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WATER SUPPLY & DEMAND ASSESSMENT REPORT

AT

0TH FORK RD (LOT#25)
PORT COLBORNE, ON

PREPARED FOR:

XUE JU (JACK) ZHENG
2789475 ONTARIO INC.

APRIL 16, 2026

Table of Contents

1 Introduction

King EPCM has been retained by XUE JU (JACK) ZHENG 2789475 ONTARIO INC. (the Client) to undertake a water supply and demand assessment for the property located at 0th Forks Rd (Lot#25), Port Colborne, Ontario (the Site). The purpose of this report is to evaluate the capacity of the existing water well (Well #7269802) to meet the water demand associated with the proposed Industrial development, including all related activities. This report has been prepared for submission to the Township of Port Colborne in support of the proposed industrial development.

2 Site Location

The subject property, with an approximate area of 319,420 m², is located at 0th Fork Road (Lot 25) in the City of Port Colborne, Ontario. The site is situated northeast of the intersection of Third Concession Road and Ramey Road and lies between Ramey Road and Canal Road. The property is currently largely vacant, with a small portion being utilized for commercial purposes (Figure 1).

Figure 1. Approximately Site area at 0th Forks Rd (Lot#25), Township of Port Colborne, ON (LSRCA)

3 Study Area Physiography and Geology

3.1 Site Topography

The subject property is located within the City of Port Colborne and falls under the jurisdiction of the Niagara Peninsula Conservation Authority (NPCA). Based on MECP topographic mapping, the site is situated on a relatively flat surface at an approximate elevation of ±180 m. The ground surface exhibits a gentle gradient, gradually decreasing toward the northeast and northwest portions of the property.

3.2 Physiography and Geology

The subject property is situated within the Haldimand Clay Plains physiographic unit (Chapman and Putnam, 2007), which is predominantly characterized by silt and clay deposits with minor amounts of sand and gravel, and has undergone localized land development. The City of Port Colborne, located in the Niagara Region of southern Ontario along the northern shore of Lake Erie and at the southern terminus of the Welland Canal, provides the regional context for the site. A canal corridor is present along the northwestern boundary of the property. As per Quaternary Geology Mapping of Southern Ontario (OGS, 2000), underlying bedrock in the area is associated with the Bertie Formation and typically consists of limestone, dolostone, shale, sandstone, gypsum, and salt.

3.3 MECP Well Records

MECP well records were reviewed and analyzed to assess the general subsurface soil and hydrogeological conditions within a 500 m radius of the subject property. A total of four well records were identified within this radius. Among these, Well Tag #6604938 (A004380) is located on the subject property and is currently in active use. These records were collectively used to characterize the subsurface stratigraphy and groundwater conditions at the site and in the surrounding area.

Table 1, MECP 500m RADIUS WELL RECORDS

Well ID / Tag	Date Completed	Location	Soil / Geology (Log)	Water Information
6601195	June 1950	Humberstone, Welland	0–125 ft: Clay 125–128 ft: Not specified	Static Level: 124 ft
6601196	Oct 17 (Year unclear)	Humberstone, Welland	0–40 ft: Red clay 40–83 ft: Hard pan 83–88 ft: Not specified 88–98 ft: Gravel	Pumping Rate: 4 (units unclear)
6604938 (Tag: A004380) (At Property)	Jan 23, 2006	Port Colborne, Niagara	0–13 ft: Brown clay 13–70 ft: Grey clay 70–74 ft: Not specified 74–80 ft: Grey shale 80–88 ft: Grey limestone (bedrock)	Conditioning Status: Observation well

Well ID / Tag	Date Completed	Location	Soil / Geology (Log)	Water Information
7206945 (Tag: A145460)	June 19, 2013	Port Colborne, Niagara	10–30 ft: Grey clay	Usage: Monitoring Status: Observation/Monitoring hole

Table 2, SOIL STRATIGRAPHY IN AREA

Depth Range (ft)	General Soil Type	Description / Interpretation
0 – 30 ft	Clay (Brown, Red, Grey)	Predominantly cohesive surficial soils; soft to firm clay across most wells.
30 – 40 ft	Red Clay	Localized stiff cohesive clay observed in some records.
40 – 83 ft	Hardpan / Stiff Clay	Dense, over consolidated clay layer indicating reduced permeability and higher strength.
83 – 98 ft	Gravel (Localized)	Intermittent granular layer; not continuous across all wells.
98 – 125 ft	Clay	Thick clay deposit continues in deeper overburden in some locations.
70 – 80 ft	Shale (Localized transition)	Bedrock transition zone observed in Port Colborne wells.
80 – 88 ft	Limestone (Bedrock)	Bedrock (Bertie Formation) encountered at shallow depth in one well.
88 – 125+ ft	Variable (Clay to Bedrock depending on location)	Significant spatial variability in bedrock elevation; some areas remain clay-dominated while others transition to bedrock.

3.4 Hydrogeology

Based on available MECP well records and field measurements from the pumping test, the well is reported to have a total depth of 88 ft (≈26.80 m below grade). During the pumping test, groundwater was encountered at a depth of 6.05 m below ground surface.

According to Well Tag #6604938 (A004380), subsurface conditions consist of dense clay extending to approximately 75 ft (≈22 m), underlain by shale and limestone bedrock. The groundwater level observed at 6.05 m occurs within the overlying clay unit, which functions as a low-permeability layer (aquitard), restricting vertical groundwater movement.

4 Source Water Protection Screening (MECP)

Based on available mapping and information from the Ministry of the Environment, Conservation and Parks (MECP), the subject property is not located within any designated source water protection areas. Specifically, there are no identified Intake Protection Zones (IPZ-Q), Wellhead Protection Areas (WHPA-Q1 or WHPA-Q2), or Significant Groundwater Recharge Areas associated with the site. Accordingly, the property is not considered to be within a

vulnerable area related to municipal drinking water sources, and no source water protection constraints are applicable to the proposed development based on the MECP data.

5 Water Taking Requirement Calculations

The total water demand for the subject property comprises both daily operational usage and a dedicated fire protection storage requirement. Based on the proposed septic system designed for five persons, the domestic sanitary discharge is estimated at approximately 1,500 L/day. In addition, an allowance of approximately 500 L/day has been included for general outdoor uses such as gardening and surface cleaning. Accordingly, the total average daily water demand is estimated to be approximately 2,000 L/day (2.0 m^3/day).

In addition to the daily demand, a separate fire protection water storage requirement has been incorporated into the design. This is based on a fire flow rate of 2,700 L/min over a minimum duration of 30 minutes, resulting in a total storage requirement of approximately 81,000 L (81 m^3). This volume is intended to be maintained in a dedicated storage tank and does not represent a continuous daily demand, but rather a standby reserve that is replenished periodically to ensure availability during emergency conditions.

For the purpose of this assessment, a conservative approach has been adopted in estimating the total water demand. The average daily operational water use is taken as 2,000 L/day. In addition, an equivalent allowance of 2,000 L/day has been included to account for periodic refilling of the fire protection storage tank as required. Accordingly, the total assessed water demand for design purposes is considered to be 4,000 L/day.

The peak demand rate is calculated as:

$Q_{Peak} = V_{Daily}$ / 120 minutes/day

Q_{Peak} = 4,000 / 120 = 34 L/min

Summary:
Daily Water Demand (V_{Daily}): 4,000 L/day
Peak Water Demand (Q_{Peak}): 34 L/min

6 Supply Well Pumping Test

To determine whether Well Tag #6604938 (A004380) has sufficient capacity to sustain the water demand for the proposed development on the subject property, a pumping test was conducted on October 01, 2025, for a duration of 160 minutes. The test was performed to evaluate the groundwater yield and assess the ability of the aquifer system to support the anticipated demand under sustained pumping conditions.

During the pumping test, groundwater levels were continuously monitored and recorded throughout the 160-minute testing period to evaluate drawdown behaviour. Upon completion of

pumping, the water level recovery in the well was also observed and documented to assess aquifer response.

Prior to commencement of pumping, the total depth of the well was measured at 26.8 m below ground surface, and the static groundwater level was recorded at 6.05 m below ground surface.
During the 160-minute pumping test, the average discharge rate was approximately 110 L/min for Well Tag #6604938 (A004380).

6.1 On Site Pumping test

As shown in Figure I (Appendix I), the water level in pumping Well Tag #6604938 (A004380) declined by approximately 0.52 m, from 6.05 m to 6.57 m below ground surface, over the 160-minute pumping test conducted on October 01, 2025, at an average pumping rate of approximately 110 L/min.

Measurements of the static water level in the pumping well (6.05 mBGS) prior to pumping, and the depth to the pump intake (approximately 26 m), indicate that the well has a maximum available drawdown of approximately 20 m. The observed drawdown of 0.52 m during the pumping test represents approximately 2.6% of the available drawdown at the applied pumping conditions.

It is noted that well efficiency is non-linear, and that with increasing pumping rates, a corresponding reduction in efficiency is generally expected due to increased drawdown and well losses. Furthermore, while the maximum available drawdown is governed by hydrogeological conditions, a practical operational drawdown limit is typically maintained approximately 0.5 to 1.0 m above the pump intake screen to ensure continuous suction and to prevent air entrainment into the system. The observed drawdown during the pumping test remained within this practical operational limit and was not exceeded.

The total extraction volume over the 160-minute pumping test, at an average pumping rate of approximately 110 L/min, was approximately 17,600 L.

Following cessation of pumping, water level recovery in Well Tag #6604938 (A004380) was monitored for approximately 117 minutes. The water level recovered to approximately 98% of the pre-test static water level during the monitoring period, indicating a strong and rapid aquifer response.

The specific capacity of the pumping well is calculated as:

$SC = Q / s$

Where:
Q = pumping rate (L/min)
s = drawdown (m) = 0.52 m

Accordingly, at a pumping rate of 110 L/min and a measured drawdown of 0.52 m, the specific capacity of Well Tag #6604938 (A004380) is calculated as approximately 212 L/min/m.

Pumping Test Data Analysis

The time-drawdown graphs for each pumping well in appendix I were analyzed to calculate aquifer transmissivity and hydraulic conductivity using the equations developed by Jacob1, as follows:

Time–Drawdown Relationship:

$T = 0.183 \times (Q / \Delta s)$

Hydraulic Conductivity:
$K = T / B$

Where:

- **T** = aquifer transmissivity (m^2/day)
- **Q** = pumping rate = 158.4 m^3/day per well (equivalent to 110 L/min average per well)
- **Δs** = drawdown per log cycle obtained from the semi-logarithmic time–drawdown plots
- **K** = hydraulic conductivity (m/day)
- **B** = saturated aquifer thickness at the well location (saturated clay layer thickness) (16.37m)

Based on MECP well log of 6604938 (A004380), bedrock shale and limestone were found at 74 ft (22.5 m), as of conservative approach, the saturated aquifer thickness is reasonably as 16.37m based on site well records.

Table 3, HYDROGEOLOGY PUMPING TEST ASSESSMENT DATA

Well Name	Analysis (Δs) (m/log cycle)	Transmissivity (T) (m^2/day)	Hydraulic Conductivity K	
			(m/day)	(m/s)
6604938 (A004380)	0.35	82	4.95	5.72×10^{-5}

The groundwater system in the vicinity of the subject property is interpreted to comprise a confined to semi-confined aquifer system, where thick clay and hardpan deposits function as aquitards, limiting vertical groundwater movement and governing aquifer response during pumping conditions.

The Jacob (Cooper–Jacob) straight-line method, as described above, is commonly applied for the interpretation of pumping test data from wells completed in or near the base of a confined aquifer under approximately fully penetrating conditions. Independent evaluation by Halford et al. (2006) indicates that, despite potential complexities such as vertical anisotropy, partial penetration, specific yield effects, and interpretive variability, the Cooper–Jacob method remains among the most robust and reliable approaches for single-well pumping test interpretation across transmissivity ranges of approximately 10 to 10,000 m^2/day. The study further concludes that Cooper–Jacob transmissivity estimates in confined aquifer settings are

only minimally influenced by partial penetration effects, vertical anisotropy, or analyst subjectivity.
Accordingly, for the purposes of this report, application of the Jacob (Cooper–Jacob) method is considered appropriate for analysis of the subject supply well during pumping test evaluation.
Based on the interpreted results for Well Tag #6604938 (A004380), an analysis Δs value of 0.35 m/log cycle was derived from the semi-logarithmic time–drawdown relationship. Using this parameter, the calculated transmissivity is 82 m²/day. Assuming an effective saturated aquifer thickness of 16.37 m, the corresponding hydraulic conductivity is estimated to be 4.95 m/day (approximately 5.72×10^{-5} m/s).

These results indicate a moderate permeability within a predominantly clay-dominated, semi-confined aquifer system and reflect a consistent hydraulic response under pumping conditions, influenced by low-permeability clay layers with localized higher transmissivity zones.

Pumping Test Summary

In the present hydrogeological setting, groundwater is contained within a saturated clay layer extending approximately from 6.05 m to 22.42 m depth (saturated thickness ≈ 16.37 m). The underlying bedrock is interpreted to act as an impermeable basal boundary, restricting vertical flow and supporting predominantly horizontal radial flow within the clay unit.

Estimation of zone of influence

An empirical relationship for estimating the radius of influence was developed by Kyieleis and Sichardt (1930), as presented below:

$$R = 3000(H_0 - H_d)\sqrt{k}$$

where R is the radius of influence (m), $H_0$is the elevation of the prevailing groundwater table (m) (Stable Groundwater Level = 6.05m), $H_d$is the elevation of the drainage level (m) (Drawdown Level = 6.57m), and $k$is the hydraulic conductivity (m/s)(Calculated Hydraulic Conductivity = 5.72 x 10^{-5} m/s).

Calculated radius of influence of 11.80 m from centre of pump well with Hydraulic Conductivity of 5.72 x 10^{-5} m/s.

7 Pumping Test Summary vs. Proposed Water Usage Requirements

Water Demand Summary

The proposed industrial development has an estimated domestic water demand based on 40-person occupancy as follows:

- Daily Water Demand (V_Daily): 4,000 L/day
- Peak Water Demand (Q_Peak): 34 L/min

Estimated Sustainable Well Yield from Pumping Test (Farvolden Method)

Q20 = (0.68) (T) (Ha) (FS)

Where:

- T = 82 m²/day → transmissivity of the aquifer
- H_a = 16.75 m → saturated thickness or aquifer head influence term
- FS = 0.5 → factor of safety
- 0.68 → empirical constant from Farvolden method

Based on the Farvolden Method, the well has an estimated long-term safe yield of 466 m³/day. This yield is considered sufficient to support the proposed water use, including both average daily demand and short-duration peak demand conditions. The peak demand is assumed to occur over a 120-minute period each day, corresponding to a peak flow rate of approximately 34 L/min, while the total average daily water demand is estimated at 4,000 L/day.

Overall, the calculated safe yield indicates that the aquifer can adequately sustain the proposed development water demand under long-term pumping conditions, subject to normal seasonal variability and standard operational conditions.

Estimated Drawdown with Peak Demand

To evaluate transient groundwater response during the short-term pumping test, the Theis (1935) solution for confined aquifers was applied. The method provides an analytical estimate of time-dependent drawdown in a confined or semi-confined groundwater system.

The subsurface conditions at the site consist of a clay-dominated water-bearing unit underlain by shale bedrock, which acts as a no-flow boundary over the duration of the test. Given the short pumping duration (2 hours), the response represents early-time transient conditions.

The governing equations are:

$$s = \frac{Q}{4\pi T} W(u)$$

$$u = \frac{r^2 S}{4Tt}$$

$$W(u) \approx -0.5772 - \ln(u)$$

Where,

- Pumping rate, Q = 34 L/min (Peak Demand)
- Transmissivity, T = 82 m²/day
- Time, t = 120 minutes = 0.0833 day
- Radial distance, r = 0.75 m
- Storage coefficient, S = 1 × 10^{-3} (clay aquifer condition)
- Bedrock: shale (assumed impermeable base)

The estimated drawdown at the pumping well (radius = 0.75 m) after 2 hours of constant pumping at a rate of 35 L/min is approximately 0.50 m.

This magnitude of drawdown indicates a moderate and localized hydraulic response under the applied pumping condition (34 L/min). In our view, this behaviour is consistent with a low-permeability clay aquifer system ($S = 1 \times 10^{-3}$), where groundwater movement is primarily governed by elastic storage rather than rapid transmissive flow.

The results suggest that the groundwater system is capable of sustaining the proposed water demand under short-term pumping conditions. Given that the analysis is based on a conservative single-well abstraction scenario, actual field conditions involving distributed pumping are expected to result in lower localized drawdown.

Overall, the predicted drawdown and limited radius of influence are not anticipated to result in significant adverse impacts to adjacent groundwater users.

8 Water Chemistry Analysis Results

Water chemistry testing is not included in the scope of work for this study, as the assessment is limited to hydrogeological and hydraulic performance. It is also noted that the water well was historically operational, which provides context regarding its prior functionality under natural and/or pumped conditions.

9 Impact Assessment Summary and Recommendations

Impact Assessment Summary

- The hydrogeological setting consists of a clay-dominated, semi-confined aquifer underlain by shale and limestone bedrock, which limits vertical groundwater flow and promotes localized groundwater response. Pumping test results from Well Tag #6604938 (A004380) show low drawdown (0.52 m at 110 L/min) and rapid recovery (~98%), indicating stable and sustainable aquifer conditions.
- Analytical modelling (Theis's method) indicates that drawdown under peak demand (34 L/min) remains low (~0.5 m near the well) and attenuates quickly with distance, with a radius of influence of approximately 11.8 m. This confirms a localized hydraulic impact with minimal potential for interference with nearby groundwater users.
- The Farvolden Method estimates a long-term safe yield of approximately 466 m^3/day, which is sufficient to support the proposed demand of 4,000 L/day and peak usage conditions. The site is also outside any designated source water protection areas, indicating no regulatory constraints.
- Overall, the groundwater system can adequately sustain the proposed development water demand with no significant adverse hydrogeological impacts expected.

Recommendations

- The existing well may be used for the proposed demand within the tested peak rate of 34 L/min.
- Maintain operational water levels at least 0.5–1.0 m above pump intake to ensure safe operation.
- Monitor static, pumping, and recovery water levels during early operation and peak demand periods.
- Any future increase in demand should be supported by additional hydrogeological assessment and, if required, further testing.

10 Reliance & Signature

This report is the intellectual property of King EPCM and has been prepared exclusively for the use of Fawn Hollow Winery. King EPCM assumes no liability for any claims arising from the use of this report or for any actions taken or decisions made based on its contents by parties other than the Client.

For questions or concerns regarding this report, please contact Tony Wang, P. Eng at 647-459-5647 or Twang@KingEPCM.com. This report is an intellectual property of King EPCM and may only be used and relied upon by the property owner, its designers, engineers, or other personnel related to the project.

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Geotechnical

King EPCM

Reviewed by,

Tony Wang, P. Eng

Principal Engineer

King EPCM

10. References

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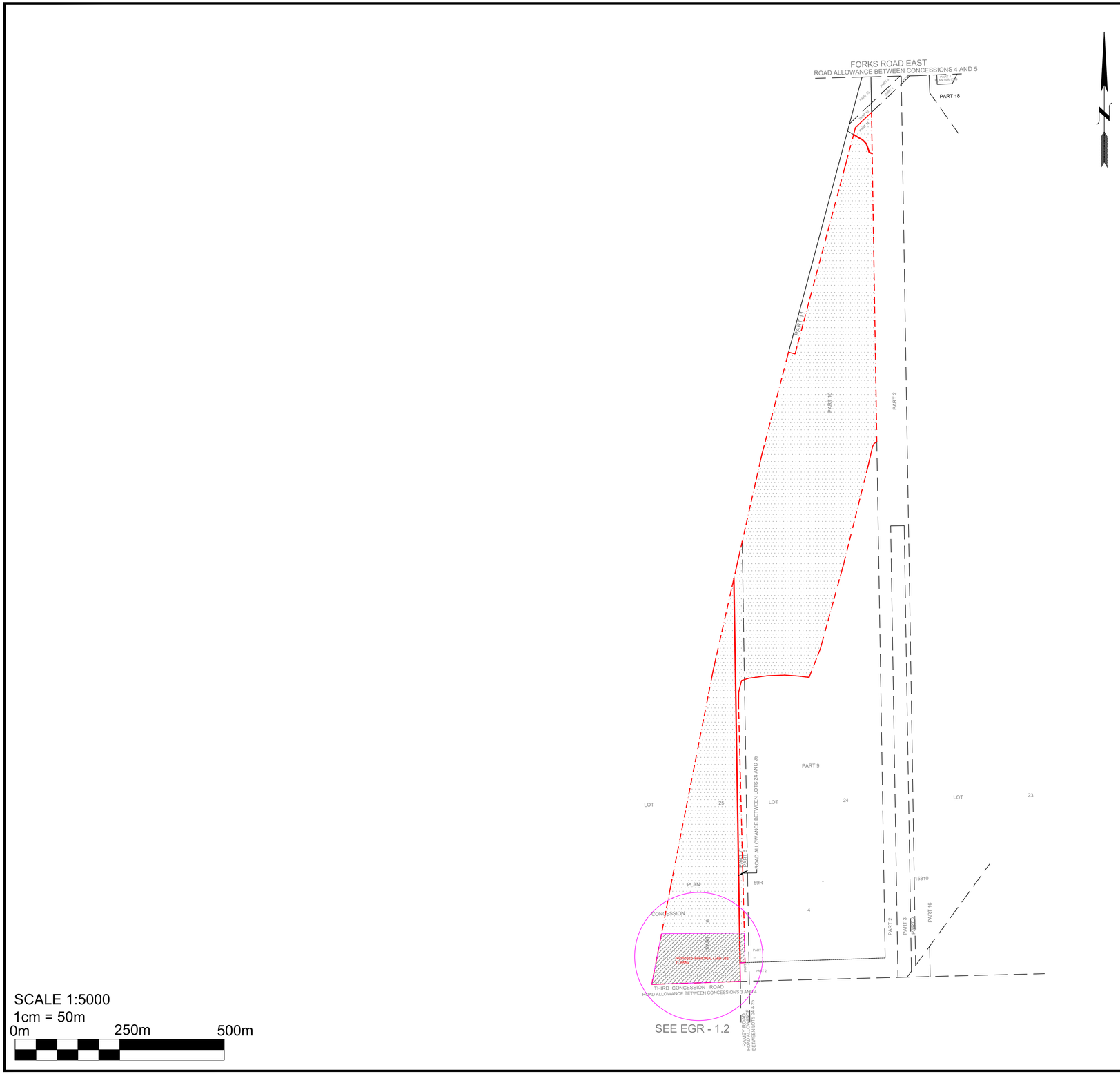
APPENDIX I: PROPOSED SITE PLAN



SCALE 1:5000
1cm = 50m
0m 250m 500m

LEGEND:
PROPERTY LINE

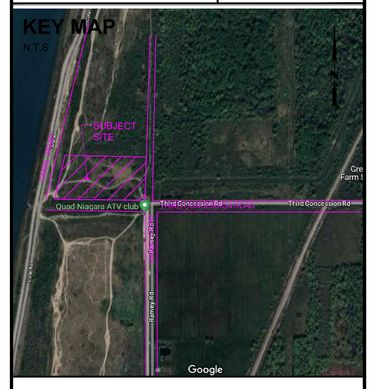
Municipality Notes

DRAWN **S.L/S.P**

STAMP

DATE **NOV 11, 2025**

KEY MAP
N.T.S



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CLIENT
XUE JU (JACK) ZHENG
2789475 ONTARIO INC.

PROJECT NAME
0TH FORKS ROAD

PROJECT LOCATION
0TH FORKS ROAD
COLBORNE

PRINT TITLE
SITE KEY PLAN

FILE No.
EGR - 1.1

No.	ISSUED FOR:	DATE	DRAW BY	CHECK
V1	ISSUED FOR PERMITS	APR 29, 2024	SL	TW
V2	ISSUED FOR PERMITS	AUG 20 2024	SL	TW
V4	ISSUED FOR PERMITS	JUN 26 2025	SP	AA
V5	ISSUED FOR PERMITS	JUL 22 2025	SP	
V6	ISSUED FOR PERMITS	NOV 11 2025	SP	

1 A-001 KEY PLAN
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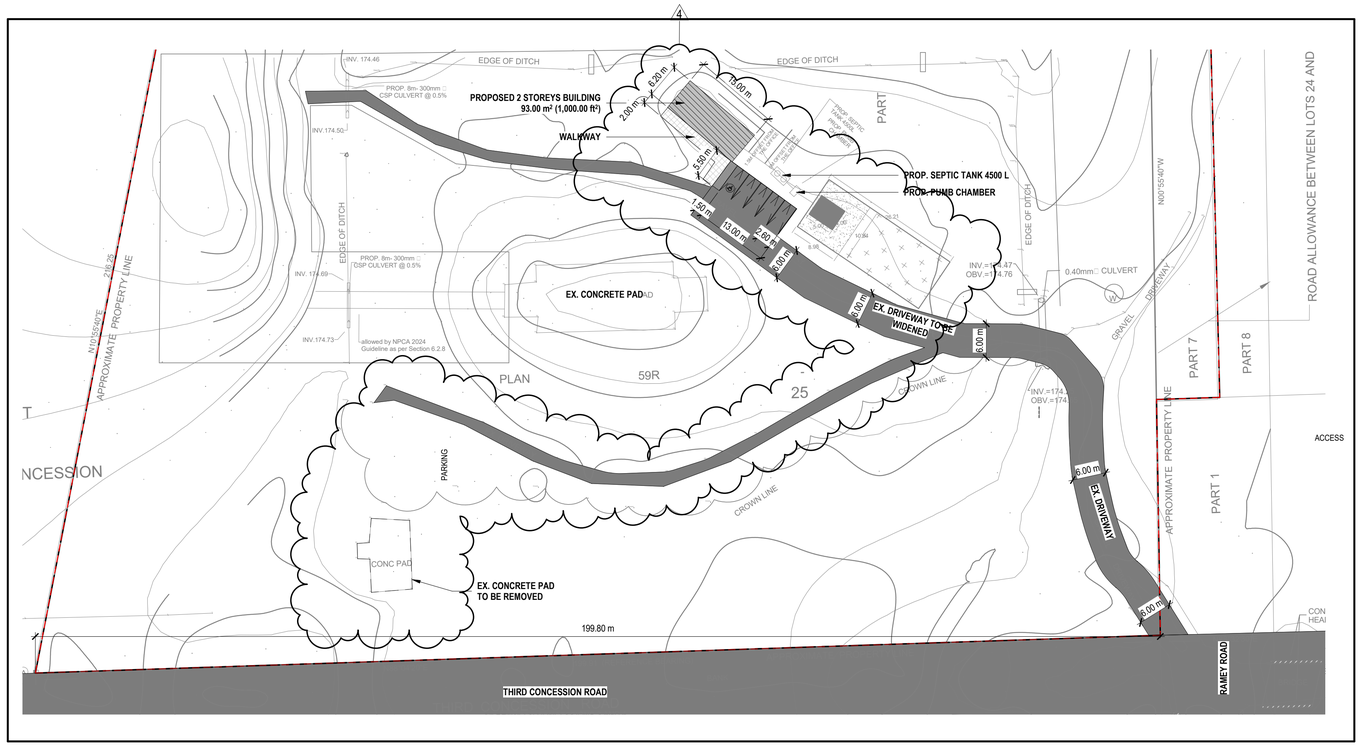

2 A-001 SITE PLAN
SCALE: 1 : 500

Statistics

ZONING	ID- 47-H - (BY-LAW # 6575/30/18 & 5989/95-2013)		
LEGAL DESCRIPTION	PIN 64456-0099(LT) PART OF LOTS 23, 24 AND 25 PLAN 59R - 12468	TOTAL LOT AREA	319,420.15 SM 31.94 HA 78.92=3 ACRE
LOT FRONTAGE	200.28 M	LOT DEPTH	1,986.34 M

DESCRIPTION	EXISTING	PROPOSED	REQUIRED	SECTION
MIN.LOT FRONTAGE	200.28 M	NO CHANGE	30.00 M	27.4
MIN. LOT WIDTH	EXISTING	NO CHANGE	N/A	
MIN. LOT AREA	319,420.15 SM	NO CHANGE		
MAX.BUILDING HEIGHT		8.00 M	MAX. 11.00 M	27.4
NO. OF STORIES		2		
DRIVEWAY WIDTH	2.00 M	6.00 M		
BUILDING AREA		93.00 SM (1,000.00 SF)		
GROSS FLOOR AREA				
GROUND FLR		93 SM	TOTAL 186 SM (2,000.00 SF)	
SECOND FLR		93 SM		
FLOOR SPACE INDEX (FSI)				
		186 SM / 319,420.15 SM =0.00		

SETBACK	EXISTING	PROPOSED	REQUIRED	SECTION
FRONT (NORTH)		12.60 M	7.50 M	27.4
SIDE (EAST)		59.97 M	15.00 M	27.4
SIDE (WEST)		132.12 M	15.00 M	27.4
REAR (SOUTH)		> 100.00 M	8.00 M	27.4

AREAS	EXISTING	PROPOSED		REQUIRED	SECTION
PROPOSED DEVELOPED AREA		100 %	20,425.50 SM		
PROPOSED BUILDING AREA		0.5 %	93.00 SM		
DRIVEWAY & PARKING SPACES		6.0 %	1,217.02 SM		
EXISTING CONCRETE PAD		1.8 %	360.00 SM		
LANDSCAPED AREA		91.8 %	18,755.48 SM		
PARKING	**EXISTING**	**PROPOSED**		**REQUIRED**	**SECTION**
TOTAL PARKING		4 SPACES		1 SPACE PER 100 SM GFA	3.1.2
INCLUDING ACCESIBLE PARKING		1 SPACES		1 SPACES	3.3
LOADING	**EXISTING**	**PROPOSED**		**REQUIRED**	**SECTION**
NUMBER OF LOADING SPACES				3.5M X 9 M	3.10

OBC CLASSIFICATION: 3.2.2.75 - GROUP F DIVISION 3,
UP TO 6 STOREYS, SPRINKLERED

PROPOSED BUILDING
ROAD / STREET
SITE BOUNDARY

DO NOT SCALE DRAWINGS.

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON SITE.

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

No.	Issues	Date	By
1	For Client Review	2023-06-12	TM
2	Revision	2023-09-25	TM
3	SPA Submission	2024-04-29	TM
4	SPA Revision	2025-09-26	CC

KEY MAP

TAES Architects Inc.
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TORONTO, ONTARIO, M3B 2R7
T: 416 800 3284
F:416 800 3485

XUE JU (JACK) ZHENG

INDUSTRIAL DEVELOPMENT

0TH FORK ROAD, LOTS 23 TO 25
PORT COLBORNE

Project No. T2023027
Drawn Scale As indicated
Checked Date 2023-06-06

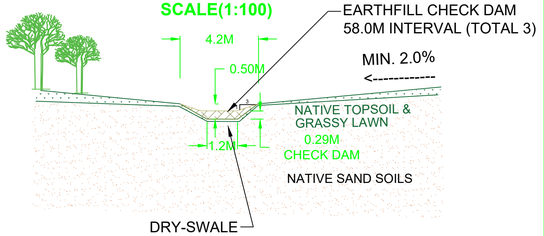
Site Plan

Drawing No.
A-001

GENERAL NOTES:

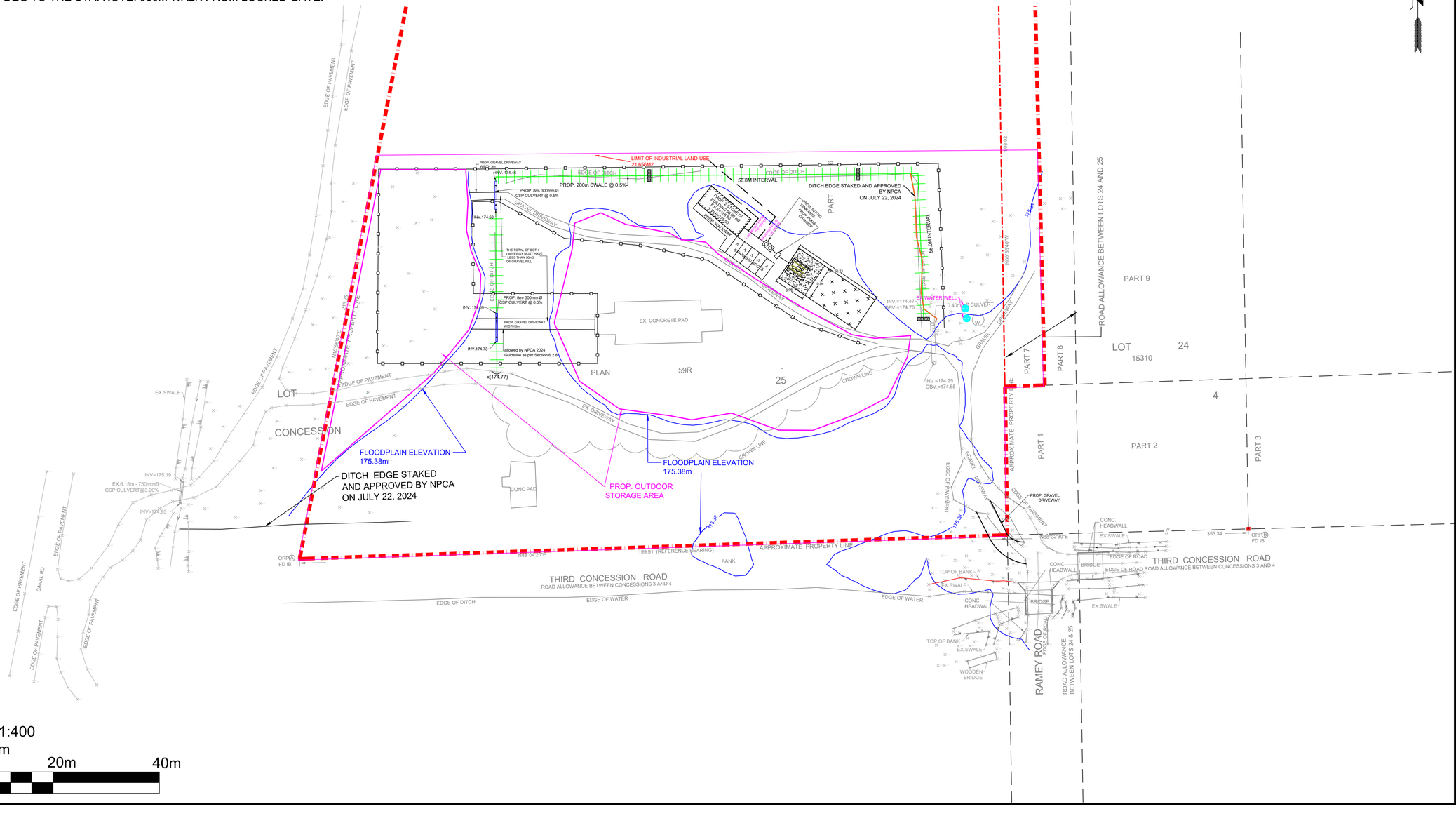
- TOPO SURVEY WAS CONDUCTED ON MARCH 7, 2024 AND OCTOBER 1, 2025 BY KING EPCM. NATURAL HERITAGE FEATURE STAKING SURVEY WAS CONDUCTED ON JULY 22, 2024
- ALL MEASUREMENTS STATED IN METRES.
- PROPERTY BOUNDARY WAS REFERENCED BY RASCH + HYDE LTD., DATED MARCH 18, 2015.
- THIS IS NOT A PLAN OF SURVEY. DO NOT USE FOR BOUNDARY.
- ELEVATIONS ARE GEODETIC, OBTAINED FROM GNSS AND USING CAN-NET DERIVED FROM RTK SOLUTIOIN AND GEOID MODEL HTv.2.0 SOLUTION, REFERRED TO CANADIAN GEODETIC VERTICAL DATUM OF 1928 (CGVD28:78) AND BENCHMARK No. 0011980U014, HAVING AN ELEVATION OF 173.81M . THE BENCHMARK IS IN MANHOLE ALONG E SIDE OF WELLAND CANAL AND 2.4KM N OF JCT OF WELLAND ST AND MAIN ST E. LOC 1.0 KM N OF SERVICE RD GATE, 34 M NE OF CONC POWER POLE #317, 24.3 M W OF MAIN SERVICE RD C/L, 20.5 M E OF CANAL SHORE AND 10.0M E OF SMALLER SERVICE RD C/L. AN ORANGE CYL WITNESS SIGN WAS SET 0.71 M AWAY AT A MAG BRG OF 84 DEG TO THE STA. NOTE: 900M WALK FROM LOCKED GATE.

DETAIL A
TYP. DRY-SWALE
CROSS-SECTION VIEW
SCALE(1:100)



LEGEND:

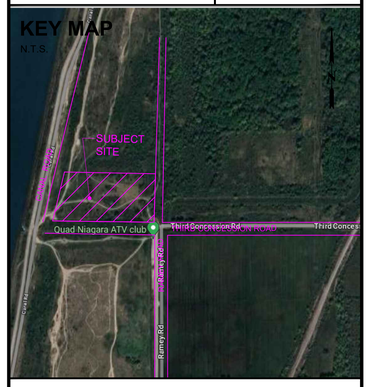
	PROPERTY LINE
x 175.54	EXISTING ELEVATION
175.00	CONTOUR LINE
	WATERWELL
CONC.	CONCRETE
IB	IRON BAR
ORP	OBSERVED REFERENCE POINTS
	CHECK DAM
	GRASS SWALE



SCALE 1:400
1cm = 4m
0m 20m 40m

Municipality Notes

DRAWN	STAMP
S.L/S.P	
DATE	
NOV 11, 2025	



KING EPCM
3780 14th Ave, Unit 211
Markham, ON, L3R 9Y5
www.KingEPCM.com
647-459-5647

CLIENT
XUE JU (JACK) ZHENG
2789475 ONTARIO INC.

PROJECT NAME
0TH FORKS ROAD

PROJECT LOCATION
0TH FORKS ROAD
COLBORNE

PRINT TITLE
SITE PLAN

FILE No.
EGR - 1.2

No.	ISSUED FOR:	DATE	DRAW BY	CHECK
V1	ISSUED FOR PERMITS	APR 29, 2024	SL	TW
V2	ISSUED FOR PERMITS	AUG 20 2024	SL	TW
V4	ISSUED FOR PERMITS	JUN 26 2025	SP	AA
V5	ISSUED FOR PERMITS	JUL 22 2025	SP	
V6	ISSUED FOR PERMITS	NOV 11 2025	SP	

APPENDIX II: MECP WELL DATA

E

76

UTM Z E

9 R N

Elev. 9 R 058 1

Basin 24

ONTARIO

DEPARTMENT OF MINES
OCT 17 1951
TO

66 No. 1195

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record WELLAND

[redacted] Village, Town or City (Humberstone)

wn or City) Welland ont.

Date Completed 25 (day) June (month) 1950 (year) Cost of Well (excluding pump)

Pipe and Casing Record

Casing diameter(s) 6 1/4

Length(s) of casing(s) 128

Type of screen

Length of screen

Distance from top of screen to ground level

Is well a gravel-wall type?

Pumping Test

Date

Static level 2

Pumping level Good & Steady

Pumping rate

Duration of test

Distance from cylinder or bowls to ground level

Water Record

Kind (fresh or mineral) Fresh

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

Appearance (clear, cloudy, coloured) Clear

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

How far is well from possible source of contamination?

What is the source of contamination?

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

Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
125-128	Fresh	126

Well Log

Overburden and Bedrock Record	From 0 ft.	To ....ft.
Clay	0	125
Gravel	125	128

Location of Well

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

500' S. N. Rd.
400' E. of C.N.R. RY

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

Drilling Firm E. A. Ricker

Address Canboro

Name of Driller G. Hulley Address Thorold ont. R. 6

Date Oct. 16. 1951 Licence Number

Ernest A. Ricker
Signature of Licensee

FORM 5

CSS.S8

UTM | | Z | | | | | | E
| 9 | R | | | | | | | N
Elev. | 9 | R | 0580 |
Basin | 24 | | | |

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

No. 1196

Water-Well Record WELLAND

County or Territorial District Welland Township, Village, Town or City (Humberstone Twp)

[redacted] in Village, Town or City

Address R 3 Welland

(day) (month) (year)

Pipe and Casing Record

Casing diameter(s) 6"
Length(s) 90 ft
Type of screen
Length of screen

Pumping Test

Static level 8 ft.
Pumping rate 4 gal. p.m.
Pumping level 8 ft.
Duration of test half hour

Well Log and Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
red clay	0	40			
blue clay	40	83			
hard pan	83	88			
gravel	88	90	90 ft.	82 ft.	slightly sulphur

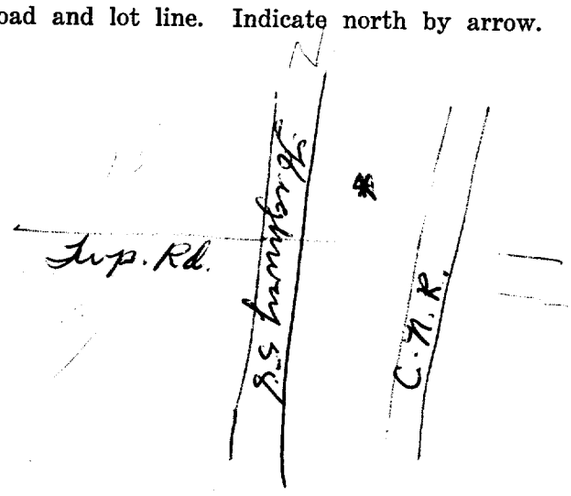
For what purpose(s) is the water to be used?
domestic
Is water clear or cloudy? clear
Is well on upland, in valley, or on hillside? upland
Drilling firm T. A. Schawbury
Address R R 3
Port Colborne
Name of Driller
Address None
Licence Number 362

I certify that the foregoing statements of fact are true.

Date Oct 17 Raymond Shawbury
Signature of Licensee

Location of Well

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



100 ft. N of Twp. Rd
400 ft. W of C.N.R.
600 ft. E of Hwy.

CSS.S8

Form 5

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below) A 004380

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

#2.

Instructions for Completing Form

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

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
CITY OF PORT	Colborne	66 CHARLOTTE ST PORT Colborne

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
Niagara Region	Humberstone	Ontario		905-835-2900

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
		24	03

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83		079 14.054 (WEST)	42 55.757	GARMIN	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
BROWN	Clay			0	13
GREY	clay			13	70
Red	clay			70	74
GREY	SHALE		loose	74	80
GREY	limestone		Bedrock	80	88

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	20	8"

Water Record

Water found at ___ Metres / Kind of Water

85 m	☐ Fresh	☒ Sulphur	☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals ☐ Other:

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

Chlorinated ☐ Yes ☒ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
6"	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	188	80	88
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☐ Open hole			

Test of Well Yield

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

Plugging and Sealing Record

☐ Annular space ☐ Abandonment

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

Method of Construction

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

Water Use

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

Final Status of Well

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

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
FIELD WELL DRILLING	2123

Business Address (street name, number, city etc.): RR#1 Vineland

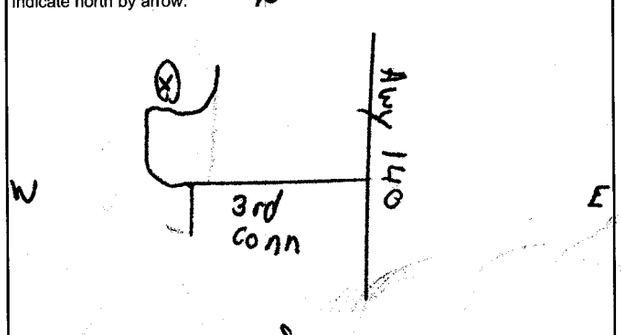
Name of Well Technician (last name, first name)	Well Technician's Licence No.
Marshall R FIELD	T0365

Signature of Technician/Contractor: X

Date Submitted YYYY MM DD

Location of Well

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



Audit No. Z 39283

Date Well Completed YYYY MM DD

Was the well owner's information package delivered? ☐ Yes ☒ No

Date Delivered YYYY MM DD

Ministry Use Only

Data Source

Contractor 2123

Date Received MAR 08 2006 YYYY MM DD

Date of Inspection YYYY MM DD 2006 / 1 / 23

Remarks DWC VIA FAX 2006/01/23

Well Record Number

0506E (09/03)

Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* **Tag#: A145460**

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 2

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	CITY OF PORT COLBORNE		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
296 FIELDEN AVE.	PORT COLBORNE	ON	L3K4T6	9058341668

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
		25	3

County/District/Municipality	City/Town/Village	Province	Postal Code
PORT COLBORNE/NIAGRA	PORT COLBORNE	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	643909	4754283		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
GREY	CLAY		CLAY	0	30'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m^3/ft^3)*
0	1'	CONCRETE	
1'	18'	BENTONITE CHIPS.	
18'	30'	WELL GRAVEL	

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter *(cm/in)*	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness *(cm/in)*	Depth (m/ft) From	Depth (m/ft) To
2"	PLASTIC	1/4"	0	20'

Construction Record - Screen

Outside Diameter *(cm/in)*	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To
2 1/4"	PLASTIC	.010	20'	30'

Status of Well

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

Water Details

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter *(cm/in)*
0	30'	Ø25"

Results of Well Yield Testing

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

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping ____ hrs + ____ min

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

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

Recommended pump depth *(m/ft)*

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

Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

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

Map of Well Location

Please provide a map below following instructions on the back.

Comments:

SEE ATTACHED MAP.

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WALKER DRILLING LTD.	7201

Business Address (Street Number/Name)	Municipality
8866 COUNTY RD 56	UTOPIA

Province	Postal Code	Business E-mail Address
ON.	L0M1T0	INFO@WALKERDRILLING.COM

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
7054424343	FARMER, JASON

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3756		20130624

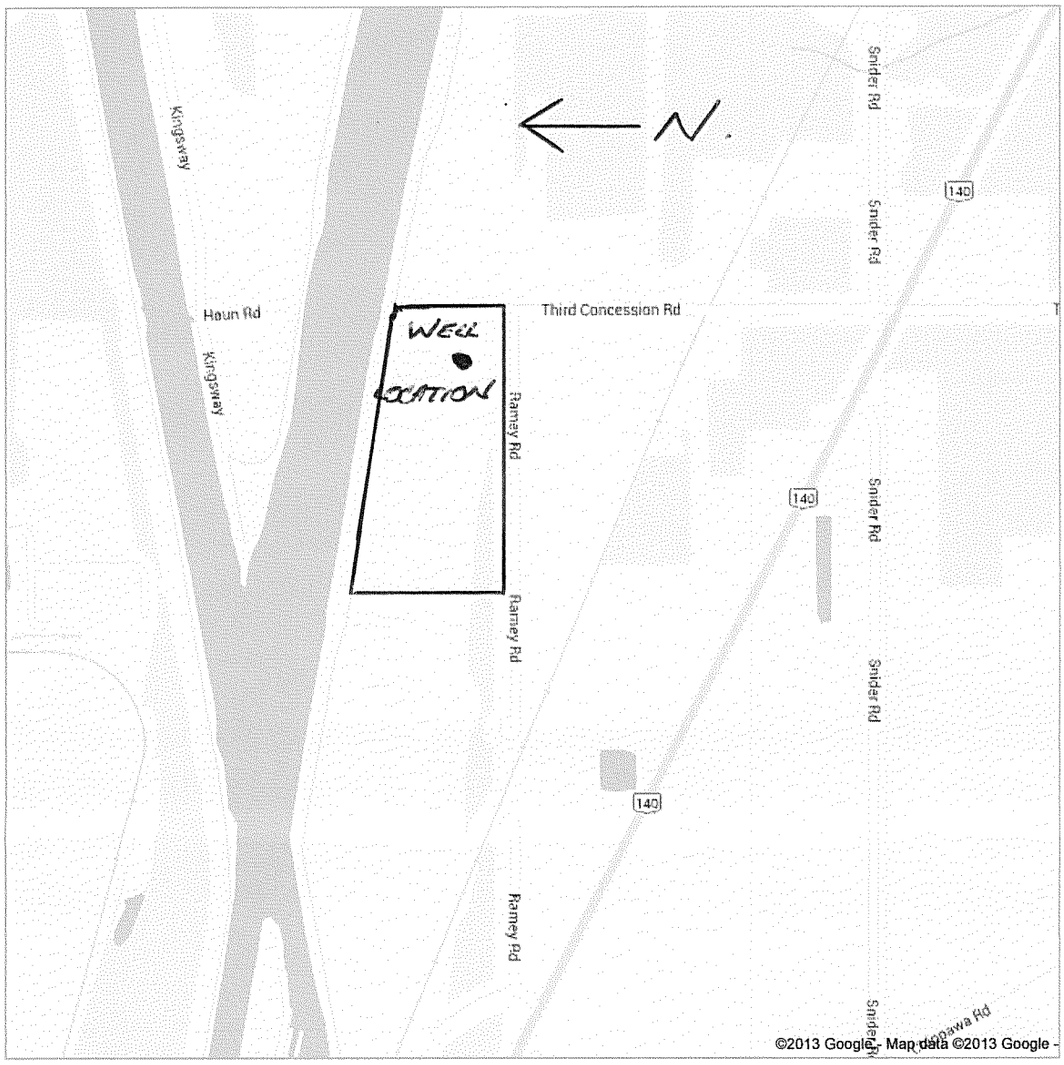
Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	YYYY MM DD	20130619

Ministry Use Only

Audit No. Z149277

AUG 27 2013

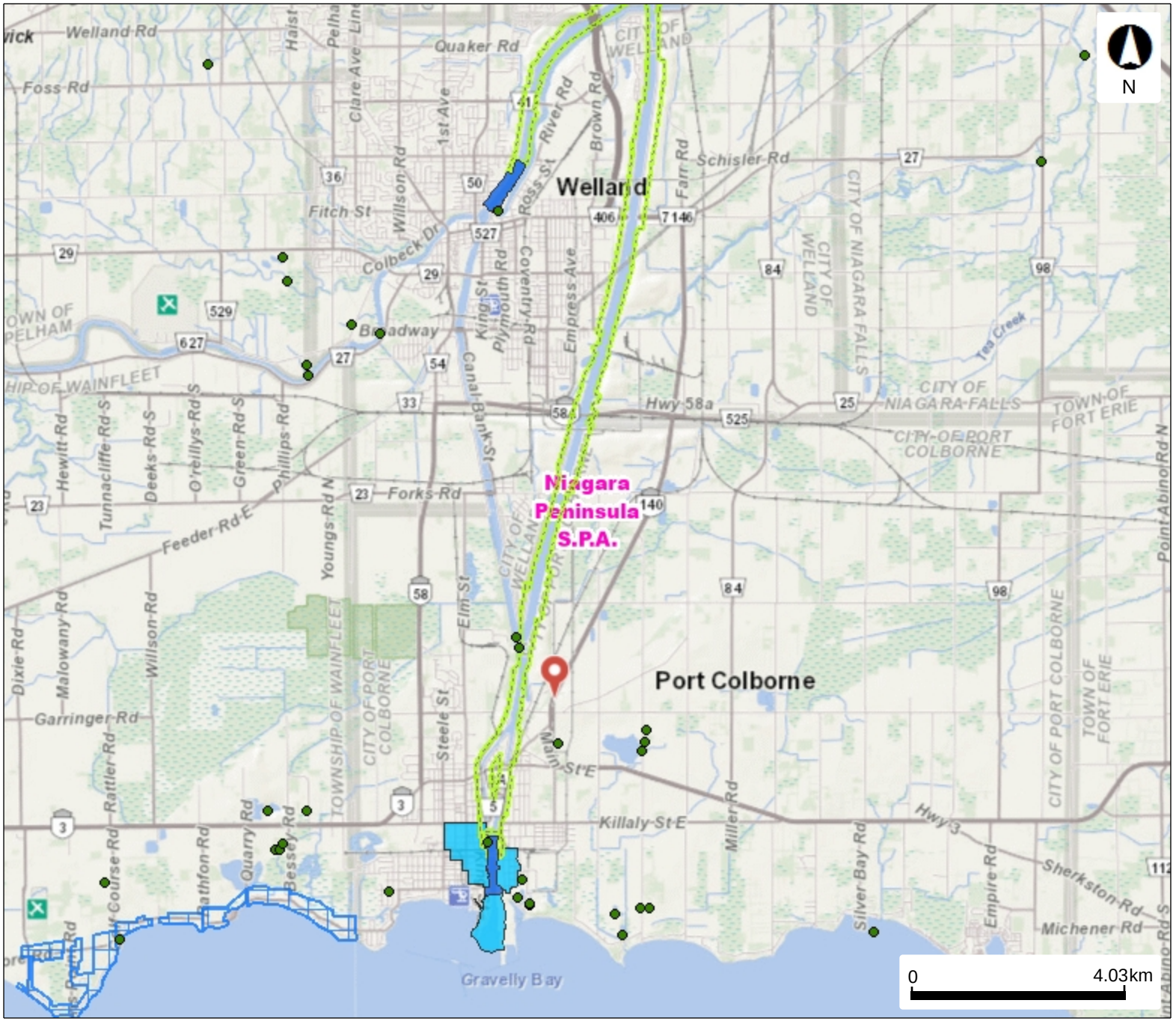
Google



C-7201
2149277

AUG 2 7 2013

0th Forks Rd, Port Colborne (Lot#25)



Legend

- Permits To Take Water: Active
- Wellhead Protection Area Q1
- Issue Contributing Areas
- WHPA-E
- Wellhead Protection Area
  - A
  - B
  - C
  - C1
  - D
  - F
- Intake Protection Zone 1
- Event Based Areas
- Intake Protection Zone 2
- Source Protection Areas

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Map Created: 4/16/2026
Map Center: 42.94404 N, -79.22717 W

APPENDIX III: PUMPING TEST DATA

3780 14th Ave, Unit: 211
Markham, ON L3R 9Y5
T: : 647-342- 001
General@KingEPCM.com
www. King EPCM.com

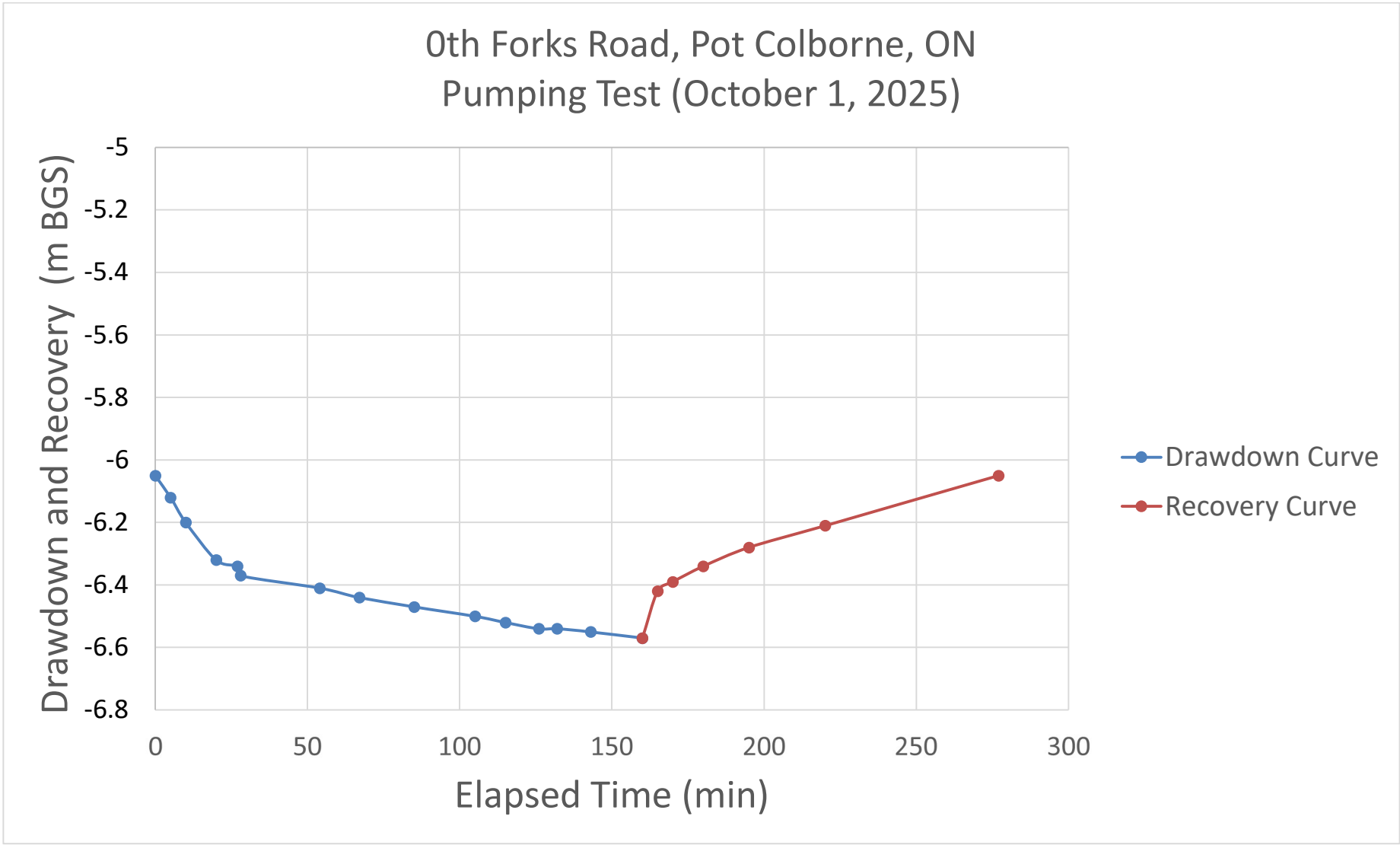
PUMPING TEST INFORMATION SHEET

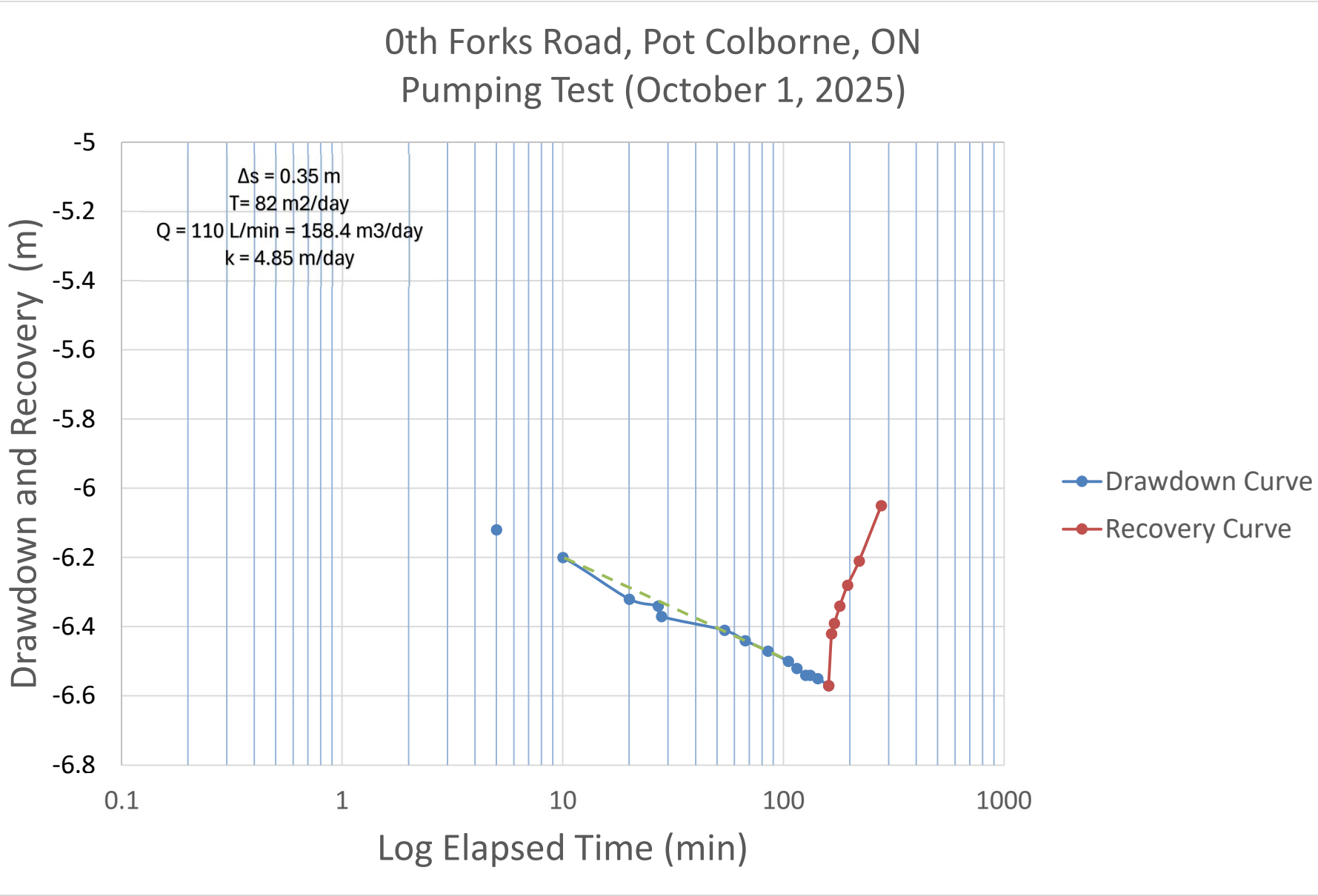
KING EPCM
Flexible. Dependable. On-site Engineering.

Pumping Well ID: BH Water Well

Date:	2025-10-01	**Site Location:**	0th Fork Rd	**Test By:**	Morteza, Dwayne
Well Depth (m):	26.85	**Pump intake (m)**	23.6	**Rcommended Pump Depth (m)**	
Casing Diameter (cm):	15	**Duration of Pumping Test**	160 Min	**Recommended Pump Rate (l/m/GPM)**	110
Static water Level (m)	6.01	**Final Water Level at end of pumping (m):**	6.57	**Well Production (l/m/GPM)**	110

DRAWDOWN PHASE		RECOVERY PHASE	
(1) Time Interval (min)	**(1) Water Level (mbgl) Drawdown- Pumping Well**	**(2) Time Interval (min)**	**(2) Water Level (mbgl) Recovery- Pumping Well**
0	6.05	0	6.57
5	6.12	5	6.42
10	6.20	10	6.39
20	6.32	20	6.34
27	6.34	35	6.28
38	6.37	60	6.21
54	6.41	117	6.05
67	6.44		
85	6.47		
105	6.50		
115	6.52		
126	6.54		
132	6.54		
143	6.55		
160	6.57		


0th Forks Road, Pot Colborne, ON
Pumping Test (October 1, 2025)
Drawdown and Recovery (m BGS)
-5
-5.2
-5.4
-5.6
-5.8
-6
-6.2
-6.4
-6.6
-6.8
0
50
100
150
200
250
300
Elapsed Time (min)
Drawdown Curve
Recovery Curve


0th Forks Road, Pot Colborne, ON
Pumping Test (October 1, 2025)
Δs = 0.35 m
T= 82 m2/day
Q = 110 L/min = 158.4 m3/day
k = 4.85 m/day
Drawdown and Recovery (m)
-5
-5.2
-5.4
-5.6
-5.8
-6
-6.2
-6.4
-6.6
-6.8
0.1
1
10
100
1000
Log Elapsed Time (min)
Drawdown Curve
Recovery Curve