

MAY 26, 2025

PROJECT NO: 1000-6897

**SENT VIA: EMAIL
SUSAN.Z@MYTRIBUTE.CA
TREVOR.M@MYTRIBUTE.CA**

Tribute (Fergus Oaks) Limited
1815 Ironstone Manor, Unit 1
Pickering, ON L1W 3W9

**Attention: Susan Zucchero
Director, Land Development
Trevor MacKenzie
Vice President, Land Operations**

**RE: INTERIM HYDROGEOLOGICAL LETTER
6704 AND 6684-6688 BEATTY LINE N AND 7692 SIDEROAD 15, FERGUS ON
(FERGUS OAKS)**

Dear Susan and Trevor,

C.F. Crozier & Associates Inc. (Crozier) is pleased to present the following interim summary of the Hydrogeological Study completed to date for the property known as Fergus Oaks located at 6704 and 6684-6688 Beatty Line North and 7692 Sideroad 15. While the Fergus Oaks property is the main focus of the Hydrogeological Study to date, review of hydrogeological information from the adjacent properties located at 7715 Sideroad 15 ("Keating") and 6586 Beatty Line North ("Brubacher") was also completed. It is understood that the Fergus Oaks, Keating, and Brubacher properties make up what is known as the "Expansion Lands" and are subject to Official Plan Amendment applications.

Groundwater measurements were first recorded in May 2023 at Fergus Oaks. Crozier has since taken two (2) additional sets of measurements at Fergus Oaks in January 2025 and May 2025 and is retained to continue groundwater monitoring throughout 2025. The following summary provides general hydrogeological information about Fergus Oaks and the Expansion Lands, provides groundwater levels thus far, and preliminary interpretations for design purposes.

1.0 Introduction

Fergus Oaks herein referred to as the "site", is located at 6704 and 6684-6688 Beatty Line North and 7692 Sideroad 15 in the Township of Centre Wellington, just northwest of the town centre of Fergus (Figure 1). The site is approximately 190 ha and currently hosts a beef cattle farm and crop land. The site is bounded by existing agricultural lands and Irvine Creek to the north, Beatty Line N to the east, Nichol Road 15 to the south, and existing agricultural and woodlot to the west. Irvine Creek flows southwest through the Elora Gorge towards the Grand River.

Based on the Conceptual Structure Plan (Landwise Consulting, November 2024), the proposed development will be a residential community with condominium townhomes, freehold townhomes, municipal housing townhomes, single detached homes, commercial, schools, stormwater management ponds and parks.

2.0 Physiography & Drainage

The site is located along the northern edge of the Guelph Drumlin Field physiographic region as shown in Figure 2. Situated between the till plains to the northwest and sandhills to the east, the Guelph Drumlin Field covers an area of approximately 82,900 ha from Orangeville in the north to Cambridge in the south. This region is littered with over 300 northwest-southeast trending drumlins formed during the last ice age. The drumlins are fringed by gravel terraces and separated by swampy valleys and glacial spillway. The primary sediment within the area is stone-rich glacial till.

The site is located within the Central Grand Subwatershed. The Central Grand Subwatershed stretches from Grand Valley in the north to Paris in the south. The creeks and streams of this subwatershed generally flow in a southerly direction to the main branch of the Grand River.

In general, topography ranges from 425 meters above sea level (masl) at Beatty Line N to 405 masl at Irvine Creek. Surface water drainage is interpreted to flow west towards Irvine Creek.

3.0 Regional Geology

According to Ontario Geological Survey (OGS) mapping, the site is located atop the Guelph Formation (Figure 3). The Guelph Formation is characterized by primarily tan to buff coloured dolostone. The dolostones of the Guelph Formation are fossil bearing, representative of the marine depositional environment.

Drift thickness is between 20 m and 40 m in the area according to local mapping and nearby well records. The site is covered in primarily sandy silt to silty sand glacial till according to Ontario Geological Survey (OGS) mapping (Figure 4). Sand and gravel deposits are located along the main branch of the Grand River due to the highly eroded banks through Fergus and Elora.

4.0 Local Geology

A preliminary geotechnical investigation led by Soil Engineers Ltd. (SEL) was conducted in June 2023 for due diligence purposes. The investigation involved drilling eleven (11) boreholes across the site to evaluate the soil conditions and collect preliminary groundwater levels.

The primary soils encountered during drilling were compact sand and silt followed by silty clay till. The soils contain seams of water bearing material and vary from brown to grey. For further details please refer to the Preliminary Geotechnical Investigation conducted by SEL appended to this letter.

Nearby MECP well records indicate the results of the drilling investigation are consistent with well records. Generally, well records report silt, sand and clay above bedrock. Depth to bedrock varied, ranging from 20 mbgs to 40 mbgs. For locations of nearby well records, please refer to Figure 5.

5.0 Groundwater Levels

Boreholes 1, 7, 9, 10 and 11 were equipped with monitoring wells by SEL in May 2023. Each monitor was installed within the first water bearing unit encountered during drilling and equipped with a 2-inch PVC monitoring well and a 10-ft well screen.

In January 2025, Crozier inspected the condition of the monitoring wells and collected an initial groundwater measurement using an electronic water meter. In May 2025, a spring reading was collected and each well was equipped with an automatic water level logger to capture water levels on an hourly basis. Table 1 displays the groundwater measurements captured to date by SEL and Crozier.

Table 1: Groundwater Levels

Monitoring Well	May 29, 2023		January 24, 2025		May 15, 2025	
	WL (mbgs)	GW Ele ¹ (masl)	WL (mbgs)	GW Ele (masl)	WL (mbgs)	GW Ele (masl)
MW1	3.5	425.1	-2	-2	3.50	425.34
MW7	1.9	420.2	1.85	420.28	1.72	418.95
MW9	2.1	423.0	2.59	422.69	1.99	418.69
MW10	5.1	414.6	5.32	412.9	4.93	415.34
MW11	1.6	422.1	1.49	416.51	1.46	416.53

1. As reported by SEL within the Preliminary Geotechnical Report.
2. Unable to access well due to snow coverage atop flushmount.

The measurements collected by SEL are reported in the Preliminary Geotechnical Report. It is not clear from the report whether the groundwater elevations are based on surveyed in elevations of the monitoring wells or from field elevations which could suggest why some wells present much higher levels than expected. The elevations used to determine the groundwater elevations for the January and May measurements were estimated from the topographic survey of the site from March 2025.

In general, water levels have risen from January 2025 to May 2025. This is expected due to the significant spring melt that occurred in March/April 2025 due to increased snowfall in winter 2025. It is expected that water levels will begin to drop throughout the summer and rise slightly in the fall.

Based on the borehole logs, the primary water bearing unit on site is sand to sand/silt semi-confined by silty clay till above with the exception of MW1 where the well is screened in sand. The soils suggest that the water bearing unit is semi-confined and may not respond significantly to precipitation events. Groundwater flow is interpreted to be west towards Irvine Creek. However, it should be noted that this is only a preliminary interpretation, and conclusions may change based on further data collection.

Groundwater levels on site suggest that construction dewatering and/or long-term groundwater dewatering may be required to facilitate the proposed development if structures are to extend beneath the water table. Construction dewatering volumes between 50,000 L/day and 400,000 L/day must be registered with the Ministry of Environment, Conservation and Parks (MECP) Environmental Activity Sector Register and any volumes exceeding 400,000 L/day requires a Permit to Take Water (PTTW). For long-term dewatering, any volume over 50,000 L/day will require a PTTW. Dewatering rates should be evaluated once final floor elevations are known. Local and regional discharge permits may also be required.

Since the current land use is agricultural, the introduction of a number of impervious surfaces post development will decrease groundwater recharge on the site without mitigation. A site-wide water balance will be required to determine the pre- to post- infiltration deficit and determine a target volume for any low impact development structures.

6.0 Hydrogeological Characteristics of Expansion Lands

A preliminary hydrogeological assessment was conducted by SEL for the Brubacher property in January 2025. This study was reviewed to supplement this interim hydrogeology letter and support existing conditions of the Expansion Lands. The following is a summary of the findings of the Brubacher hydrogeology assessment:

- A total of thirteen (13) boreholes and twelve (12) monitoring wells were advanced on the property. During the subsurface investigation, the primary soil stratigraphy observed was topsoil, earth fill, sandy silt till, sand, silt, and silty clay extending to maximum depth of excavation of 10.9 mbgs. The findings of the Brubacher subsurface investigation are consistent with the findings of SEL subsurface investigation on the Fergus Oaks property.
- Groundwater levels were measured throughout the fall of 2024 in September, October and November. Peak groundwater levels were observed to be at the east end of the site and captured in September 2024. High water levels were captured at MW1 S and measured approximately 418.00 masl. SEL notes that groundwater monitoring is ongoing, and peak conditions were expected in Spring 2025.
- From the nested well measurements, a downward gradient suggests that the wetlands on the Brubacher property are primarily surface water fed although further study is required.
- Groundwater is interpreted to flow south towards a tributary of Irvine Creek located south of the property.

The findings of the Brubacher report are consistent with the findings of this interim letter.

It is Crozier's understanding that a detailed hydrogeological report has not yet been prepared for the Keating property. However, it is expected that given the information from the Fergus Oaks and Brubacher properties, the hydrogeological conditions on the Keating property are consistent with other studies. Crozier will confirm the hydrogeological conditions across the entirety of the Expansion Lands following further data collection.

7.0 Future Work

To supplement the current monitoring network, additional monitoring wells are proposed as shown in Figure 6. Six (6) additional monitoring wells are proposed to better understand the groundwater conditions in the north portion of the site and understand soil and groundwater conditions in the areas of the proposed stormwater management ponds. A complete hydrogeological investigation inclusive of seasonal high groundwater levels and design considerations will be prepared following completion of the additional field investigation.

Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Sincerely,

C.F. CROZIER & ASSOCIATES INC.



Chris Gerrits, M.Sc., P.Eng.
Director, Land Development

CM/cj

c.c.

Enclosure:

Figure 1 – Site Location Plan

Figure 2 – Physiography

Figure 3 – Bedrock Geology

Figure 4 – Surficial Geology

Figure 5 – MECP Well Plan

Figure 6 – Well Plan

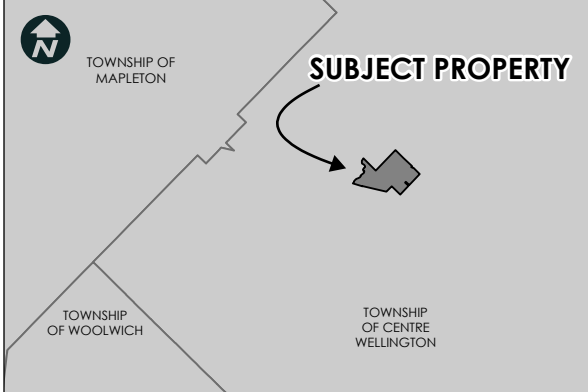
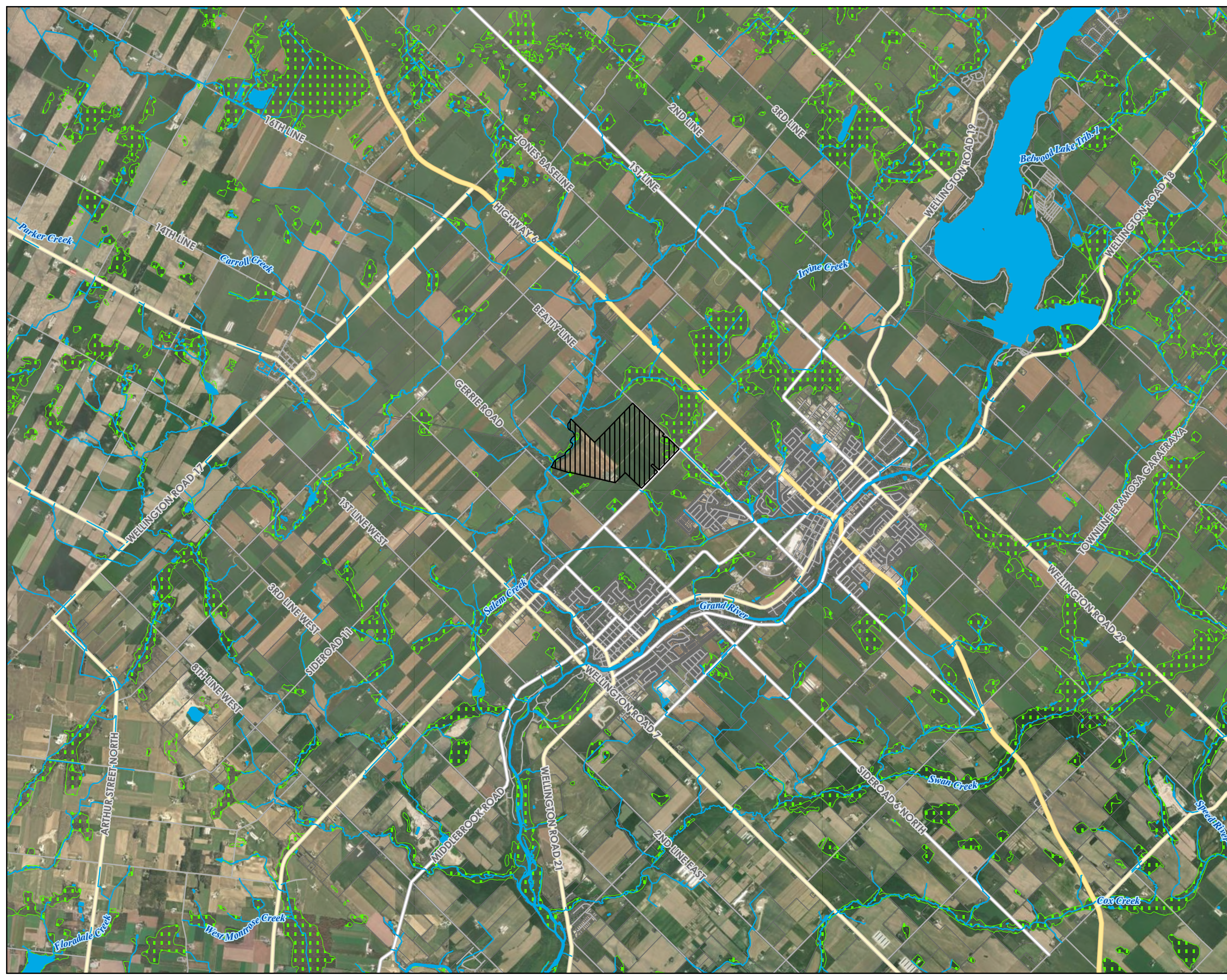
Preliminary Geotechnical Investigation (Soil Engineers Ltd., June 9, 2023)

C.F. CROZIER & ASSOCIATES INC.




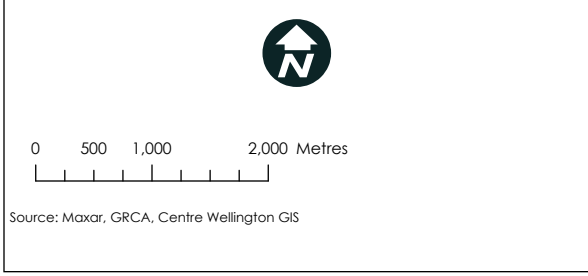
Caitlyn MacPhee, EIT, GIT
Hydrogeology

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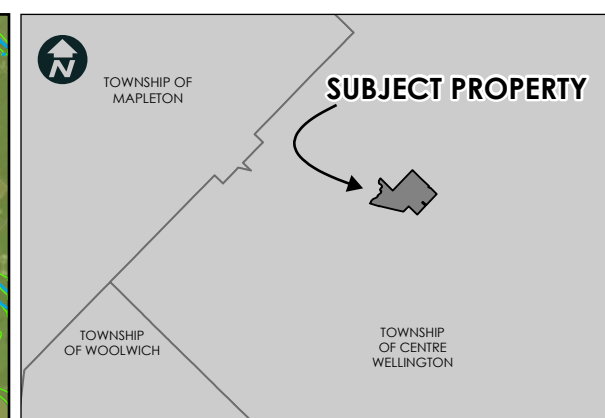
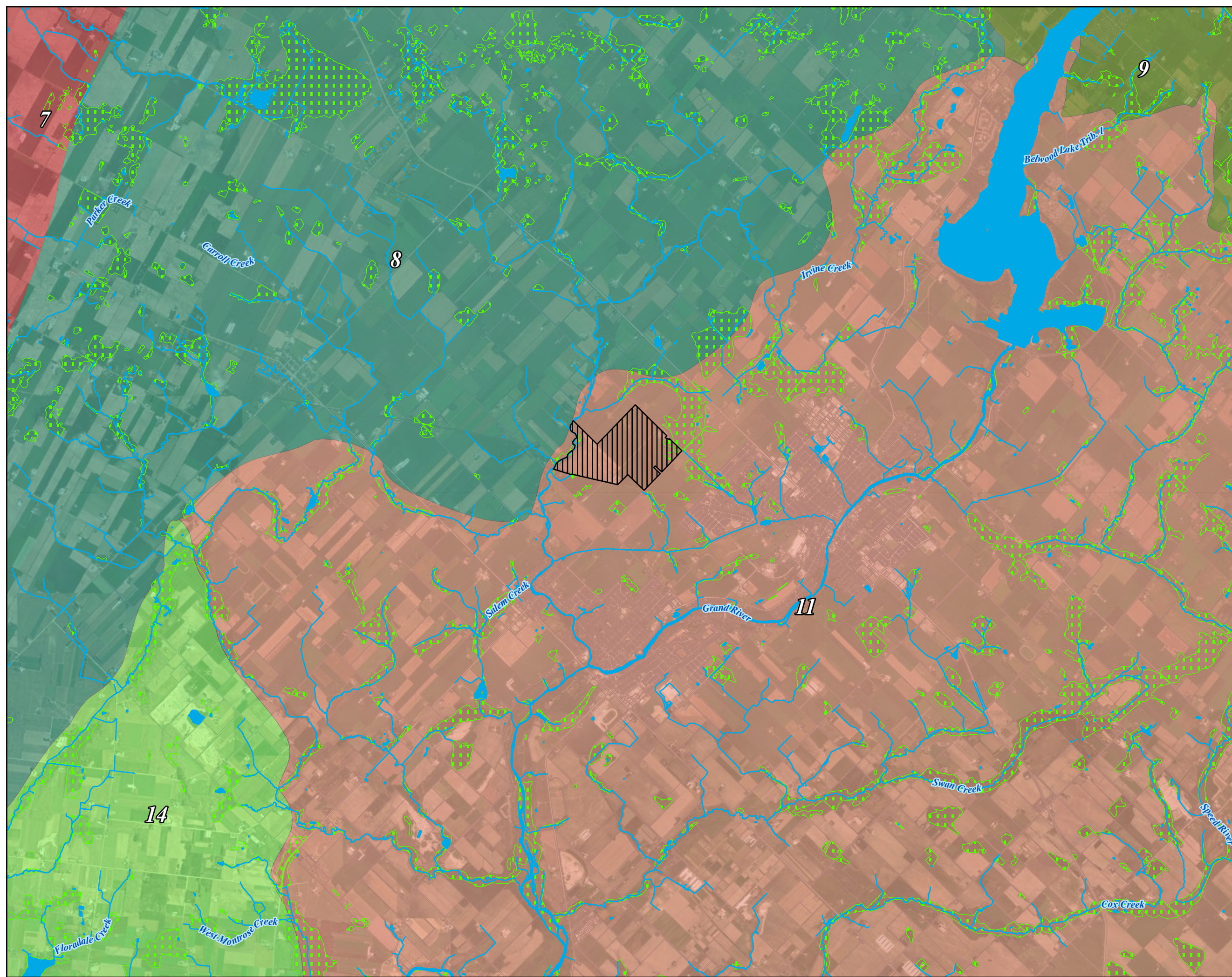
LEGEND

-  SUBJECT PROPERTY
-  WATERBODY
-  WETLAND
-  WATERCOURSE



FERGUS OAKS RESIDENTIAL
6704 & 6684 BEATTY LINE N, FERGUS
 SITE LOCATION PLAN





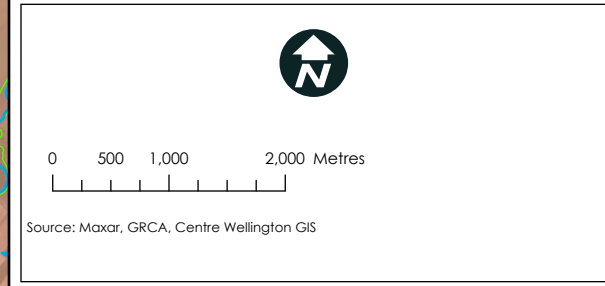
LEGEND

PHYSIOGRAPHIC REGION

- 7: DUNDALK TILL PLAIN
- 8: STRATFORD TILL PLAIN
- 9: HILLSBURGH SANDHILLS
- 11: GUELPH DRUMLIN FIELD
- 14: OXFORD TILL PLAIN

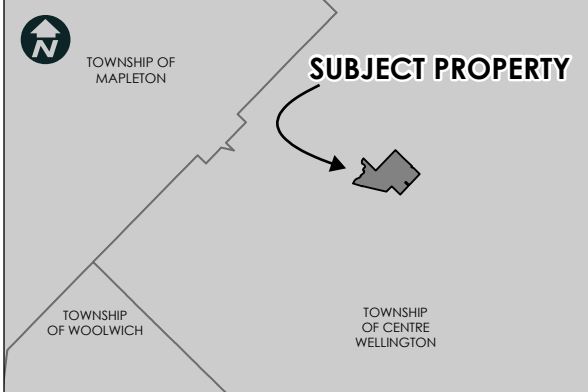
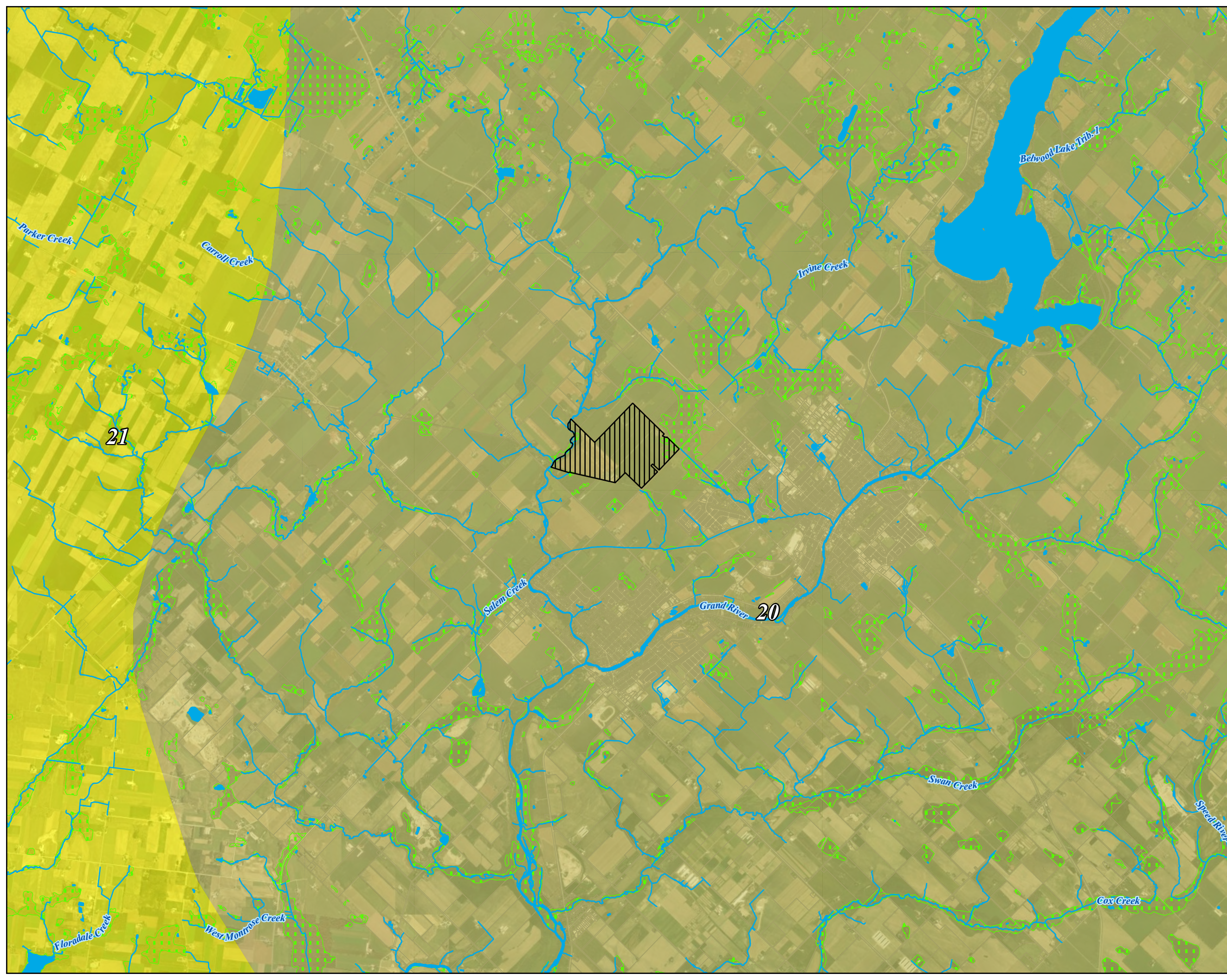
SYMBOLS

- SUBJECT PROPERTY
- WATERBODY
- WETLAND
- WATERCOURSE



FERGUS OAKS RESIDENTIAL
6704 & 6684 BEATTY LINE N, FERGUS
 PHYSIOGRAPHY



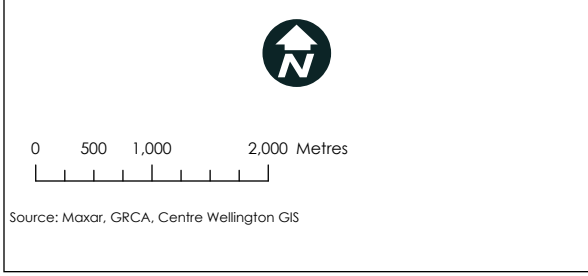


LEGEND

BEDROCK GEOLOGY

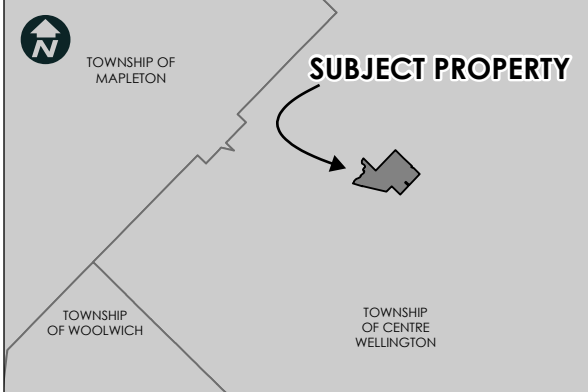
- 21: SALINA FORMATION - THIN BEDDED DOLOSTONE, SHALE, ABUNDANT EVAPORITES
- 20: GUELPH FORMATION - THICK BEDDED, TAN-BROWN FOSSILIFEROUS DOLOSTONE, WACKESTONE, GRAINSTONE

- SUBJECT PROPERTY
- WATERBODY
- WETLAND
- WATERCOURSE



FERGUS OAKS RESIDENTIAL
6704 & 6684 BEATTY LINE N, FERGUS
 BEDROCK GEOLOGY





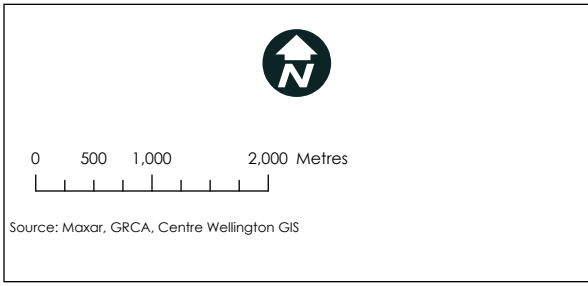
LEGEND

SURFICIAL GEOLOGY

- 20: ORGANIC PEAT, MUCK, MARL
- 19: MODERN FLUVIAL SILT, SAND, GRAVEL
- 9C: GLACIOLACUSTRINE SAND
- 8A: GLACIOLACUSTRINE CLAY, SILT
- 7: GLACIOFLUVIAL SAND, GRAVEL
- 7B: GLACIOFLUVIAL GRAVEL
- 7A: GLACIOFLUVIAL SAND
- 6: ICE-CONTACT SAND, GRAVEL
- 5B: SANDY SILT TO SILTY SAND TILL
- 5D: CLAYEY SILT TO SILTY CLAY TILL
- 3: PALEOZOIC BEDROCK

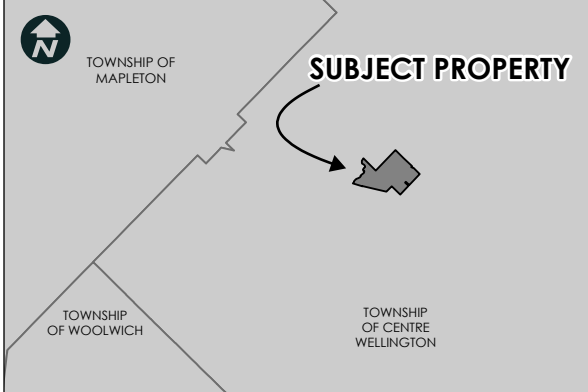
OTHER FEATURES

- ||||| SUBJECT PROPERTY
- WATERBODY
- WETLAND
- WATERCOURSE



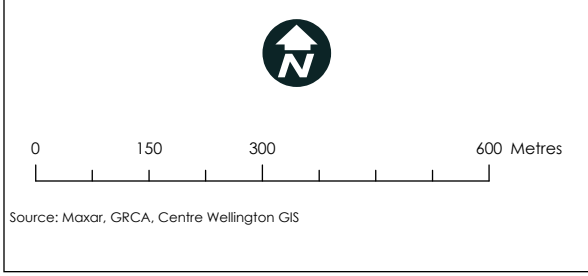
FERGUS OAKS RESIDENTIAL
 6704 & 6684 BEATTY LINE N, FERGUS
 SURFICIAL GEOLOGY





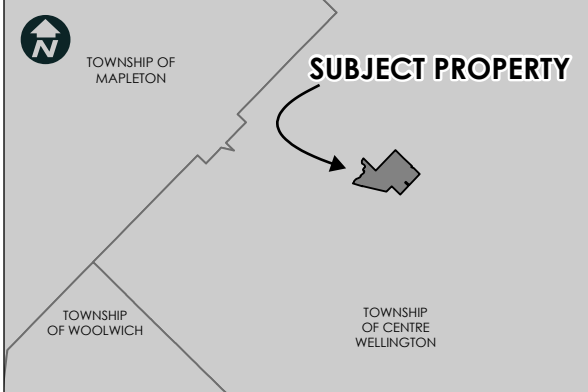
LEGEND

- SUBJECT PROPERTY
- WATERBODY
- WETLAND
- WATERCOURSE
- MECP WELL



FERGUS OAKS RESIDENTIAL
6704 & 6684 BEATTY LINE N, FERGUS
 MECP WELL PLAN



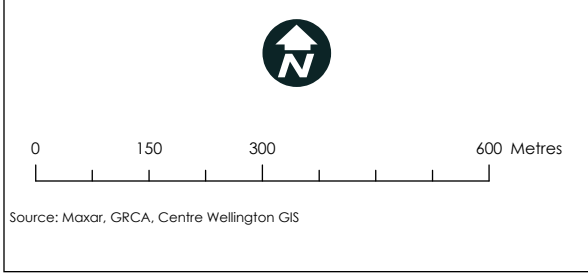


LEGEND

- SUBJECT PROPERTY
- WATERBODY
- WETLAND
- WATERCOURSE

TYPE

- EXISTING WELL
- PROPOSED ADDITIONAL WELL
- INTERPRETED GROUNDWATER FLOW DIRECTION (MAY 2025)



FERGUS OAKS RESIDENTIAL
6704 & 6684 BEATTY LINE N, FERGUS
 WELL PLAN





Soil Engineers Ltd.

CONSULTING ENGINEERS

GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE

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June 9, 2023

Reference No. 2305-S020

Page 1 of 7

Eleven Oaks Partners Ltd.
341 Four Miles Creek Road
P.O. Box 329
St. Davids, Ontario
L0S 1P0

Attention: Mr. Dan Raseta, Director, Vice President

**Re: Preliminary Geotechnical Investigation
Due Diligence for Property Acquisition
6684 and 6704 Beatty Line North
Township of Centre Wellington**

Dear Sir:

In accordance with your written authorization dated May 8, 2023, we have completed a preliminary geotechnical investigation at the captioned property as part of a due diligence for property acquisition purposes. The results from the investigation are presented in this report.

SITE CONDITION

The subject site consists of two parcels of land, having municipal addresses of 6684 and 6704 Beatty Line North, located at the northwest corner of Sideroad 15 and Beatty Line North in the Township of Centre-Wellington. The combined site is irregular in shape and is approximately 190 hectares in area. The property generally consists of farm land, with a portion of the land being used for a cattle farm, consisting of grain silos, storage and cattle barns, as well as other associates structures. The north limit of the site is bounded by Irvine Creek which meanders in a northeast and southwest direction. The site is relatively flat, however, the grade difference between the east and west limit of the site is approximately 9 m, descending towards the west.

FIELD WORK

Eleven (11) sampled boreholes, extending to depths of 6.6 m, 6.7 m and 8.1 m, were drilled at the site between May 18 and 24, 2023. The borehole locations are shown on Drawing No 1, enclosed.



The boreholes were advanced at intervals to the sampling depths by a track-mounted, continuous-flight power-auger machine equipped for soil sampling. Standard Penetration Test, using the procedures described on the enclosed “List of Abbreviations and Terms”, was performed at the sampling depths. The test results are recorded as the Standard Penetration Resistance (or ‘N’ values) of the subsoil. Split-spoon samples were recovered for soil classification and laboratory testing. The relative density of the non cohesive strata and the consistency of the cohesive strata are inferred from the ‘N’ values.

Upon completion of drilling and sampling, monitoring wells were installed in five (5) selected boreholes for groundwater records. The depth and details of the monitoring wells are shown on the corresponding Borehole Logs.

The fieldwork was supervised and the findings were recorded by a Geotechnical Technician. The ground elevation at each borehole location was obtained using a hand-held Global Navigation Satellite System (GNSS) equipment.

SOIL AND GROUNDWATER CONDITIONS

Detailed descriptions of the encountered subsurface conditions are presented on the enclosed Borehole Logs, comprising Figures 1 to 11, inclusive.

The investigation has revealed that beneath the topsoil veneer, 10 cm to 30 cm in thickness, and a layer of earth fill at Borehole 9; the site is underlain by strata of sand, silt and silty clay till.

The earth fill was encountered at Borehole 9, in the vicinity of the cattle barns. It was likely placed during previous grading activities for the construction of the facilities on site.

The obtained ‘N’ values encountered in the native soils and the moisture content of the retrieved samples are summarized in the table below:

Soil Type	Obtained ‘N’ Values (# blows per 30 cm of penetration)	Natural Water Content %
Sand	5 to 28 (median 12)	6 to 25 (median 20)
Silt	5 to 19 (median 10)	15 to 27 (median 21)
Silty Clay Till	4 to 100+ (median 21)	7 to 24 (median 11)



The sand and silt are loose to compact, generally compact in relative density and the silty clay till is firm to hard, generally very stiff in consistency. In the vicinity of Boreholes 8 and 10, the consistency of the silty clay till becomes hard at lower depth. The upper portion of the soils near the ground surface is generally weathered, which extends to approximately 0.9 to 1.2 m below the existing grade. The soils are in a generally moist to very moist condition.

Grain size analyses were carried out on representative samples of the sand, silt and silty clay till; the resulting grain size distributions are presented on Figures 12 to 15 inclusive.

The groundwater condition, as observed during the borehole investigation and recorded in the monitoring wells on May 29, 2023, is summarized in the table below:

BH/MW No.	Borehole Depth (m)	Seepage Encountered During Augering	Measured Groundwater Level in Borehole On Completion		Groundwater Level Recorded in Monitoring Well on May 29, 23	
		Depth (m)	Depth (m)	El. (m)	Depth (m)	El. (m)
BH/MW.1	6.7	3.0	4.6	424.0	3.5	425.1
BH.2	6.6	0.8	Not measured		No well	
BH.3	6.6	2.3	Not measured		No well	
BH.4	6.6	1.5	Not measured		No well	
BH.5	6.1	1.5	Not measured		No well	
BH.6	6.6	1.5	Not measured		No well	
BH/MW.7	6.7	1.5	Not measured		1.9	420.2
BH.8	6.2	0.8	Dry on completion		No well	
BH/MW.9	8.1	2.3	Not measured		2.1	423.0
BH/MW.10	6.6	2.1	5.9	413.8	5.1	414.6
BH/MW.11	6.6	1.5	Dry on completion		1.6	422.1

Groundwater seepage were encountered at shallow depths, ranging from 0.8 to 3.0 m below the prevailing ground surface, generally in the sand and silt deposit. The depth where seepage was encountered are presented in the borehole logs. Based on the groundwater level profiles, the seepage levels appears to represent the groundwater level within the property at the time of the borehole investigation, which will be subjected to seasonal fluctuations.

The water seepage in the sand and silt is expected to be appreciable and persistent; while in the silty clay till, it is expected to be small and limited.



DISCUSSION AND RECOMMENDATIONS

Based on the borehole findings, the preliminary geotechnical considerations pertaining to the design and construction of a residential development are presented below:

- The topsoil is void of engineering value and should be removed for site development. It should not be buried within the building areas.
- The existing earth fill is not suitable to support structures sensitive to settlement; it must be removed and replaced with properly compacted engineered earth fill.
- The existing structures and foundations will be demolished. The debris must be removed and disposed of off-site. The cavity must be inspected by the geotechnical engineer before backfilling for building construction. The backfill in cavities must be free of topsoil or deleterious material, placed and compacted to engineered fill specifications.
- The weathered soils must be sub-excavated, sorted free of topsoil and organics, and further assessed to determine its suitability for reuse.
- Where re-grading is required with additional earth filling, it may be economical to place engineered fill for the building foundation and site services support.
- A portion of the property limit abuts to Irvine Creek, which is under the Grand River Conservation Authority regulated area. Depending on the topographic feature along Irvine Creek, a slope stability assessment will be required to establish the erosion hazard limit for the future development.
- The structures can be constructed on conventional footings founded on compacted engineered fill or undisturbed native subsoil with the following recommended bearing pressures:
 - Maximum Bearing Pressure at Serviceability Limit State (SLS) = 75 to 150 kPa
 - Factored Ultimate Bearing Pressure at Ultimate Limit State (ULS) = 120 to 225 kPa
- The total and differential settlements of the footing designed at SLS are estimated to be 25 mm and 20 mm, respectively.
- Foundations exposed to weathering or in unheated areas should have at least 1.6 m of earth cover for protection against frost action.
- The silt is high in frost susceptibility and soil adfreezing potential. Where the silt is used to backfill against foundation walls, special measures will need to be implemented to prevent frost damage to the structures.
- The footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer; this is to ensure that the subgrade conditions are compatible with the foundation design requirements.
- The foundations should meet the requirements specified in the latest Ontario Building Code. The structure should be designed to resist an earthquake force using Site Classification 'D' (stiff soil).



- In conventional basement construction, perimeter subdrain at the foundations and damp-proofing of the foundation walls will be required. The subdrain should be encased in a fabric filter to protect it against blockage by silting and connected to positive outlets. Where groundwater level is found to be relatively shallow, and where permitted by the Municipality or Conservation Authority, perimeter subdrains and underfloor subdrains can be provided to relieve any hydrostatic pressure imposed on the structures; otherwise, in areas where shallow groundwater is encountered, the grade should be raised in order to accommodate structures with basements.
- A Class 'B' bedding, consisting of compacted 19-mm Crusher-Run Limestone, is recommended for the construction of the underground services. In areas where erodible sand and silt is encountered or the services lie below the groundwater level, a Class 'A' concrete bedding may be required. Anti-seepage collars must also be provided along the service alignment at regular intervals.
- Service pipes connecting into manholes and catch basins must be connected by leak-proof joints to prevent subgrade upfiltration through the joints. Openings to subdrains and catch basins should be shielded with a fabric filter to prevent blockage by silting.
- Excavation should be carried out in accordance with Ontario Regulation 213/91. For excavation purposes, the types of soils are classified below:

Material	Type
Sound Till	2
Weathered Soils and drained Sand and Silt	3
Saturated Sand and Silt	4

- The in situ till contains cobbles and boulders. Extra effort will be required for excavation.
- Any groundwater seepage from the percolation of surface water or perched water from the sand and silt deposit and in the sand and silt seams within the till will be slow in rate and limited in quantity. It can be drained into a sump pit and removed by conventional pumping, where necessary. The yield in the sand and silt below saturation level will be appreciable and persistent. Excavation below the groundwater level will require the use of well-point dewatering system.

One must recognize that this is a summary of the boreholes completed within the property as part of a preliminary investigation. A detailed soil investigation and a comprehensive geotechnical report will be required for project design once the Draft Plan for the proposed development is available.



CONCLUSION

Based on the borehole findings, the property is generally suitable for a low density residential development.

- The topsoil encountered on site must be stripped. It can only be reused in landscaped area.
- The earth fill encountered on site to a depth of 2.3 m at Borehole 9, will require removal. It may need to be disposed of off site.
- A slope stability analysis may be required to establish the erosion hazard limit within the development, with additional setbacks for the building lots along the development limits abutting to Irvine Creek, subject to the Grand Valley Conservation Authority and Township of Centre-Wellington requirements.
- Conventional strip and spread footings can be considered to support the proposed residential structures with or without a basement. Where shallow groundwater is encountered, the grade should be raised in order to accommodate structures with basements, unless perimeter subdrains and underfloor drains are permitted to collect and discharge any groundwater within the building envelopes to relieve any potential groundwater pressure imposed on the structures.
- Dewatering is likely required for site servicing in the area where saturated sand and silt are encountered. An additional hydrogeological assessment is recommended to assess the groundwater conditions of the site and to determine the dewatering requirements.
- Once the development plans become available, a detailed geotechnical investigation should be completed
- One must recognize that this is a summary of the preliminary investigation. A detailed soil investigation and a comprehensive geotechnical report will be required for project design once the Draft Plan for the proposed development is available.

LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account of Eleven Oaks Partners Ltd. and for review by their designated consultants, contractors, financial institutions, and government agencies. Use of the report is subject to the conditions and limitations of the contractual agreement. The material in the report reflects the judgment of Kelvin Hung, P.Eng., and Bernard Lee, P.Eng., in light of the information available to it at the time of preparation.



Any use which a Third Party makes of this report, and/or any reliance on decisions to be made based on it are the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

SOIL ENGINEERS LTD.

Kelvin Hung, P.Eng.



Bernard Lee, P.Eng.
KH/BL:dd

ENCLOSURES

Borehole Logs	Figures 1 to 11
Grain Size Distribution Graphs	Figures 12 to 15
Borehole Location Plan	Drawing No. 1
Subsurface Profile	Drawing No. 2

LIST OF ABBREVIATIONS AND DESCRIPTION OF TERMS

The abbreviations and terms commonly employed on the borehole logs and figures, and in the text of the report, are as follows:

SAMPLE TYPES

AS	Auger sample
CS	Chunk sample
DO	Drive open (split spoon)
DS	Denison type sample
FS	Foil sample
RC	Rock core (with size and percentage recovery)
ST	Slotted tube
TO	Thin-walled, open
TP	Thin-walled, piston
WS	Wash sample

SOIL DESCRIPTION

Cohesionless Soils:

<u>'N'</u> (blows/ft)	<u>Relative Density</u>
0 to 4	very loose
4 to 10	loose
10 to 30	compact
30 to 50	dense
over 50	very dense

Cohesive Soils:

PENETRATION RESISTANCE

Dynamic Cone Penetration Resistance:

A continuous profile showing the number of blows for each foot of penetration of a 2-inch diameter, 90° point cone driven by a 140-pound hammer falling 30 inches.

Plotted as '—●—'

Undrained Shear Strength (ksf)

less than 0.25
0.25 to 0.50
0.50 to 1.0
1.0 to 2.0
2.0 to 4.0
over 4.0

'N' (blows/ft)

0 to 2
2 to 4
4 to 8
8 to 16
16 to 32
over 32

Consistency

very soft
soft
firm
stiff
very stiff
hard

Standard Penetration Resistance or 'N' Value:

The number of blows of a 140-pound hammer falling 30 inches required to advance a 2-inch O.D. drive open sampler one foot into undisturbed soil.

Plotted as '○'

Method of Determination of Undrained Shear Strength of Cohesive Soils:

x 0.0 Field vane test in borehole; the number denotes the sensitivity to remoulding

△ Laboratory vane test

□ Compression test in laboratory

For a saturated cohesive soil, the undrained shear strength is taken as one half of the undrained compressive strength

WH	Sampler advanced by static weight
PH	Sampler advanced by hydraulic pressure
PM	Sampler advanced by manual pressure
NP	No penetration

METRIC CONVERSION FACTORS

1 ft = 0.3048 metres
11b = 0.454 kg

1 inch = 25.4 mm
1ksf = 47.88 kPa



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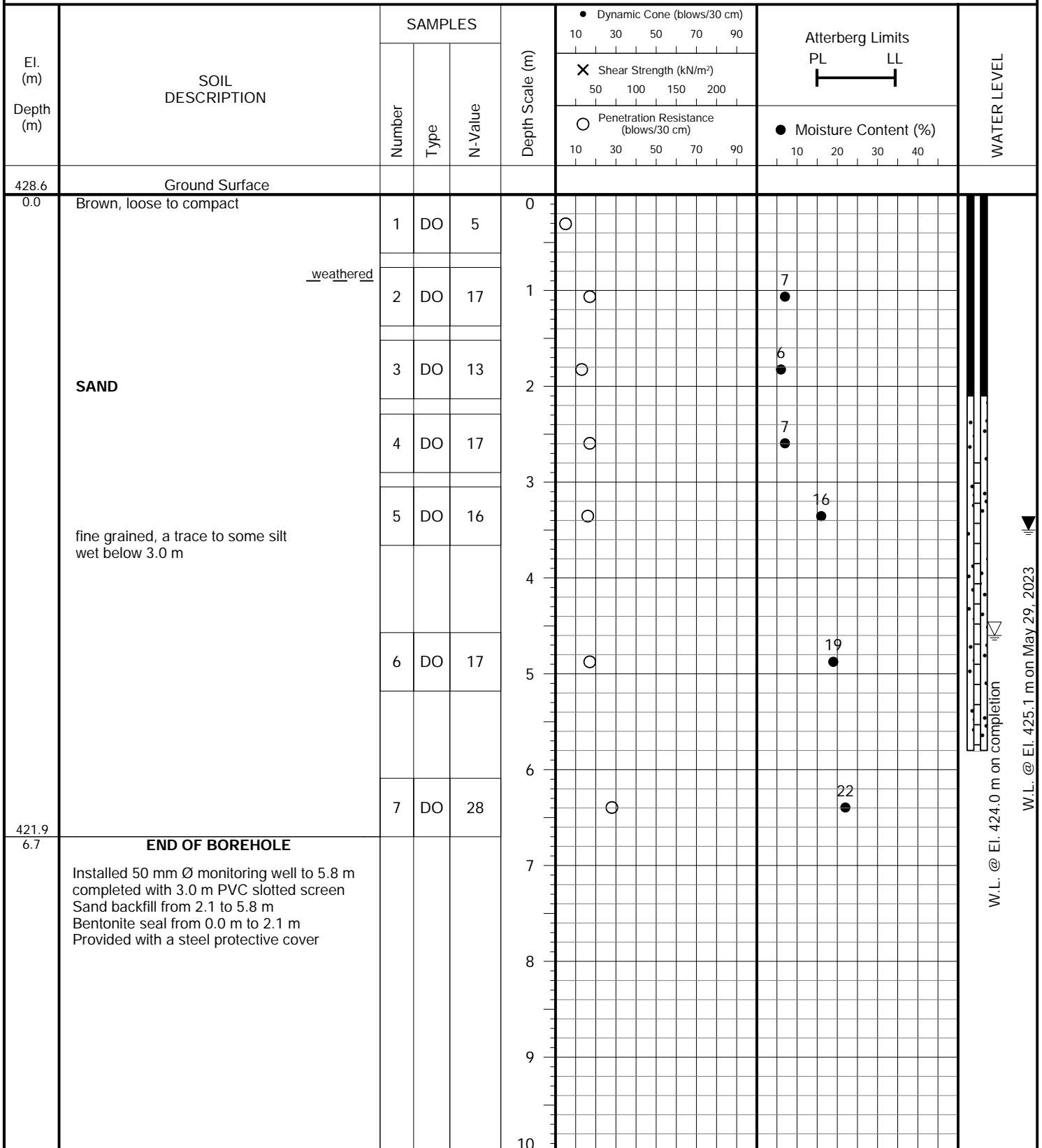
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE

PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Solid/Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 18, 2023



W.L. @ El. 424.0 m on completion
 W.L. @ El. 425.1 m on May 29, 2023

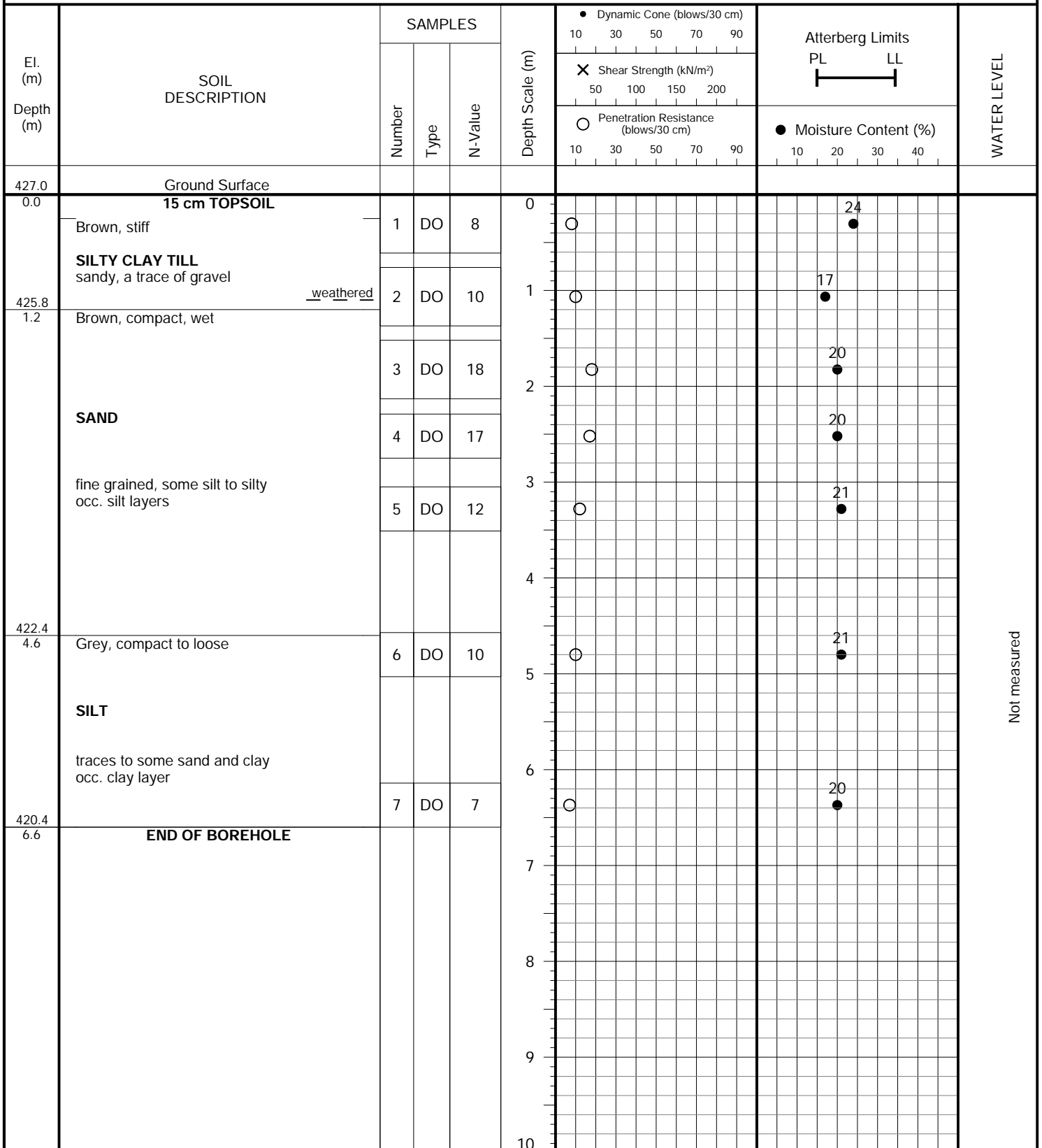


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 19, 2023



Not measured

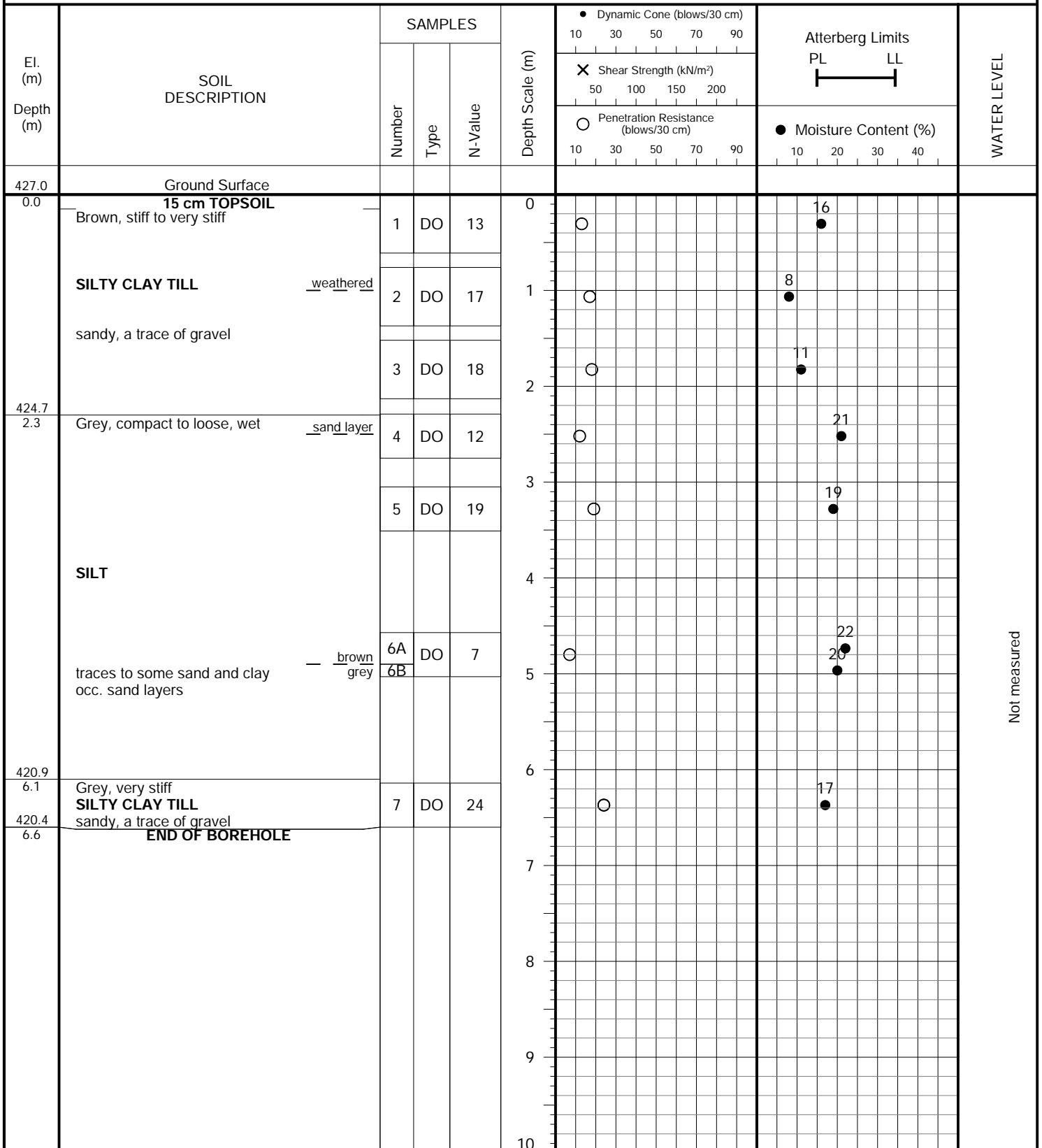


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 18, 2023



Not measured



PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 19, 2023

El. (m) Depth (m)	SOIL DESCRIPTION	SAMPLES			Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90		Atterberg Limits PL LL		WATER LEVEL
		Number	Type	N-Value		Shear Strength (kN/m ²) 50 100 150 200		Moisture Content (%) 10 20 30 40		
423.0	Ground Surface									
0.0	30 cm TOPSOIL									
	Brown, loose to compact, wet	1	DO	6	0	○		21		
	<u>weathered</u>									
		2	DO	16	1	○		20		
		3	DO	21	2	○				
	SAND									
		4	DO	18	2.5	○		25		
		5	DO	18	3.5	○		21		
	fine grained some silt to silty									
		6	DO	10	4.5	○		22		
417.0					6					
6.0	Grey, loose SILT									
416.4	some clay, a trace of sand	7	DO	7	6.5	○		21		
6.6	END OF BOREHOLE				7					
					8					
					9					
					10					

Not measured



PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 18, 2023

El. (m)	SOIL DESCRIPTION	SAMPLES			Depth Scale (m)	Atterberg Limits		WATER LEVEL
		Number	Type	N-Value		PL	LL	
426.3	Ground Surface							
0.0	15 cm TOPSOIL Brown, loose to compact	1	DO	7	0		17	Not measured
	SAND <u>weathered</u> fine grained some silt to silty wet below 1.5 m	2	DO	9	1		20	
		3	DO	11	2		21	
		4	DO	12	2.5		20	
423.3	3.0	5	DO	10	3		17	
	SILT traces to some sand and clay	6	DO	12	5		15	
420.2	6.1	7	DO	22	6		13	
419.7	6.6				6.1			
	SILTY CLAY TILL sandy, a trace of gravel							
	END OF BOREHOLE							

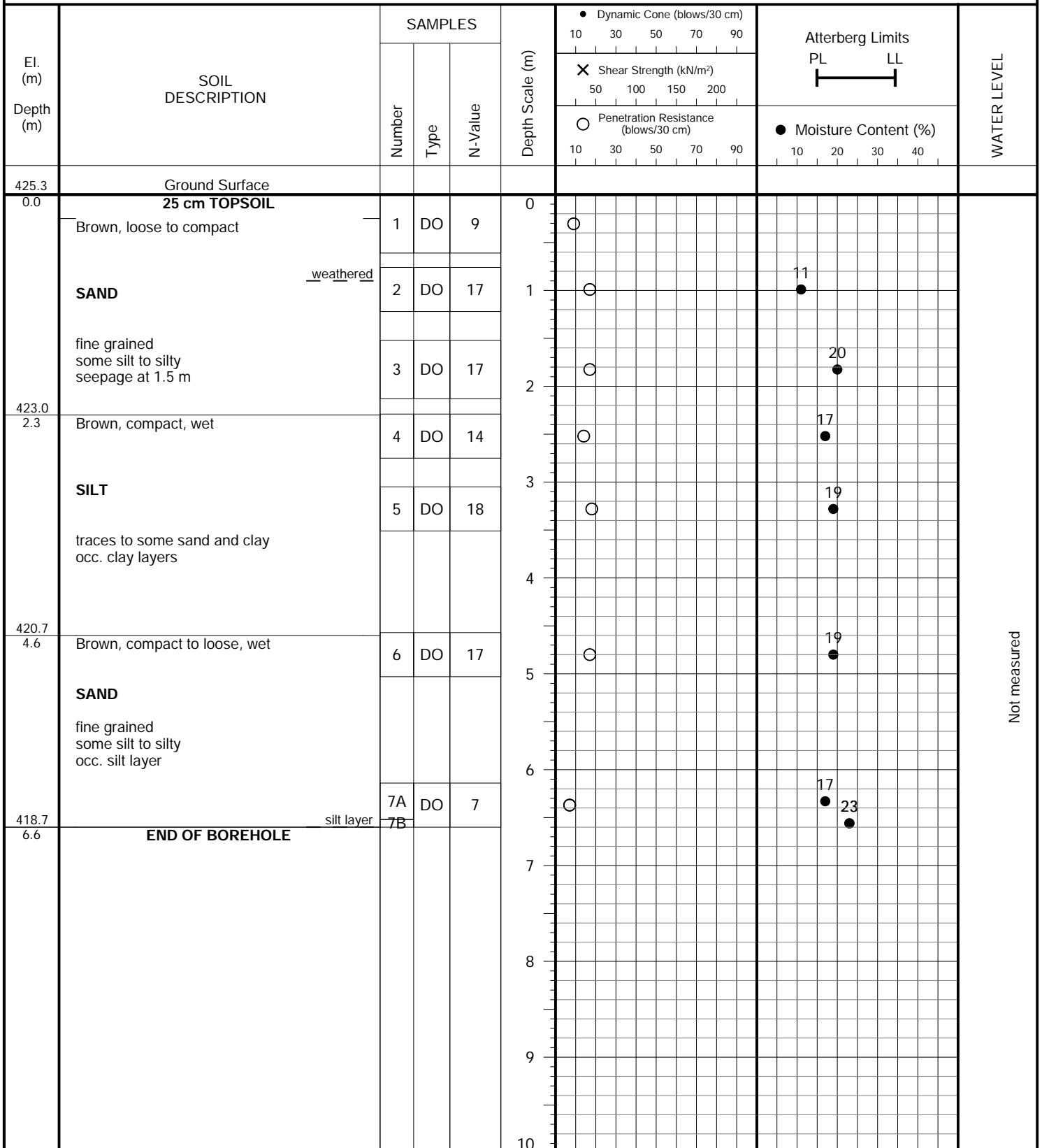


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 18, 2023



Not measured

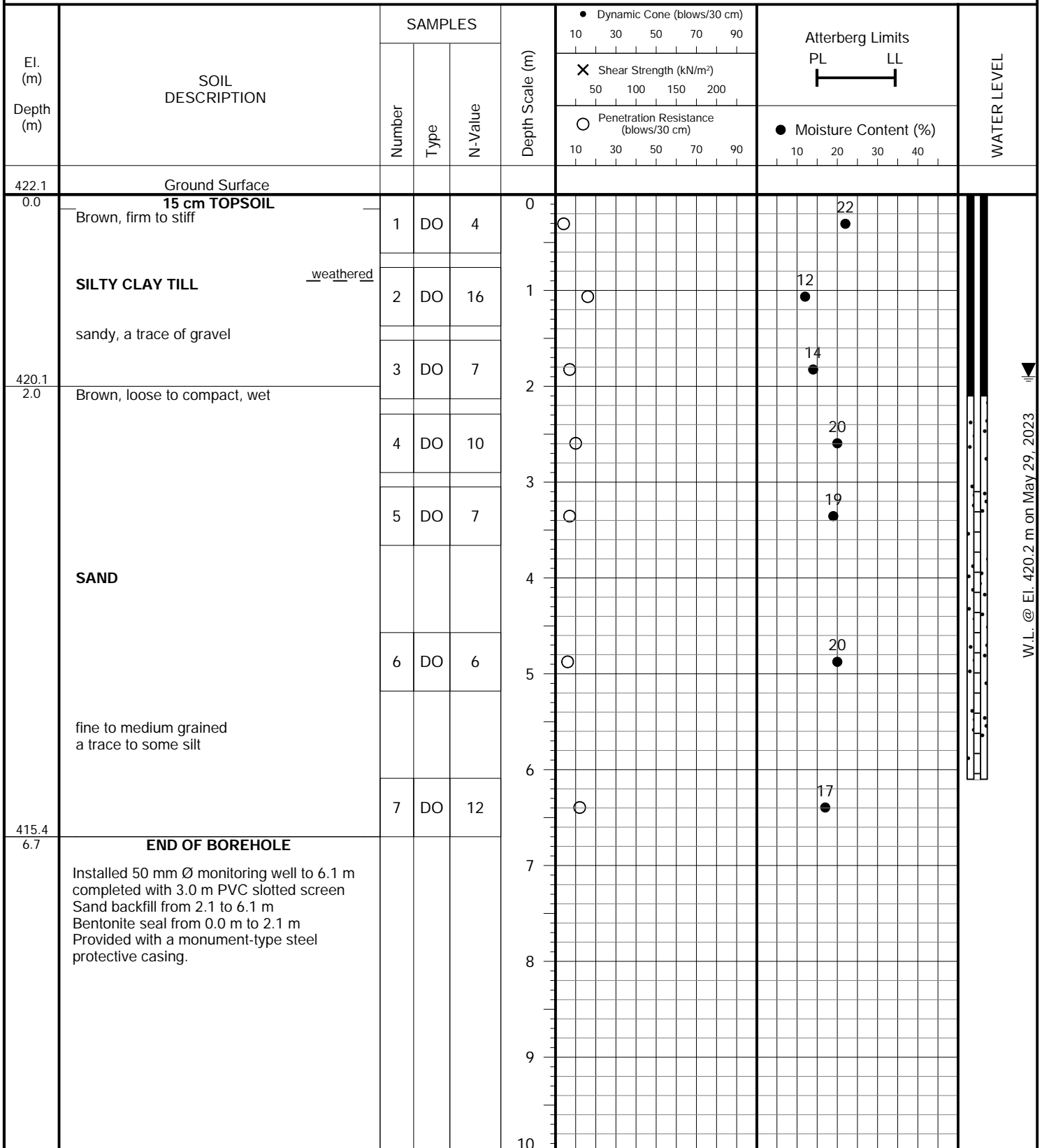


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 24, 2023



W.L. @ El. 420.2 m on May 29, 2023

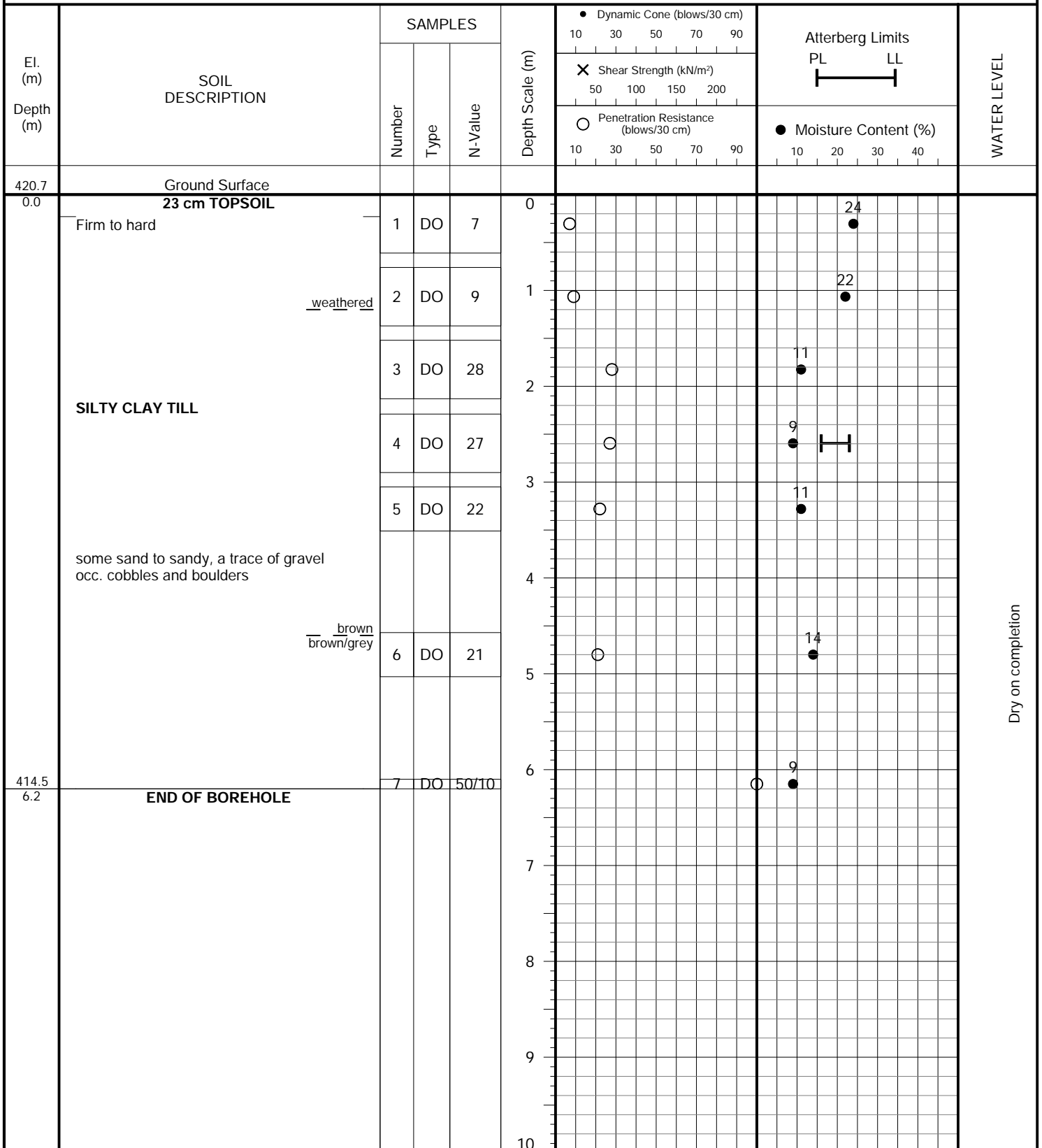


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 19, 2023

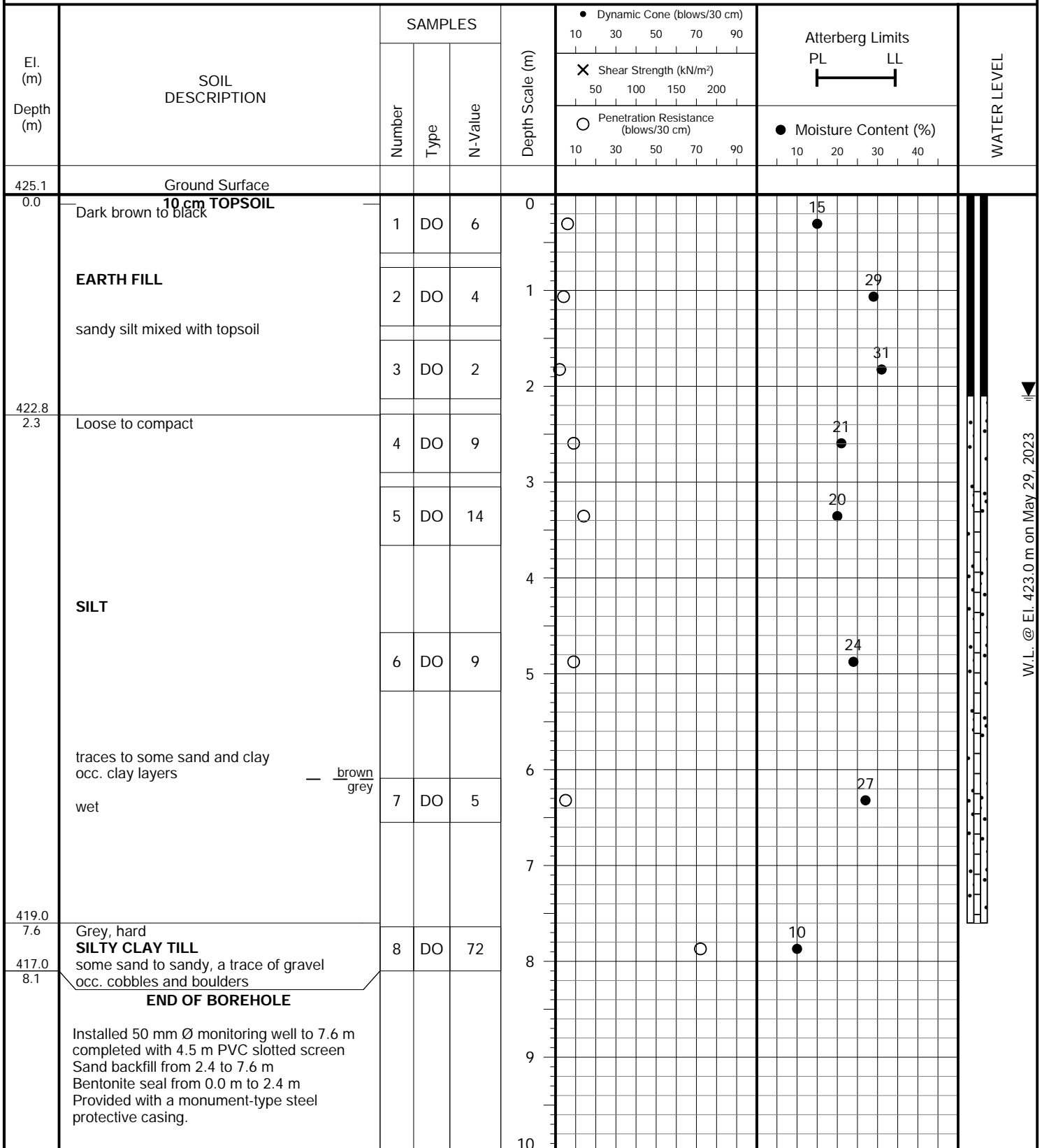


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 24, 2023

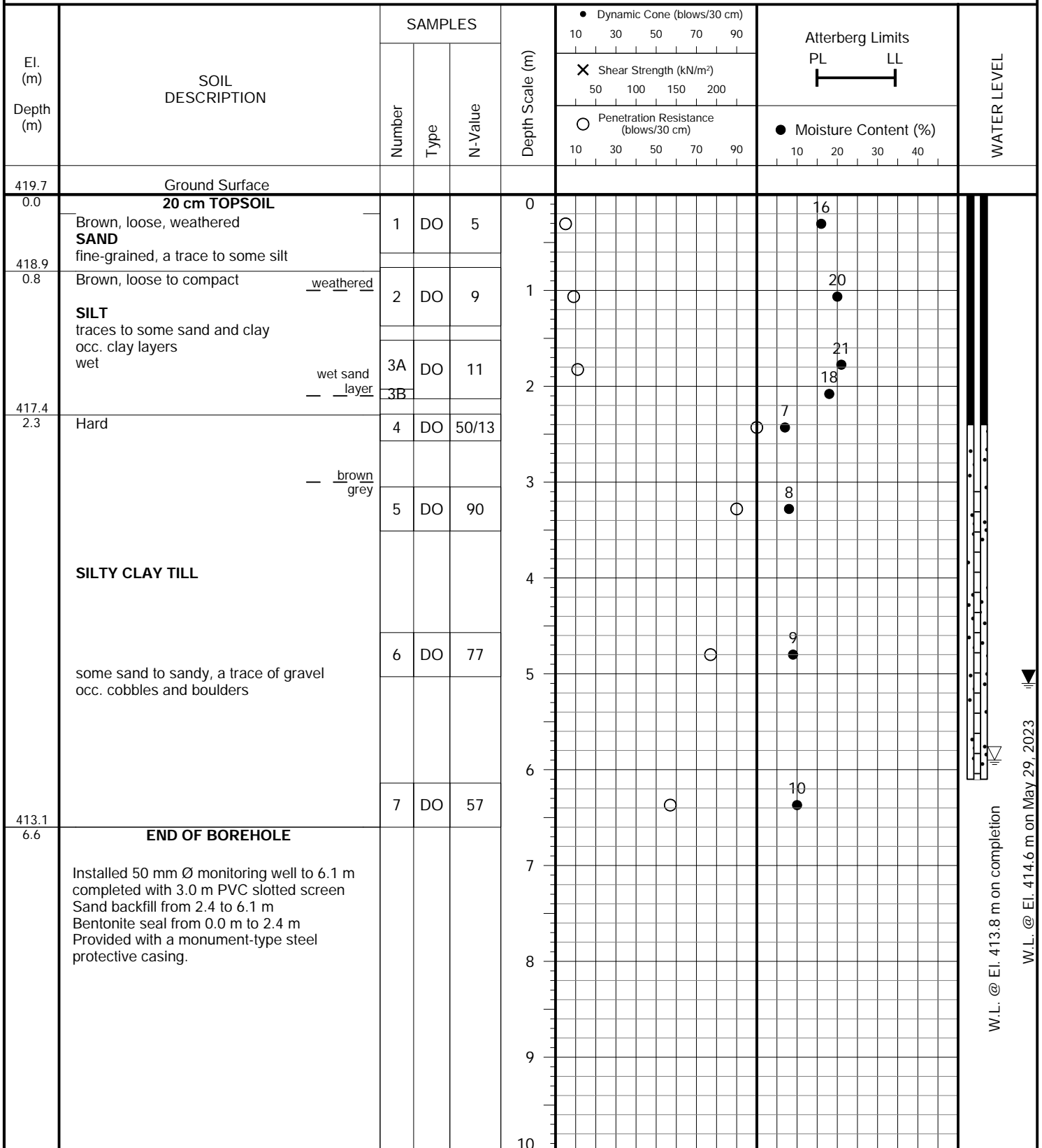


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 23, 2023

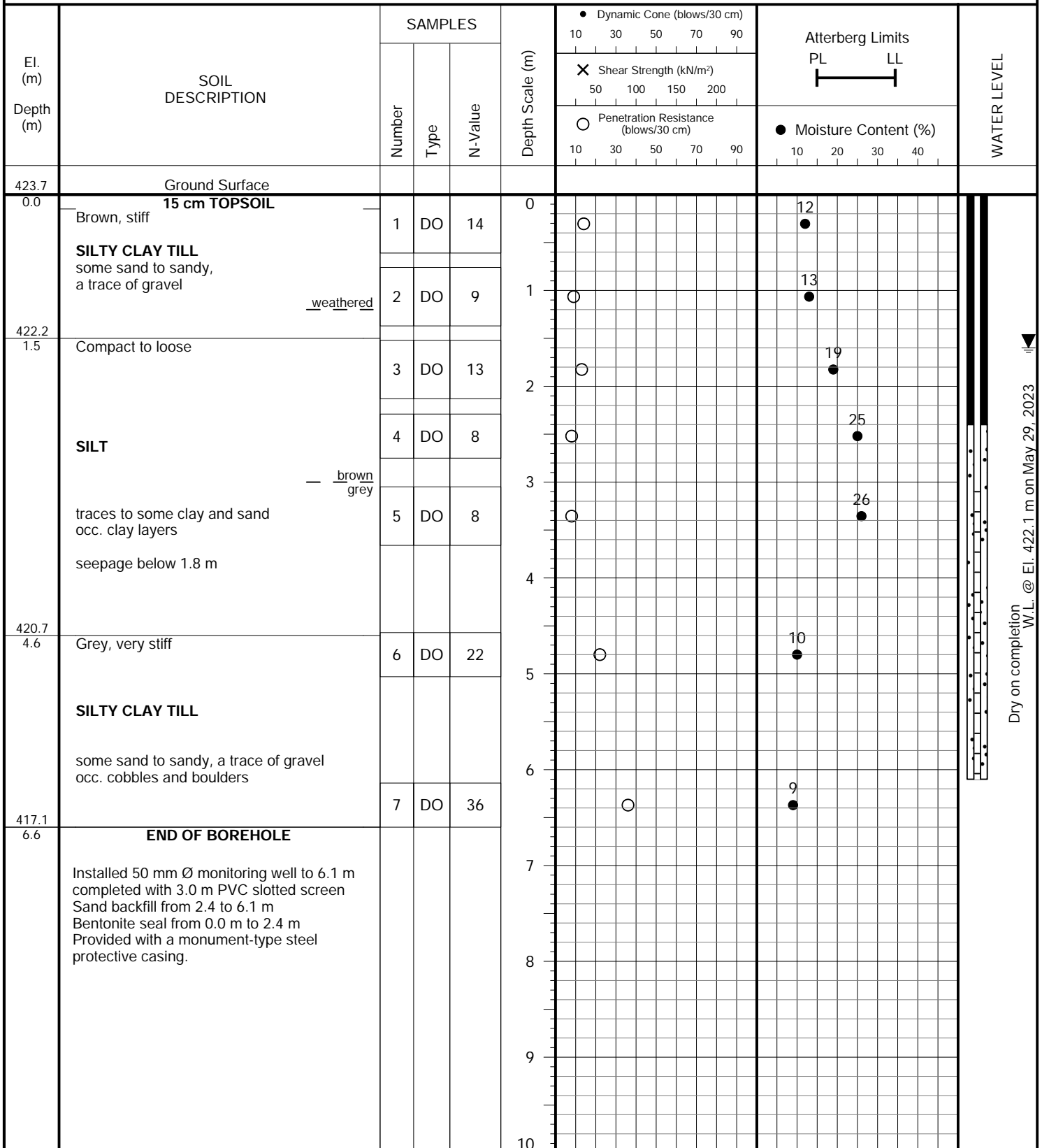


PROJECT DESCRIPTION: Due Diligence for Property Acquisition

METHOD OF BORING: Hollow-Stem

PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

DRILLING DATE: May 23, 2023



Dry on completion
W.L. @ El. 422.1 m on May 29, 2023



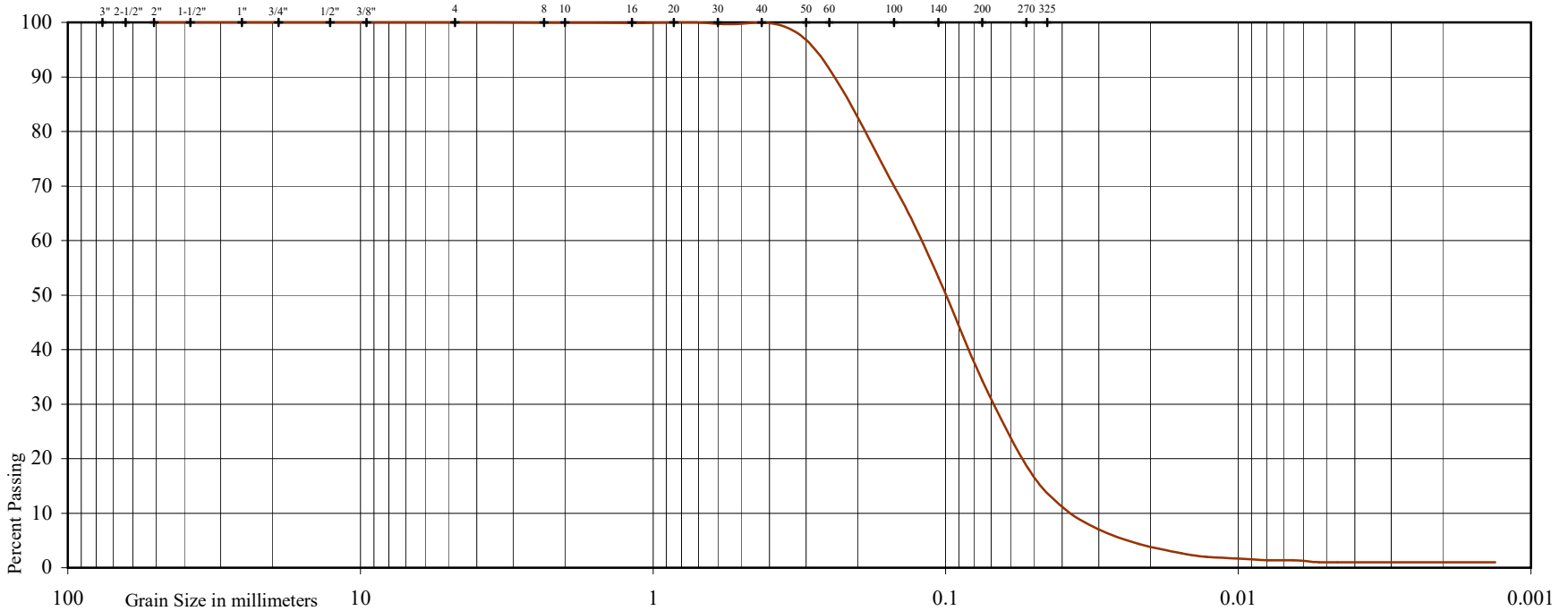


U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL			SAND				SILT	CLAY
COARSE		FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Due Diligence for Property Acquisition

Location: 6684 and 6704 Beatty Line North, Township of Centre-Wellington

Borehole No: 5

Sample No: 4

Depth (m): 2.5

Elevation (m): 423.8

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = 20

Estimated Permeability

(cm./sec.) = 10⁻³

Classification of Sample [& Group Symbol]:	SAND fine grained, silty
--	-----------------------------

Figure: 13

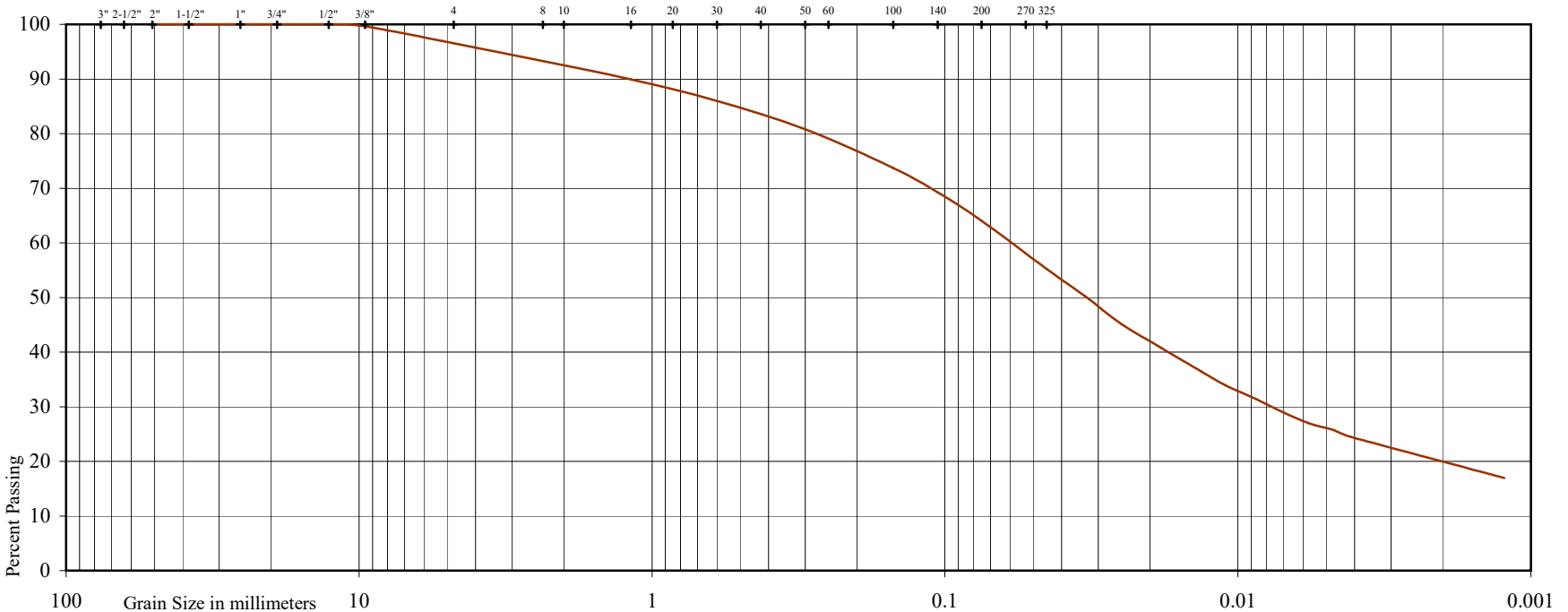


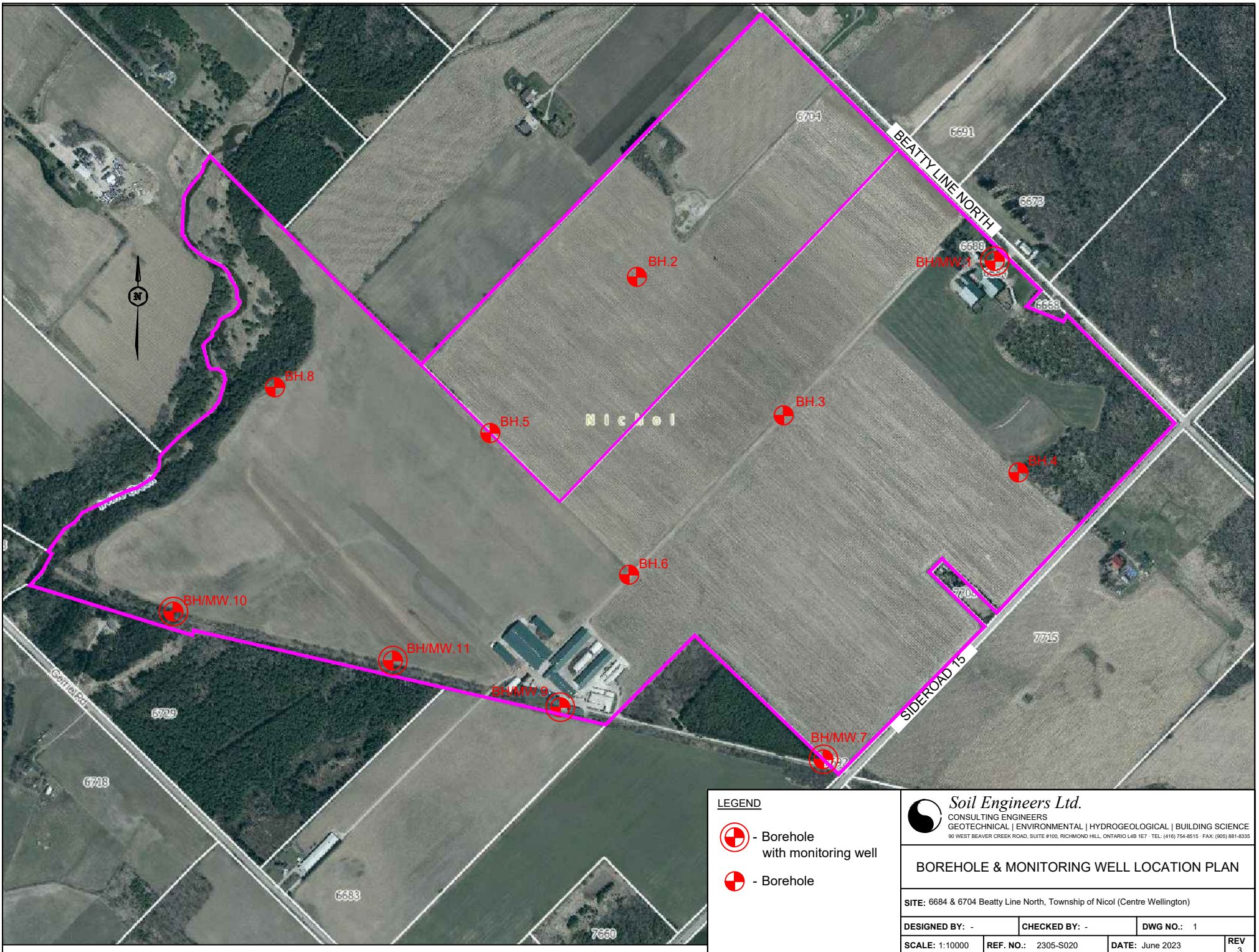
U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL			SAND				SILT	CLAY
COARSE	FINE		COARSE	MEDIUM	FINE	V. FINE		



UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	





LEGEND

-  - Borehole with monitoring well
-  - Borehole

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 90 WEST BEAVER CREEK ROAD, SUITE #100, RICHMOND HILL, ONTARIO L4B 1E7 TEL: (416) 754-8515 FAX: (905) 881-8335

BOREHOLE & MONITORING WELL LOCATION PLAN

SITE: 6684 & 6704 Beatty Line North, Township of Nicol (Centre Wellington)

DESIGNED BY: -	CHECKED BY: -	DWG NO.: 1
SCALE: 1:10000	REF. NO.: 2305-S020	DATE: June 2023
		REV 3



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SUBSURFACE PROFILE

DRAWING NO. 2

SCALE: AS SHOWN

JOB NO.: 2305-S010
REPORT DATE: June 2023
PROJECT DESCRIPTION: Due Diligence for Property Acquisition
PROJECT LOCATION: 6684 and 6704 Beatty Line North
Township of Centre Wellington

LEGEND

-  TOPSOIL
-  SAND
-  SILT
-  SILTY CLAY TILL
-  FILL

 WATER LEVEL (END OF DRILLING)  WATER LEVEL (STABILIZED)

