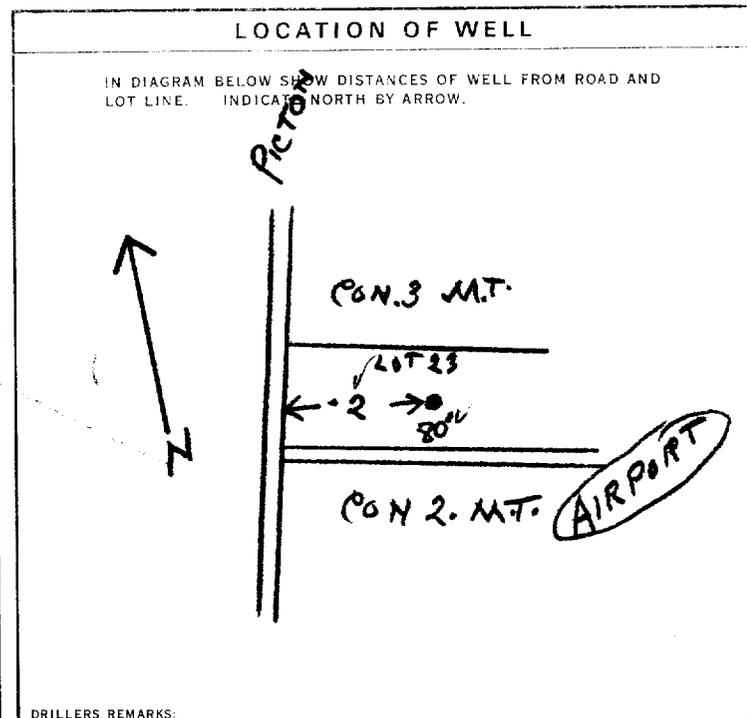
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN
		FEET

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: PUMP BAILER
 PUMPING RATE: 0030 GPM
 DURATION OF PUMPING: 00 HOURS 45 MINS
 STATIC LEVEL: 075 FEET
 WATER LEVEL END OF PUMPING: 115 FEET
 WATER LEVELS DURING: 15-MINUTES: 075 FEET, 30-MINUTES: 075 FEET, 45-MINUTES: 075 FEET, 60-MINUTES: 075 FEET
 IF FLOWING, GIVE RATE: 000.8 GPM
 RECOMMENDED PUMP TYPE: SHALLOW DEEP
 RECOMMENDED PUMP SETTING: 0110 FEET
 RECOMMENDED PUMPING RATE: 0005 GPM



FINAL STATUS OF WELL

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

WATER USE 01

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: L.H. McCLENNON-SON LICENCE NUMBER: 3516
 ADDRESS: WELLINGTON, ONT.
 NAME OF DRILLER OR BORER: Ken McClellon
 SIGNATURE OF CONTRACTOR: L.H. McClellon
 SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE: 1 CONTRACTOR: 3516 DATE RECEIVED: 230173
 DATE OF INSPECTION: INSPECTOR: 280173
 REMARKS: P WJ
 WI

WATER WELL RECORD

30/11/79

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

11 5303901 53003 MT 03
 COUNTY OR DISTRICT: **Hallowell** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **III M.T.** LOT: 25-27
 DATE COMPLETED: 09 05 79
 RR# 3 Picton
 RC: 4 ELEVATION: 0380 BASIN CODE: 29

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	clay	small stone	loose	0	9
grey	limestone		hard	9	150

31 000916051277 015021573
 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0110	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
0146	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 1/2	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	0	20.2
6 1/2	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		20.2	0150

SCREEN

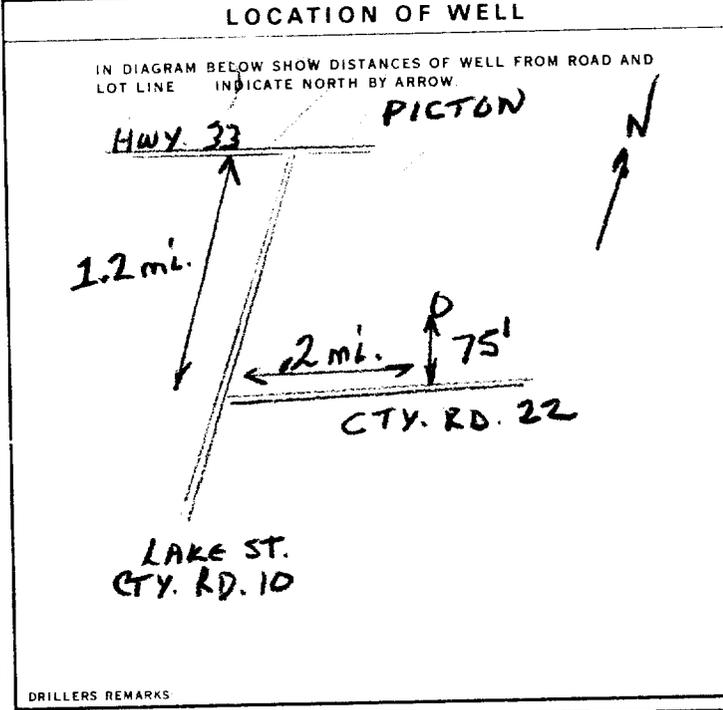
SIZE(S) OF OPENING (SLOT NO 1)	DIAMETER	LENGTH
	INCHES	FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC)
FROM TO	
10-13	14-17
18-21	22-25
26-29	30-33 80

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	0004 GPM	02 HOURS 00 MINS
STATIC LEVEL: 040 FEET	WATER LEVEL END OF PUMPING: 150 FEET	WATER LEVELS DURING:
		15 MINUTES: 100 FEET 30 MINUTES: 060 FEET 45 MINUTES: 040 FEET 60 MINUTES: 040 FEET
IF FLOWING GIVE RATE	PUMP INTAKE SET AT: 147 FEET	WATER AT END OF TEST: 42 FEET
RECOMMENDED PUMP TYPE: <input checked="" type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE: 0004 GPM



FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: **CHALK WELL DRILLING LTD.** LICENCE NUMBER: **1507**
 ADDRESS: **RR#6 Napanee**
 NAME OF DRILLER OR BORER: **R. Ian Chalk** LICENCE NUMBER: **1576**
 SIGNATURE OF CONTRACTOR: **R. Ian Chalk** SUBMISSION DATE: **9 5 79**
 CHALK WELL DRILLING LTD. DAY 9 MO 5 YR 79

OFFICE USE ONLY

DATA SOURCE: 1 CONTRACTOR: 1507 DATE TESTED: 28 01 80
 DATE OF INSPECTION: INSPECTOR: *[Signature]*
 REMARKS: *[Signature]*



Ministry of the Environment
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

30N/14g

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

11 5303903 53.003 MT 03

COUNTY OR DISTRICT: **Halton** TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **III M.T.** CON. BLOCK, TRACT, SURVEY ETC: **023 23**

DATE COMPLETED: DAY **15** MO **05** YR **79**

RR# **3** PICTON

ELEVATION: **72.500** RC: **4** BASIN CODE: **24**

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	clay		loose	0	2
grey	shale		broken	2	12
grey	limestone		hard	12	160

31 000260577 001221771 0116021573

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER			
10-13	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL
0130	15-18	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY
0154	20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 1/2	1 <input checked="" type="checkbox"/> STEEL	.188	0	20'6"
06	2 <input type="checkbox"/> GALVANIZED			0021
5 1/2	3 <input type="checkbox"/> CONCRETE		20'6"	0160
06	4 <input checked="" type="checkbox"/> OPEN HOLE			
	1 <input type="checkbox"/> STEEL			
	2 <input type="checkbox"/> GALVANIZED			
	3 <input type="checkbox"/> CONCRETE			
	4 <input type="checkbox"/> OPEN HOLE			

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE
10-13	14-17
18-21	22-25
26-29	30-33

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER

PUMPING RATE: 0006 GPM

DURATION OF PUMPING: 02 HOURS 25 MINS

STATIC LEVEL: 057 FEET

WATER LEVEL END OF PUMPING: 160 FEET

WATER LEVELS DURING:

15 MINUTES: 080 FEET	30 MINUTES: 057 FEET	45 MINUTES: 057 FEET	60 MINUTES: 057 FEET
----------------------	----------------------	----------------------	----------------------

IF FLOWING: GIVE RATE: 38-41 GPM

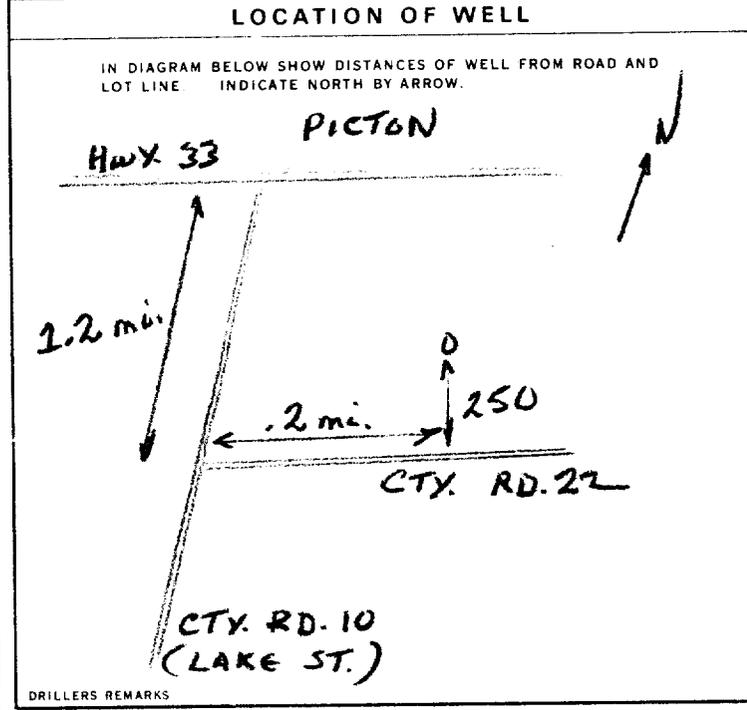
PUMP INTAKE SET AT: 157 FEET

WATER AT END OF TEST: 1 CLEAR 2 CLOUDY

RECOMMENDED PUMP TYPE: SHALLOW DEEP

RECOMMENDED PUMP SETTING: 157 FEET

RECOMMENDED PUMPING RATE: 0006 GPM



FINAL STATUS OF WELL

1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY

2 OBSERVATION WELL 6 ABANDONED POOR QUALITY

3 TEST HOLE 7 UNFINISHED

4 RECHARGE WELL

WATER USE 01

1 DOMESTIC 5 COMMERCIAL

2 STOCK 6 MUNICIPAL

3 IRRIGATION 7 PUBLIC SUPPLY

4 INDUSTRIAL 8 COOLING OR AIR CONDITIONING

9 NOT USED

METHOD OF DRILLING 1

1 CABLE TOOL 6 BORING

2 ROTARY (CONVENTIONAL) 7 DIAMOND

3 ROTARY (REVERSE) 8 JETTING

4 ROTARY (AIR) 9 DRIVING

5 AIR PERCUSSION

CONTRACTOR

NAME OF WELL CONTRACTOR: **CHALK WELL DRILLING LTD.** LICENCE NUMBER: **1507**

ADDRESS: **RR#6 Napanee**

NAME OF DRILLER OR BORER: **R. Ian Chalk** LICENCE NUMBER: **1576**

SIGNATURE OF CONTRACTOR: **R. Ian Chalk**

SUBMISSION DATE: DAY **15** MO **5** YR **79**

OFFICE USE ONLY

DATA SOURCE: 1 CONTRACTOR: 1507 DATA RECEIVED: 28 01 80

DATE OF INSPECTION: INSPECTOR: **VA**

REMARKS: **R. Ian Chalk**



Ministry of the Environment
Ontario

The Ontario Water Resources Act

30N149

WATER WELL RECORD

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

11

5304195

MUNICIPALITY 53.003

CON. MT

02

COUNTY OR DISTRICT: [REDACTED] TOWNSHIP, BOROUGH CITY TOWN VILLAGE: **Lowell** CON. BLOCK TRACT. SURVEY ETC: **II MT.**

DATE COMPLETED: DAY **14** MO **06** YR **82**

R.R.#3 **Pictou**

NG: **72799** RC: **4** ELEVATION: **0350** RC: **4** BASIN CODE: **244**

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)					
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	sand	gravel	loose	0	10
grey	limestone		hard	10	72

31: 00106281177 0072215173

32: [REDACTED]

41 WATER RECORD

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

51 CASING & OPEN HOLE RECORD

INSIDE DIA. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	0
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		12'8" 0072
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		

SCREEN

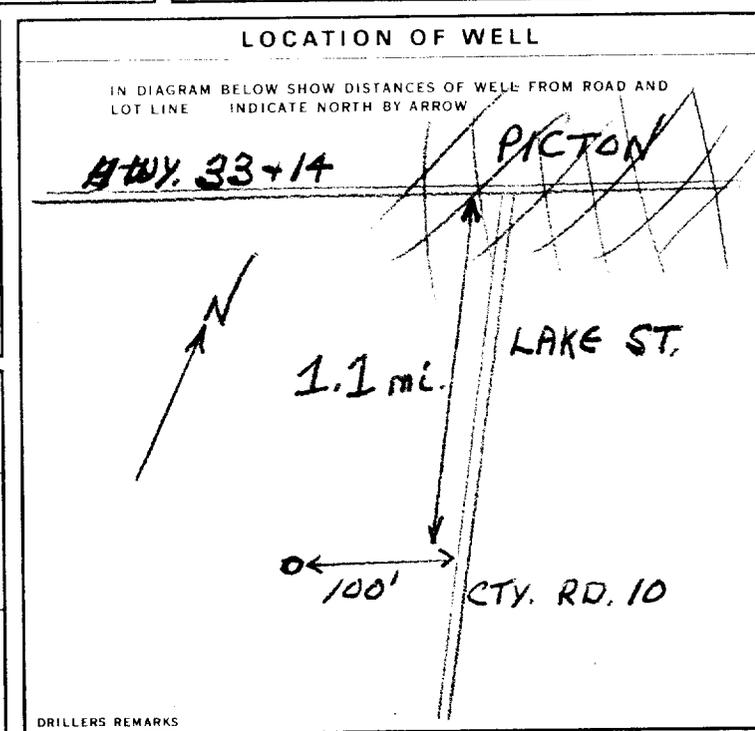
SIZES OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
		DEPTH TO TOP OF SCREEN

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	PUMPING RATE: 0006 GPM	DURATION OF PUMPING: 01 HOURS 00 MINS
STATIC LEVEL: 015 FEET	WATER LEVEL END OF PUMPING: 070 FEET	WATER LEVELS DURING:
		15 MINUTES: 021 FEET
		30 MINUTES: 015 FEET
		45 MINUTES: 015 FEET
		60 MINUTES: 015 FEET
IF FLOWING GIVE RATE: 38-41	PUMP INTAKE SET AT: 068 FEET	WATER AT END OF TEST: 0006 GPM
RECOMMENDED PUMP TYPE: <input checked="" type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING: 068 FEET	RECOMMENDED PUMPING RATE: 0006 GPM



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

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

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

CONTRACTOR

NAME OF WELL CONTRACTOR: **CHALK WELL DRILLING LTD.** LICENCE NUMBER: **1507**

ADDRESS: **R.R.#6 Madawaska**

NAME OF DRILLER OR BORER: **R. Ian Chalk** LICENCE NUMBER: **1576**

SIGNATURE OF CONTRACTOR: [Signature]

SUBMISSION DATE: DAY **14** MO **6** YR **82**

OFFICE USE ONLY

DATA SOURCE: **1** CONTRACTOR: **1507** DATE RECEIVED: **20 01 83**

DATE OF INSPECTION: [REDACTED] INSPECTOR: [REDACTED]

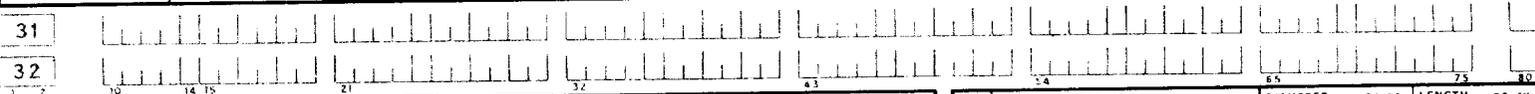
REMARKS: [Signature]

5304571

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Hallowell	CON. BLOCK, TRACT, SURVEY, ETC. II M.T.	LOT 22
R.R.#1 Picton		DATE COMPLETED DAY 13 MO 5 YR 86	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)					
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	sand		loose	0	22
brown	sand	fine gravel	loose	22	35
brown	sand	coarse gravel	packed	35	44
brown	sand	fine gravel	packed	44	47
grey	limestone		hard	47	83



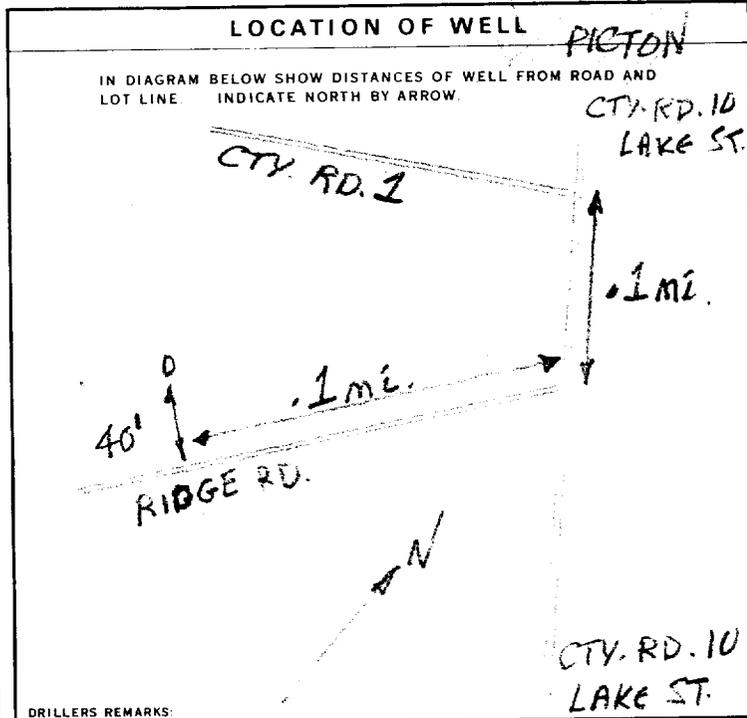
41 WATER RECORD	
WATER FOUND AT - FEET	KIND OF WATER
10-13 60	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18 75	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD				
INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6 1/4	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	0	48'6"
6 1/4	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		48'6"	83
	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			

SCREEN	SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
		INCHES	FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN	
		41-44	10

61 PLUGGING & SEALING RECORD		
DEPTH SET AT - FEET		MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
FROM	TO	
10-13	14-17	
18-21	22-25	
26-29	30-33	80

71 PUMPING TEST	10-13 PUMPING TEST METHOD 1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER		11-14 PUMPING RATE 3 GPM		15-18 DURATION OF PUMPING 1 HOURS 0 MINS	
	14-17 STATIC LEVEL 45 FEET		17-19 WATER LEVEL END OF PUMPING 83 FEET		19-21 WATER LEVELS DURING	
	21-23 15 MINUTES 55 FEET		23-25 30 MINUTES 48 FEET		25-27 45 MINUTES 45 FEET	
	27-29 60 MINUTES 45 FEET		31-33 PUMP INTAKE SET AT 80 GPM		33-35 WATER AT END OF TEST 1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY	
	35-37 RECOMMENDED PUMP TYPE 1 <input type="checkbox"/> SHALLOW 2 <input checked="" type="checkbox"/> DEEP		39-41 RECOMMENDED PUMP SETTING 80 FEET		41-43 RECOMMENDED PUMPING RATE 3 GPM	



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

CONTRACTOR	NAME OF WELL CONTRACTOR CHALK HILL DRILLING LTD.	LICENCE NUMBER 1507
	ADDRESS R.R.#6 Napanee	
	NAME OF DRILLER OR BORER R. Ian Chalk	LICENCE NUMBER 1576
	SIGNATURE OF CONTRACTOR	SUBMISSION DATE DAY 13 MO 5 YR 86

OFFICE USE ONLY	DATA SOURCE	58 CONTRACTOR	59-62 USE RECEIVED 300187	63-68	80
	DATE OF INSPECTION		INSPECTOR		

CCS-ES



Ministry
of the
Environment

The Ontario Water Resources Act

WATER WELL RECORD

5304573

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

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Hallowell	CON. BLOCK, TRACT, SURVEY, ETC. II M.T.	LOT 22
R.R.#1 Ficton		DATE COMPLETED DAY 18 MO 6 YR 86	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
brown	sand		loose	0	8
brown	gravel	fine	packed	8	35
brown	gravel	coarse	packed	35	68
brown	limestone		hard	68	125

31	32
----	----

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13 114	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
10-11 6 1/4	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	0	70
17-18 6 1/4	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input checked="" type="checkbox"/> OPEN HOLE		70	125
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			27-30

SCREEN

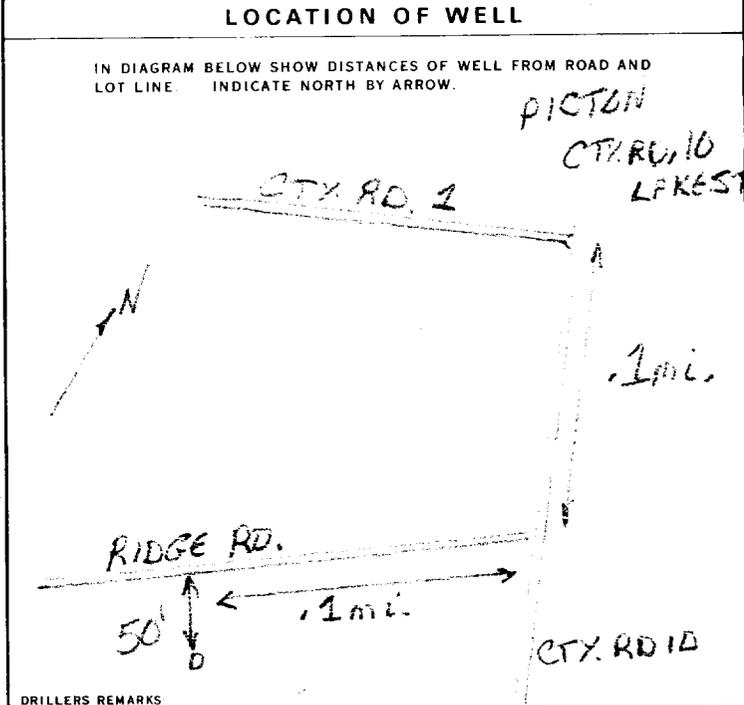
SIZE (S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
	INCHES	FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN	
	41-44	10
	FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
FROM TO	
10-13 14-17	
18-21 22-25	
26-29 30-33 80	

71 PUMPING TEST

PUMPING TEST METHOD 1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> BAILER	PUMPING RATE 3 GPM	DURATION OF PUMPING 1 15-16 HOURS 0 17-18 MINS
STATIC LEVEL 19-21 55 FEET	WATER LEVEL END OF PUMPING 22-24 125 FEET	WATER LEVELS DURING 15 MINUTES 26-28 85 FEET 30 MINUTES 29-31 70 FEET 45 MINUTES 32-34 56 FEET 60 MINUTES 35-37 55 FEET
IF FLOWING, GIVE RATE 38-41	PUMP INTAKE SET AT GPM	WATER AT END OF TEST 42 1 <input checked="" type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 43-45 122 FEET	RECOMMENDED PUMPING RATE 46-49 3 GPM



FINAL STATUS OF WELL

1 <input checked="" type="checkbox"/> WATER SUPPLY 2 <input type="checkbox"/> OBSERVATION WELL 3 <input type="checkbox"/> TEST HOLE 4 <input type="checkbox"/> RECHARGE WELL	5 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY 6 <input type="checkbox"/> ABANDONED, POOR QUALITY 7 <input type="checkbox"/> UNFINISHED
---	--

WATER USE

1 <input checked="" type="checkbox"/> DOMESTIC 2 <input type="checkbox"/> STOCK 3 <input type="checkbox"/> IRRIGATION 4 <input type="checkbox"/> INDUSTRIAL <input type="checkbox"/> OTHER	5 <input type="checkbox"/> COMMERCIAL 6 <input type="checkbox"/> MUNICIPAL 7 <input type="checkbox"/> PUBLIC SUPPLY 8 <input type="checkbox"/> COOLING OR AIR CONDITIONING 9 <input type="checkbox"/> NOT USED
--	--

METHOD OF DRILLING

1 <input checked="" type="checkbox"/> CABLE TOOL 2 <input type="checkbox"/> ROTARY (CONVENTIONAL) 3 <input type="checkbox"/> ROTARY (REVERSE) 4 <input type="checkbox"/> ROTARY (AIR) 5 <input type="checkbox"/> AIR PERCUSSION	6 <input type="checkbox"/> BORING 7 <input type="checkbox"/> DIAMOND 8 <input type="checkbox"/> JETTING 9 <input type="checkbox"/> DRIVING
---	---

CONTRACTOR

NAME OF WELL CONTRACTOR CHALK WELL DRILLING LTD.	LICENCE NUMBER 1507
ADDRESS R.R.#6 Nanawane	
NAME OF DRILLER OR BORER R. Ian Chalk	LICENCE NUMBER T-0047
SIGNATURE OF CONTRACTOR	SUBMISSION DATE DAY 18 MO 6 YR 86

DATE RECEIVED

DATA SOURCE	CONTRACTOR	DATE RECEIVED 300187
DATE OF INSPECTION	INSPECTOR	
REMARKS		

CS:IBS

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

11 5305676 53003 MT 03

COUNTY OR DISTRICT: [REDACTED] TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: **OWELL** CON. BLOCK, TRACT, SURVEY ETC: **1** LOT: **24**
DATE COMPLETED: **31** MO **5** YR **91**
SISEAUGA ONE LHT 306

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)					
GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	TOP SOIL			0	1
BROWN	CLAY	STONES		1	4
GRAY		SHALE	LIMESTONE	4	6
GRAY			LIMESTONE	6	200

31 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER			
10-13 130	<input checked="" type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	<input type="checkbox"/> 14	
15-18	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	<input type="checkbox"/> 19	
20-23	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	<input type="checkbox"/> 24	
25-28	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	<input type="checkbox"/> 29	
30-33	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY	<input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS	<input type="checkbox"/> 34	

51 CASING & OPEN HOLE RECORD

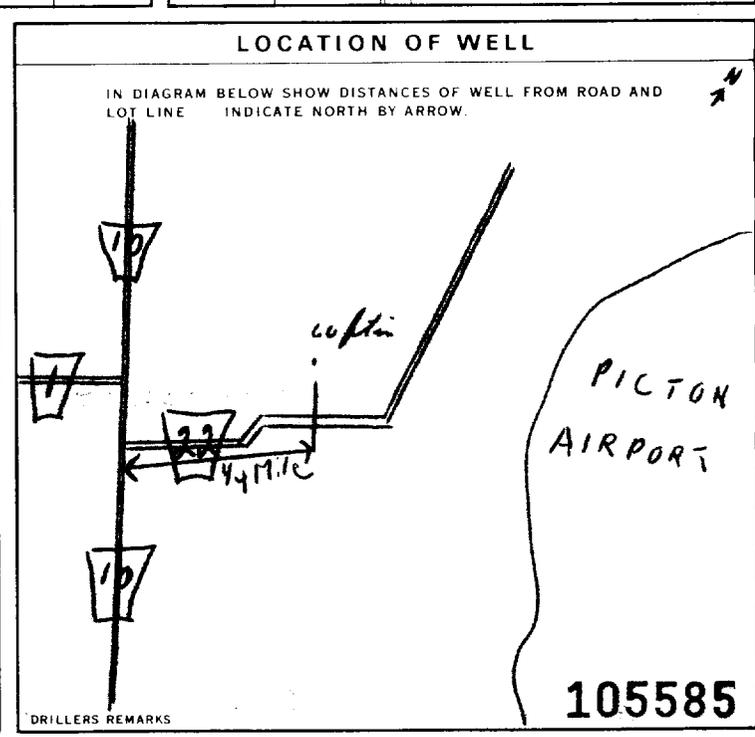
INSIDE DIA. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11 6 1/4	<input checked="" type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC	1 1/8	0	20
17-18	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input checked="" type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC		20	200
24-25	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC			27-30

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING	
<input type="checkbox"/> PUMP <input checked="" type="checkbox"/> BAILER	1/2 GPM	1 HOURS	30 MINS
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	
40 FEET	125 FEET	15 MINUTES	30 MINUTES
		45 MINUTES	60 MINUTES
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST	
	128 GPM	<input checked="" type="checkbox"/> CLEAR	<input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE	
<input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	128 FEET	1/2 GPM	



FINAL STATUS OF WELL

WATER USE

METHOD OF CONSTRUCTION

CONTRACTOR

NAME OF WELL CONTRACTOR: **Bill's Well Drilling**
ADDRESS: **R.R. 1 Foxboro Ontario**
NAME OF WELL TECHNICIAN: **William Donaldson**
SIGNATURE OF TECHNICIAN/CONTRACTOR: *William Donaldson*
WELL CONTRACTOR'S LICENCE NUMBER: **1352**
WELL TECHNICIAN'S LICENCE NUMBER: **70046**
SUBMISSION DATE: **31** MO **5** YR **91**

OFFICE USE ONLY

DATA SOURCE: **1352**
DATE RECEIVED: **DEC 19 1991**
DATE OF INSPECTION: _____
INSPECTOR: _____
REMARKS: _____

Measurements recorded in: Metric Imperial

A 174257

Tag#: A174257

Page _____ of _____

Address of Well Location (Street Number/Name) 616 County Road 22		Township Prince Edward	Lot Pt. 23	Concession MT Tract 2
County/District/Municipality Prince Edward		City/Town/Village Picton	Province Ontario	Postal Code K0K 2T0
UTM Coordinates Zone NAD 83 18	Easting 327181	Northing 4872744	Municipal Plan and Sublot Number Other	

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)					
General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
Brown	Loam		Loose	0	1
Grey	Limestone		Broken	1	7
Grey	Limestone		Hard	7	41
Grey	Limestone		Broken	41	67
Grey	Limestone		Hard	67	81

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
From: 20 To: 0	Bentonite	7.7
From: 79 To: 57	Peastone	9.1

Method of Construction		Well Use		
<input type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Not used
<input type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input type="checkbox"/> Domestic	<input type="checkbox"/> Municipal	<input type="checkbox"/> Dewatering
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Driving	<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)	Wall Thickness (cm/in)	Depth (m/ft)		<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify
			From	To	
6.25	Steel	.188	+2	20	
4.0"	PVC	Sch 40	9	69	

Construction Record - Screen				Status of Well	
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)		
			From	To	
4"	PVC	.010	69	79	

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m/ft)	Diameter (cm/in)
67	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	From: 0 To: 20	10"
		From: 20 To: 81	6"

Well Contractor and Well Technician Information			
Business Name of Well Contractor Chalk Well Drilling Ltd.		Well Contractor's Licence No. 1 5 0 7	
Business Address (Street Number/Name) 31 Johnson's Side Road		Municipality Napane	
Province Ontario	Postal Code K7R 3L1	Business E-mail Address chalkwel kos.net	
Bus. Telephone No. (inc. area code) 613 388-2809	Name of Well Technician (Last Name, First Name) Chalk, Kevin		
Well Technician's Licence No. 0 6 2 7	Signature of Technician and/or Contractor Kevin Chalk		Date Submitted 2015 05 27

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) 76 Pumping rate (l/min / GPM) 15 g.p.m. Duration of pumping 1 hrs + 30 min Final water level end of pumping (m/ft) 51.0 If flowing give rate (l/min / GPM) Recommended pump depth (m/ft) 76 Recommended pump rate (l/min / GPM) 10 g.p.m. Well production (l/min / GPM) 15+ g.p.m. Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Static Level	46.9		51.0
	1	49.8	1	48.2
	2	49.9	2	48.1
	3	50.0	3	48.1
	4	50.0	4	48.0
	5	50.0	5	48.0
10	50.2	10	47.9	
15	50.2	15	47.8	
20	50.3	20	47.7	
25	50.4	25	47.7	
30	50.5	30	47.6	
40	50.7	40	47.5	
50	50.8	50	47.5	
60	50.9	60	47.4	

Map of Well Location	
Please provide a map below following instructions on the back.	
Comments:	
Well owner's information package delivered <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered 2015 05 27
Date Work Completed 2015 05 27	
Ministry Use Only Audit No. 2198541 JUN 09 2015 Received	

A169563

Address of Well Location (Street Number/Name) 530 COUNTY ROAD 22		Township	Lot	Concession
County/District/Municipality PRINCE EDWARD COUNTY		City/Town/Village PICTON	Province Ontario	Postal Code K1K2T0
UTM Coordinates Zone Easting NAD 83 183271390	UTM Coordinates Northing 48721834	Municipal Plan and Sublot Number		Other

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)				
General Colour	Most Common Material	Other Materials	Depth (m/ft)	
			From	To
BROWN	SAND		0	17
GREY	CLAY	STONES	17	19
GREY	LIMESTONE		19	60

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To	
0	20 BENTONITE SLURRY	6.98

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

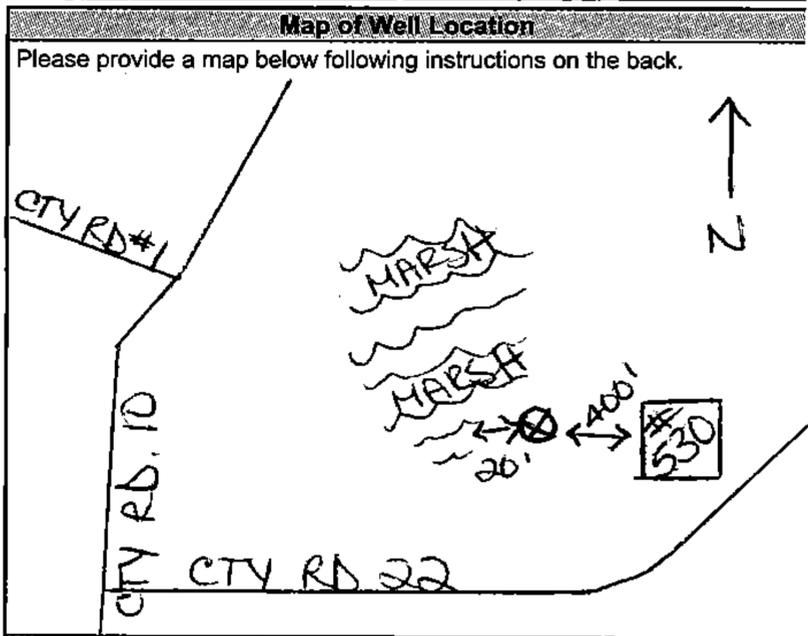
Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		<input checked="" type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify
			From	To	
6.25	STEEL	1.88	2	20	

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

Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: <input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	Depth (m/ft)	Diameter (cm/in)
From	To	From	To
21		0	10
		20	60

Well Contractor and Well Technician Information			
Business Name of Well Contractor MPL DRILLING		Well Contractor's Licence No. 6151711	
Business Address (Street Number/Name) COMP 6007		Municipality PICTON	
Province ON	Postal Code K1K2T0	Business E-mail Address info@mpldrilling.com	
Bus. Telephone No. (inc. area code) 6133932165		Name of Well Technician (Last Name, First Name) SCOTT HUGH	
Well Technician's Licence No. 1211014		Signature of Technician and/or Contractor <i>[Signature]</i>	
		Date Submitted 2018/10/26	

Results of Well Yield Testing					
After test of well yield, water was:		Draw Down		Recovery	
<input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify		Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level	9'0		15'2
Pump intake set at (m/ft) 40		1	9'1	1	12'
Pumping rate (l/min / GPM) 3		2	9'3	2	10'1
Duration of pumping 1 hrs + 0 min		3	9'4	3	9'
Final water level end of pumping (m/ft) 15'2"		4	9'6	4	
If flowing give rate (l/min / GPM)		5	9'7	5	
Recommended pump depth (m/ft) 40		10	10'1	10	
Recommended pump rate (l/min / GPM) 3		15	10'7	15	
Well production (l/min / GPM) 3		20	11	20	
Disinfected? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		25	11'6	25	
		30	12'1	30	
		40	13'2	40	
		50	14'1	50	
		60	15'2	60	✓



Well owner's information package delivered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date Package Delivered 2018/10/26	Ministry Use Only Audit No. 7286156 NOV 05 2018 Received
Date Work Completed 2018/10/26		



Annex B: Investigation of Hydrogeologic Conditions to Support the Design of Storm Water Management at 287 Lake Street, Picton



G R E E R
G A L L O W A Y
C O N S U L T I N G
E N G I N E E R S

August 28th, 2024

Greer Galloway Project Number: 23-3-6593

Alan Hirschfield
Homes First Development Corporation
51 Oak Ave
Richmond Hill ON L4C 6R5

Peter Zandbergen, P.Eng
Mechanical Engineer
Greer Galloway Group
1620 Wallbridge-Loyalist Road
Belleville ON K8N 4Z5

Investigation of Hydrogeological Conditions to Support the Design of Storm Water Management at 287 Lake Street, Picton. Prince Edward County

Dear Mr. Hirschfield

The following are the results of the Hydrogeological assessment carried out on your property located at 287 Lake Street, Picton, Prince Edward County.

Objective:

Investigation of the hydrogeological conditions on the property to assist with design of storm water management on the Hillside North property.

Work Completed:

1. Preparation of a topographic map, with longitudinal and cross sections.
2. Review of information on geology and existing well on site.
3. Design of soil and groundwater investigation
4. Construction of nine backhoe test pits to bedrock refusal across property on 29 May 2024.
5. Construction of one piezometer to 6 metres depth in the area of the proposed storm water pond, on August 8th, 2024.
6. Logging of all test pits and the piezometer hole construction.
7. Submission of representative samples to a geotechnical lab for grain size analysis.

Site Description:

The property is described as Lot 23, Concession 3 Military Tract (Hallowell), Roll Number 135051102512800. Consisting of approximately 12 hectares, fronting on County Road 10 (Lake Street), Prince Edward County, with civic address of 287 Lake Street, the property is zoned as Future Development (FD).

Topography and Drainage:

Topography of the property is rolling (moderate slope) dominated by a central North-South trending topographic high with sub surface drainage to the east and west. The elevation of the property ranges from 106mASL on the East and West flanks to 116mASL at the centre. The nearest notable surface water body (Picton Bay) is approximately 2.5 kilometres north of the site.

Surficial Geology:

The Ontario Soil Report No.10 classifies soils in this area as Pontypool Sand, characterized by materials ranging from coarse sand to cobbly gravel typically having an overburden thickness of less than 1 metre. The surface layer is a dark

1620 Wallbridge Loyalist Road

R.R. #5

Belleville, Ontario

K8N 4Z5

Telephone

(613) 966-3068

Facsimile

(613) 966-3087

E-mail

Belleville@greergalloway.com



**G R E E R
G A L L O W A Y**
C O N S U L T I N G
E N G I N E E R S



1620 Wallbridge Loyalist Road

R.R. #5

Belleville, Ontario

K8N 4Z5



Telephone

(613) 966-3068



Facsimile

(613) 966-3087

E-mail

Belleville@greergalloway.com

brown to yellow coarse sand, and cobblestone, single grain structure, underlain by a thin layer of brown sandy loam, then cobbly grey sand and gravel. Lands where these soils are found range from slightly to steeply rolling in topography, occurring mostly in the Picton esker.

Bedrock Geology:

Carson (1981) has mapped this area as underlain by limestone of the Lindsay Formation (nodular and crystalline limestone and shale), and Verulam Formation (interbedded limestone and shale). His mapping demonstrates erosion of the overlying Lindsay, forming a valley and exposing the older underlying Verulam and also hosting Marsh Creek further north. Fault trends have been interpreted by Carson and by Leyland (1982) (esker related), intersecting where Ridge Road meets Upper Lake Street.

The well records in the vicinity indicate the bedrock in the area consists of grey limestone 6 to 18 feet below ground level. Drillers' well tests show flows ranging from 13.6 to 68.2 litres/minute (3 to 15 imperial GPM), at depths ranging from 35 to 85 feet from ground surface.

Results:

Test pits were constructed to bedrock refusal with depths ranging from 45cm to 106cm. All test pits encountered a thin layer of brown silty topsoil overlying silty sand and gravel with limestone fragments, overlying limestone bedrock. All test pits were dry on completion of construction, the water table was not encountered, and no evidence of mottling due to a seasonally elevated water table observed. To confirm water table depth, the static water level in the existing well (A207378 located as shown on the attached Site Map, well record attached) was measured on July 9th and August 8th, 2024. Results indicated a stable water table depth of 19.83 metres below ground surface (89.17mASL). To confirm this depth in the area of the proposed storm water pond, a piezometer was installed to a depth of 6 metres at the location shown on the Site Map (A398941 well record attached). Groundwater was not encountered.

Conclusions:

1. This property is characterized by thin bedrock derived thin alkaline topsoil, overlying limestone bedrock.
2. Although the geology underlying the property has been mapped as showing a junction of fault trends forming part of the St Lawrence graben system (Carson, 1981) no recorded seismic activity has been noted for this location, with limited seismic activity reported elsewhere in the region (Richter 3 or less).
3. The water table is below 6 metres below ground surface, and was observed on August 8th, 2024 at 19.83 metres below ground surface.
4. The Unified Soil Classification soil type is SM to SW, with medium to low permeability, and hydraulic conductivity of 10^{-2} cm/sec to 10^{-5} cm/sec.
5. Drainage on the site is primarily through vertical infiltration and subsurface flow, with no defined watercourses identified.
6. The presence of Verulam Formation interbedded limestone and shale underlying the property permits more rapid infiltration of precipitation than the surrounding Lindsay Formation limestone.



G R E E R
G A L L O W A Y
C O N S U L T I N G
E N G I N E E R S

Recommendation:

Before construction begins on the site, Wells A207378 and A398941 must be abandoned by a licensed Ontario Water Resources Technician as per Ontario Regulation 903.

Sincerely,

John Porritt, P. Geo
Senior Hydrogeologist



520 Wallbridge Loyalist Road

R.R. #5

Belleville, Ontario

K8N 4Z5

Attachments:

- Site Map – 1 sheet
- Section A – A' – 1 sheet
- Longitudinal Section B – B' – 1 sheet
- Test Pit Records – 3 sheets
- Soil Grain Size Analyses – 2 sheets
- Well Records – 2 sheets

References:

Carson, D.M. 1981. Paleozoic Geology of the Belleville-Wellington Area, Southern Ontario; Ontario Geological Survey Preliminary Map P. 2412, Geological Series, Scale 1:50,000. : Geology 1980.

Leyland, J.G. 1982. Quaternary Geology of the Belleville-Wellington Area, Southern Ontario; Ontario Geological Survey Preliminary Map P. 2412, Geological Series, Scale 1:50,000. : Geology 1981.

Experimental Farms Service, 1947: Soil Map of Prince Edward County, Ontario. Soil Survey Report No. 10, Scale 1:63 360.

Telephone

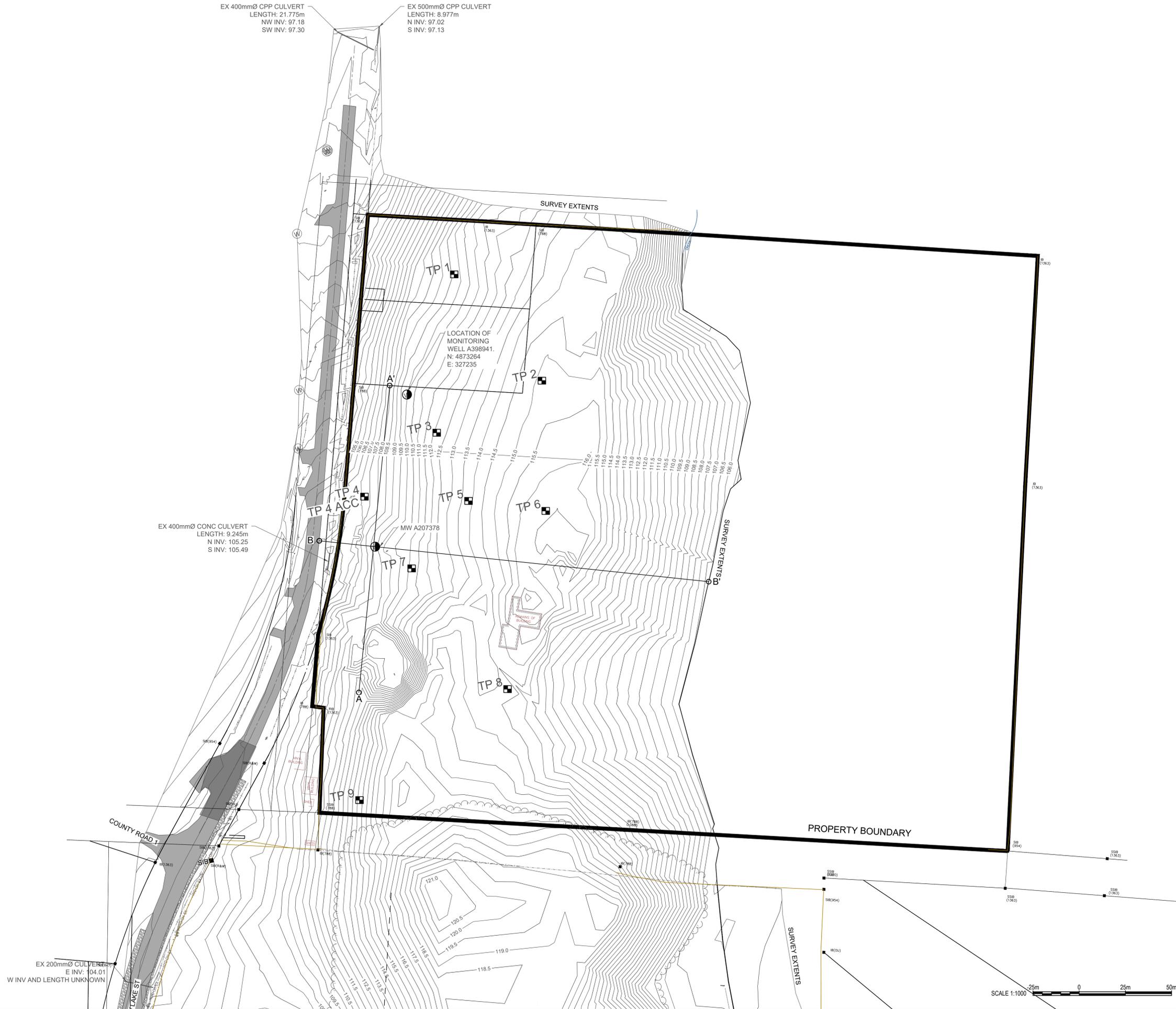
(613) 966-3068

Facsimile

(613) 966-3087

E-mail

elleville@greergalloway.com



- NOTES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH RELEVANT CODES AND GUIDELINES.
 2. ALL DRAWINGS AND ADDENDA ARE TO BE READ AS, AND IN CONJUNCTION WITH THE SPECIFICATIONS.
 3. ALL EQUIPMENT SHALL BE INSTALLED AS SPECIFIED OR APPROVED EQUIVALENT.
 4. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH WORK AND BE RESPONSIBLE FOR SAME.
 5. CONTRACTOR MUST REPORT ANY DISCREPANCIES TO ENGINEER FOR RESOLUTION BEFORE COMMENCING THE WORK.
 6. ANY CHANGES MUST BE APPROVED BY THE ENGINEER.

- A DETAIL NO.
 B DRAWING NO. - WHERE DETAILED

LEGAL SURVEY SOURCE:
KRCMAR SURVEYORS LTD, COMPLETED ON MARCH 27TH 2024

TOPOGRAPHIC SURVEY SOURCE:
GREER GALLOWAY GROUP, COMPLETED ON FEBRUARY 1ST 2024

- TEST PIT
 DRILLED WELL
 DUG WELL
 106.0 ELEVATION IN mASL

01	HYDROGEOLOGY REVISION 2	24/09/11
----	-------------------------	----------

REVISION	DESCRIPTION	DATE

NORTH

STAMP

PROJECT
318 LAKE STREET DEVELOPMENT

UD&D INCORPORATED
PRINCE EDWARD COUNTY, ONTARIO

DRAWING TITLE
EXISTING CONDITIONS SITE PLAN (WITH TEST PITS&WELLS)

DESIGNED BY
—

DRAWN BY
J. DOERING

REVIEWED BY
—

APPROVED BY
—

PROJECT DATE
2023/03/21 (YY/MM/DD)

PROJECT #
23-3-6593

DRAWING #
HG1

DRAWING SCALE (ISO A1)
HOR: 1 : 1000
VER: N/A

- NOTES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH RELEVANT CODES AND GUIDELINES.
 2. ALL DRAWINGS AND ADDENDA ARE TO BE READ AS, AND IN CONJUNCTION WITH THE SPECIFICATIONS.
 3. ALL EQUIPMENT SHALL BE INSTALLED AS SPECIFIED OR APPROVED EQUIVALENT.
 4. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH WORK AND BE RESPONSIBLE FOR SAME.
 5. CONTRACTOR MUST REPORT ANY DISCREPANCIES TO ENGINEER FOR RESOLUTION BEFORE COMMENCING THE WORK.
 6. ANY CHANGES MUST BE APPROVED BY THE ENGINEER.

A A DETAIL NO.
B B DRAWING NO. - WHERE DETAILED

LEGAL SURVEY SOURCE:
KRCMAR SURVEYORS LTD, COMPLETED ON MARCH 27TH 2024

TOPOGRAPHIC SURVEY SOURCE:
GREER GALLOWAY GROUP, COMPLETED ON FEBRUARY 1ST 2024

	BEDROCK
	TOPSOIL
	SILTY SAND SOME GRAVEL
	SILTY CLAY SAND
	SILTY SAND WITH FRACTURE LIMESTONE FRAGMENTS
	SANDY SILT

01	HYDROGEOLOGY REVISION 2	24/09/11
----	-------------------------	----------

REVISION	DESCRIPTION	DATE
NORTH		STAMP

PROJECT
318 LAKE STREET DEVELOPMENT

UD&D INCORPORATED
PRINCE EDWARD COUNTY, ONTARIO

DRAWING TITLE
LONGITUDINAL A-A'

DESIGNED BY
J. PORRITT

DRAWN BY
J. DOERING

REVIEWED BY
J. PORRITT

APPROVED BY
J, PORRITT

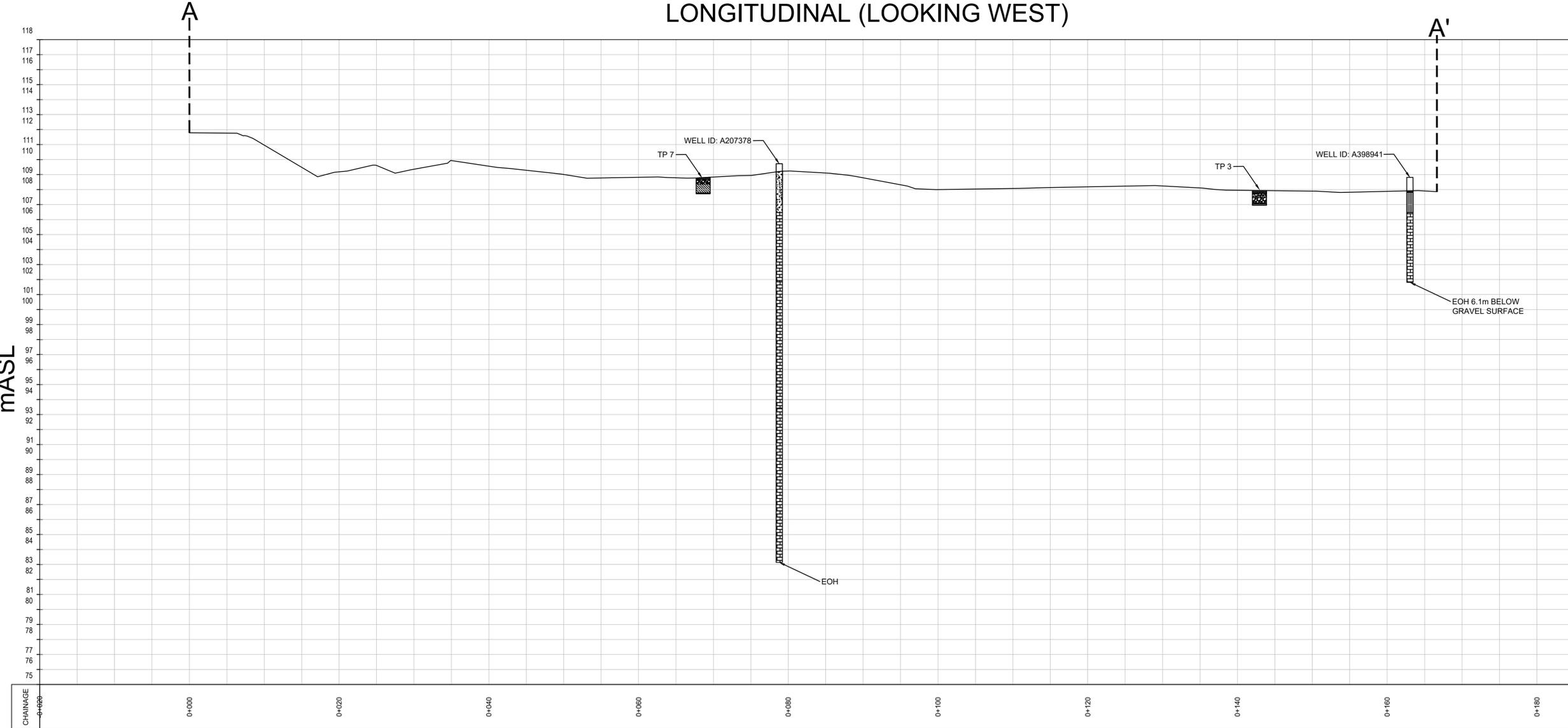
PROJECT DATE
2023/03/21 (YYYY/MM/DD)

PROJECT #
23-3-6593

DRAWING #
HG2

DRAWING SCALE (ISO A1)
HOR: 1:300
VER: 1:20

LONGITUDINAL (LOOKING WEST)



IN METERS

- NOTES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH RELEVANT CODES AND GUIDELINES.
 2. ALL DRAWINGS AND ADDENDA ARE TO BE READ AS, AND IN CONJUNCTION WITH THE SPECIFICATIONS.
 3. ALL EQUIPMENT SHALL BE INSTALLED AS SPECIFIED OR APPROVED EQUIVALENT.
 4. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH WORK AND BE RESPONSIBLE FOR SAME.
 5. CONTRACTOR MUST REPORT ANY DISCREPANCIES TO ENGINEER FOR RESOLUTION BEFORE COMMENCING THE WORK.
 6. ANY CHANGES MUST BE APPROVED BY THE ENGINEER.
- A A DETAIL NO.
B B DRAWING NO. - WHERE DETAILED

LEGAL SURVEY SOURCE:
KRCMAR SURVEYORS LTD, COMPLETED ON
MARCH 27TH 2024

TOPOGRAPHIC SURVEY SOURCE:
GREER GALLOWAY GROUP, COMPLETED ON
FEBRUARY 1ST 2024

	BEDROCK
	TOPSOIL
	SILTY SAND SOME GRAVEL
	SILTY CLAY SAND
	SILTY SAND WITH FRACTURE Limestone FRAGMENTS
	SANDY SILT

01	HYDROGEOLOGY REVISION 2	24/09/11
----	-------------------------	----------

REVISION	DESCRIPTION	DATE
NORTH		STAMP

PROJECT
318 LAKE STREET DEVELOPMENT

UD&D INCORPORATED
PRINCE EDWARD COUNTY, ONTARIO

DRAWING TITLE
SECTION B-B'

DESIGNED BY
J. PORRITT

DRAWN BY
J. DOERING

REVIEWED BY
J. PORRITT

APPROVED BY
J. PORRITT

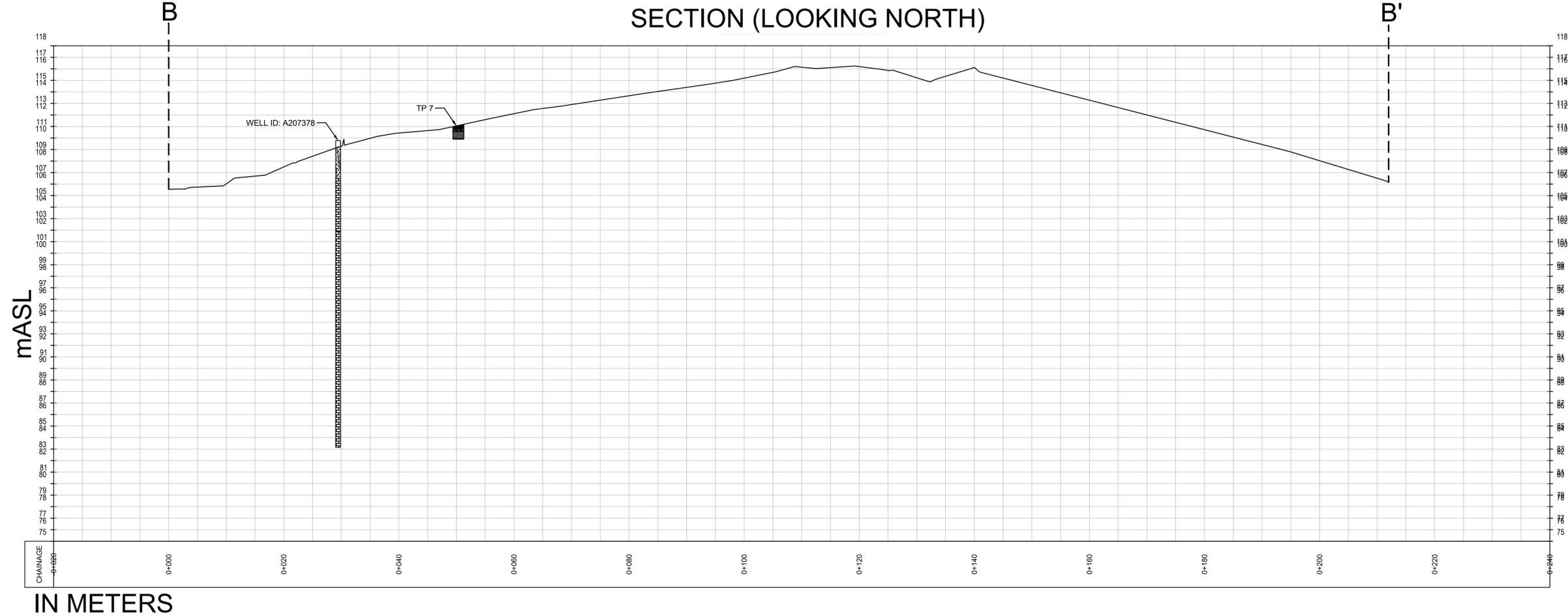
PROJECT DATE
2023/03/21 (YYYY/MM/DD)

PROJECT #
23-3-6593

DRAWING #
HG4

DRAWING SCALE (ISO A1)
HOR: 1:400
VER: 1:20

SECTION (LOOKING NORTH)



Test Hole Data
287 Lake Street, Picton
May 29, 2024

Notes

1. Soil types, strata, and groundwater conditions have been established only at test hole locations.
2. Soils are described according to the MTO Soils Classification System and OPSD 100.06.
3. Dimensions are in millimetres up to 1 metre, then in metres thereafter.

Abbreviations

NFP - no further progress

1

0 - 150 brown silty topsoil
 150 - 450 brown silty sand with fractured limestone fragments -moist, compact
 450 NFP, fractured limestone bedrock

2

0 - 200 brown silty topsoil
 200 - 800 brown silty sand and fractured limestone fragments -moist, dense
 800 NFP, flat limestone bedrock

3

0 - 180 brown silty topsoil
 180 - 500 brown silty sand/silty clay sand -moist, compact S2 at 0.3m
 500 - 870 brown silty sand and fractured limestone fragments -moist, dense
 870 NFP, limestone bedrock

4

0 - 230 brown silty topsoil
 230 - 670 brown silty sand -moist, compact
 670 - 1.06 light brown silty sand -moist, compact
 1.06 - 1.40 grey/brown silty sand and fractured limestone fragments -moist, dense
 -some clay deposits between the fragments, boulder at 1m
 1.4 NFP, flat limestone bedrock
 -photo 4

5

0 - 150 brown silty topsoil
 150 - 610 brown silty sand some gravel -moist, compact S4 at 0.5m
 610 - 800 brown silty sand and fractured limestone fragments -moist, dense
 800 NFP, limestone bedrock

6

0	-	220	brown silty topsoil
220	-	670	brown silty sand some gravel some roots -moist, compact S3 at 0.5m
670	-	950	brown silty sand with fractured limestone fragments -moist, compact
950			NFP, fractured limestone bedrock

7

0	-	140	brown silty topsoil
140	-	390	brown silty sand with fractured limestone fragments -dry, compact
390	-	940	brown sandy silt -moist, loose S1 at 0.61m
940			NFP, limestone (some shale) bedrock

8

0	-	150	brown silty topsoil
150	-	530	brown silty sand with fractured limestone fragments -moist, compact
530			NFP, limestone (some shale) bedrock

9

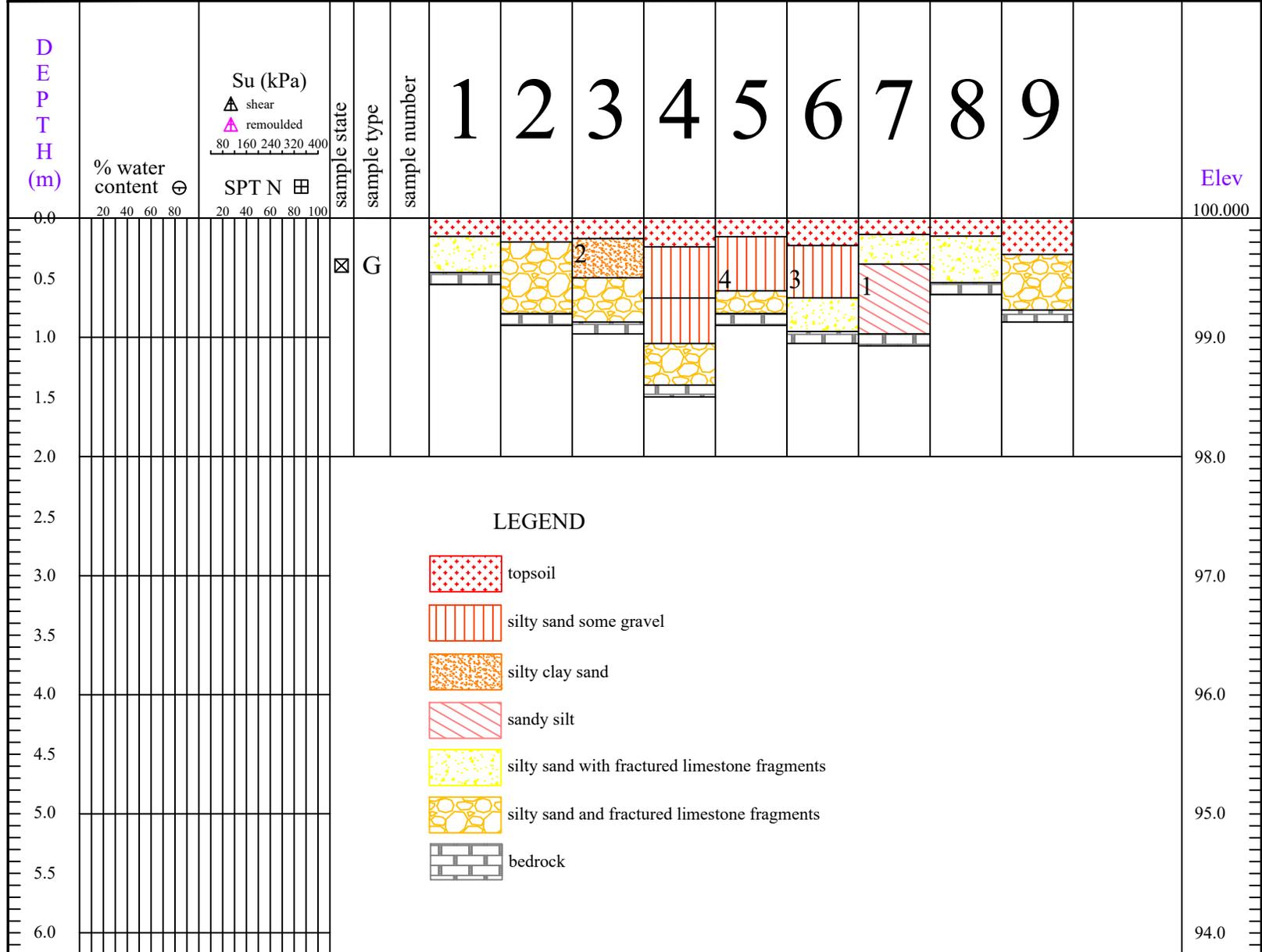
0	-	300	brown silty topsoil with roots
300	-	760	brown silty sand and fractured limestone fragments -moist, compact
760			NFP, flat limestone bedrock

-photo 9

Soil Log

PROJECT: 287 Lake Street, Picton
 Project No. 23-3-6593
 DATE: May 29, 2024
 Sample Type A: auger S: spoon
 Sample State remoulded intact

Test Hole Data
 METHOD: Excavation
 ▼ encountered water elevation



Laboratory Test Data

Soil Sample	S1	S2	S3	S4		
Sieve	% Passing					
19.0mm	100	100	100	100	grain size	
13.2mm	100	100	97.4	96.6		
9.50mm	100	100	92.5	96.6		
4.75mm	99.1	100	85.3	95.8		
2.36mm	98.7	99.4	80.8	94.8		
1.18mm	98.2	97.6	75.2	92.2		
600um	96.9	93.3	68.4	86.8		
300um	91.7	85.6	56.6	77.1		
150um	75.2	68.4	36.7	55.6		
75um	51.9	48.6	19.5	31.9		
ASTM	ML	SM	SM	SM		soil classification
frost rating	Med	Med	Low	Low		susceptibility to frost heave
% moisture	22.7	23.0	12.4	16.2		moisture content
T (min/cm)	26	24	16	18	estimated T time	

**terraspec engineering inc.
geotechnical engineers ■ materials testing**

**973 Crawford Drive
Peterborough, Ontario
K9J 3X1**

**Phone: (705) 743-7880
Fax: (705) 743-9592**

SITE REPORT

To: The Greer Galloway Group Inc.

1 Page

From: Shane Galloway

**Re: Grain Size Analysis
23-3-6593**

Date: August 16, 2024

Soil sample from August 8, 2024

<u>Sieve</u>	<u>% Passing</u>	
26.5mm	100	grain size
19.0mm	83.1	
13.2mm	75.7	
9.50mm	69.9	
4.75mm	61.7	
2.13mm	58.7	
1.18mm	54.8	
600um	50.5	
300um	46.4	
150um	39.7	
75um	31.4	
ASTM	SM	soil classification
description	silty sand & gravel	soil description
min/cm	13	estimated T time

Measurements recorded in: Metric Imperial

A398941

Page 1 of 1

Well Owner's Information

First Name: _____ Last Name/Organization: Homes First Development Corporation E-mail Address: _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name): 51 Oak Ave Municipality: Richmond Hill Province: ON Postal Code: L4Y 4G9 Telephone No. (inc. area code): _____

Well Location

Address of Well Location (Street Number/Name): 287 City Rd 10 Township: _____ Lot: _____ Concession: _____

County/District/Municipality: _____ City/Town/Village: Pickering Province: **Ontario** Postal Code: K1A 4A7D

UTM Coordinates: Zone: 18 Easting: 327236 Northing: 48173262 Municipal Plan and Sublot Number: _____ Other: _____

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
brown	top soil			0	6"
brown	sand	gravel		6"	4'9"
gray	limestone			4'9"	20'
1mm set on site					

Annular Space

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To	
0	7'6" 3/8" rope plug	
7'6"	20' #2 silica sand	

Results of Well Yield Testing

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

If pumping discontinued, give reason: _____

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

Pump intake set at (m/ft): _____

Pumping rate (l/min / GPM): _____

Duration of pumping: _____ hrs + _____ min

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

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

Recommended pump depth (m/ft): _____

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

Well production (l/min/GPM): _____

Disinfected? Yes No

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	
1.5"	PVC	25"	0	10'	<input 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 checked="" 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
1.75"	PVC	10	10'	20'

Water Details

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____
Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____

Hole Diameter

Depth (m/ft)	Diameter (cm/in)		
		From	To
0	4'9" 9"		
4'9"	20' 4"		

Well Contractor and Well Technician Information

Business Name of Well Contractor: Can. Enviro. Drilling Contractors Inc. Well Contractor's Licence No.: 7131213

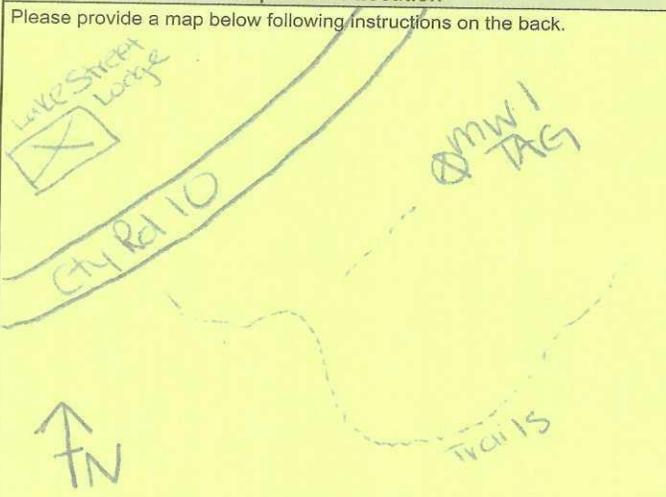
Business Address (Street Number/Name): 4102 Perth Road, Inverary Municipality: B. Frontenac

Province: ON Postal Code: K0A 1X0 Business E-mail Address: info@canedc.com

Bus. Telephone No. (inc. area code): 6133533331 Name of Well Technician (Last Name, First Name): Fillion, Jonathan

Well Technician's Licence No.: 313115 Signature of Technician and/or Contractor: _____ Date Submitted: 2024-08-09

Map of Well Location



Comments: _____

Well owner's information package delivered: Yes No

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

Date Work Completed: 20240809

Ministry Use Only

Audit No. **2424795**

Received: _____



Measurements recorded in: Metric Imperial

A 207378

Well Owner's Information

First Name, Last Name / Organization (DONNELLY GROUP), E-mail Address (scoble@donnellygroup.ca), Mailing Address, Municipality, Province, Postal Code, Telephone No.

Well Location

Address of Well Location (287 COUNTY ROAD 10), Township, Lot, Concession, City/Town/Village (PICTON), Province (Ontario), Postal Code (K0K2T0), UTM Coordinates, Municipal Plan and Sublot Number.

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

Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth (m/ft) From, To. Includes entries for Brown Soil and Grey Limestone.

Annular Space table with columns: Depth Set at (m/ft) From, To; Type of Sealant Used (Bentonite Slurry); Volume Placed (26.67).

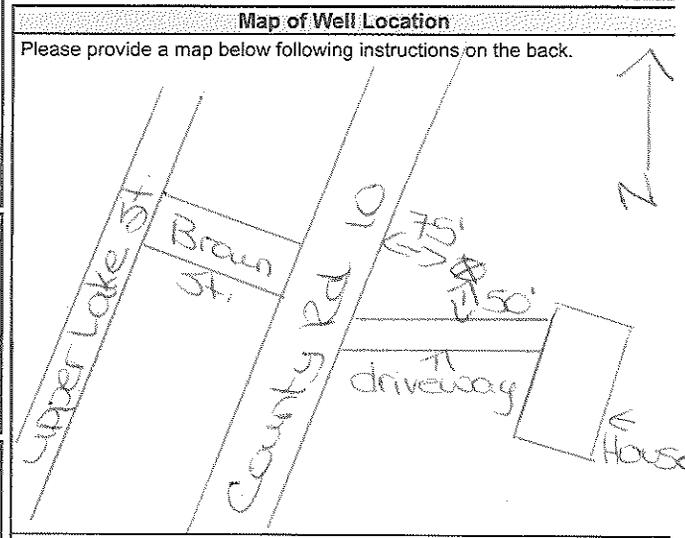
Results of Well Yield Testing table with columns: Draw Down (Time, Water Level), Recovery (Time, Water Level). Includes pumping rate (10 GPM) and static level (61').

Method of Construction and Well Use checkboxes. Includes options for Cable Tool, Rotary, Boring, Air percussion, and various well uses like Domestic, Commercial, etc.

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

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

Water Details and Hole Diameter tables. Includes water found at depth (61 m/ft) and hole diameter (10 inch).



Well Contractor and Well Technician Information. Includes MPI Drilling, Scott, Hugh, and various contact details.

Ministry Use Only section with Audit No. 2251228 and date JUN 25 2018.