

AGROLOGY AND SOIL CAPABILITY STUDY

Part Lots 1 & 2 Concession II Nepean, City of Ottawa
4386 Rideau Valley Drive

Erik Apedaile, P.Ag.

June 18th 2025



Introduction

Apedaile Environmental was retained by Uniform Developments to perform an agrology and soil capability study on a parcel of land located on Part Lots 1 and 2 Concession II Nepean in the City of Ottawa (Figure 1). The purpose of an agrology and soil capability study is to confirm or recommend alterations to the mapping of agricultural land in the City of Ottawa. The agricultural capability of land is assessed through the Canada Land Inventory (CLI) classification and is used to inform the Land Evaluation component of the City of Ottawa LEAR.

The Province of Ontario requires municipalities to identify prime agricultural areas for the long-term use for agriculture. Through the Provincial Policy Statement, the Province has issued guidelines for how these areas are to be identified, through the development of the Land Evaluation and Area Review (LEAR) analysis. The LEAR study allows for the quantitative evaluation of individual parcels of agricultural land and to identify broad areas of a municipality that should be protected for long term agricultural use and conversely, areas that do not warrant protection.

The Canada Land Inventory for agriculture is a system for assessing the effects of climate and soil characteristics on the limitations for growing common field crops. The system evaluates three qualities of mineral soils:

1. their productivity relative to all mineral soils in Canada,
2. their flexibility in terms of field crops they are capable of producing, and
3. the management requirements in terms of necessary improvements for crop production.

It is important to note that the CLI system considers the potential capability of soils and so current land use may not reflect its agricultural potential.

The CLI classification provides the basis for the LEAR system, since it classifies land according to agricultural capability for crop production. The CLI ranks soils on a scale of 1 to 7, where Class 1 soils have no significant limitations or crop production and Class 7 soils have no capability for crop production. Classes 1 to 3 are considered prime land for agricultural production while Classes 4 to 6 are not prime land for agricultural production.

The Ottawa LEAR scores property parcels on a scale of 1 to 200, using the proportion of each CLI soil class in a parcel to calculate the Land Evaluation component of the LEAR score and then the percentage of the parcel in agriculture, surrounding uses and parcel size to inform the Area Review component of the score. The threshold for inclusion of land in the Agricultural Resource Area is a LEAR score of 125 or greater. This parcel has a LEAR score of 87.

OBJECTIVE

The objective of this study is to evaluate the agricultural capability of the subject lands and determine whether any mitigation is warranted.



Figure 1 Site Location

SITE DESCRIPTION

The study area is located on Part Lots 1 and 2 Concession II Nepean, 4386 Rideau Valley Drive in the City of Ottawa, southwest of the Village of Manotick (Figure 1). The site is

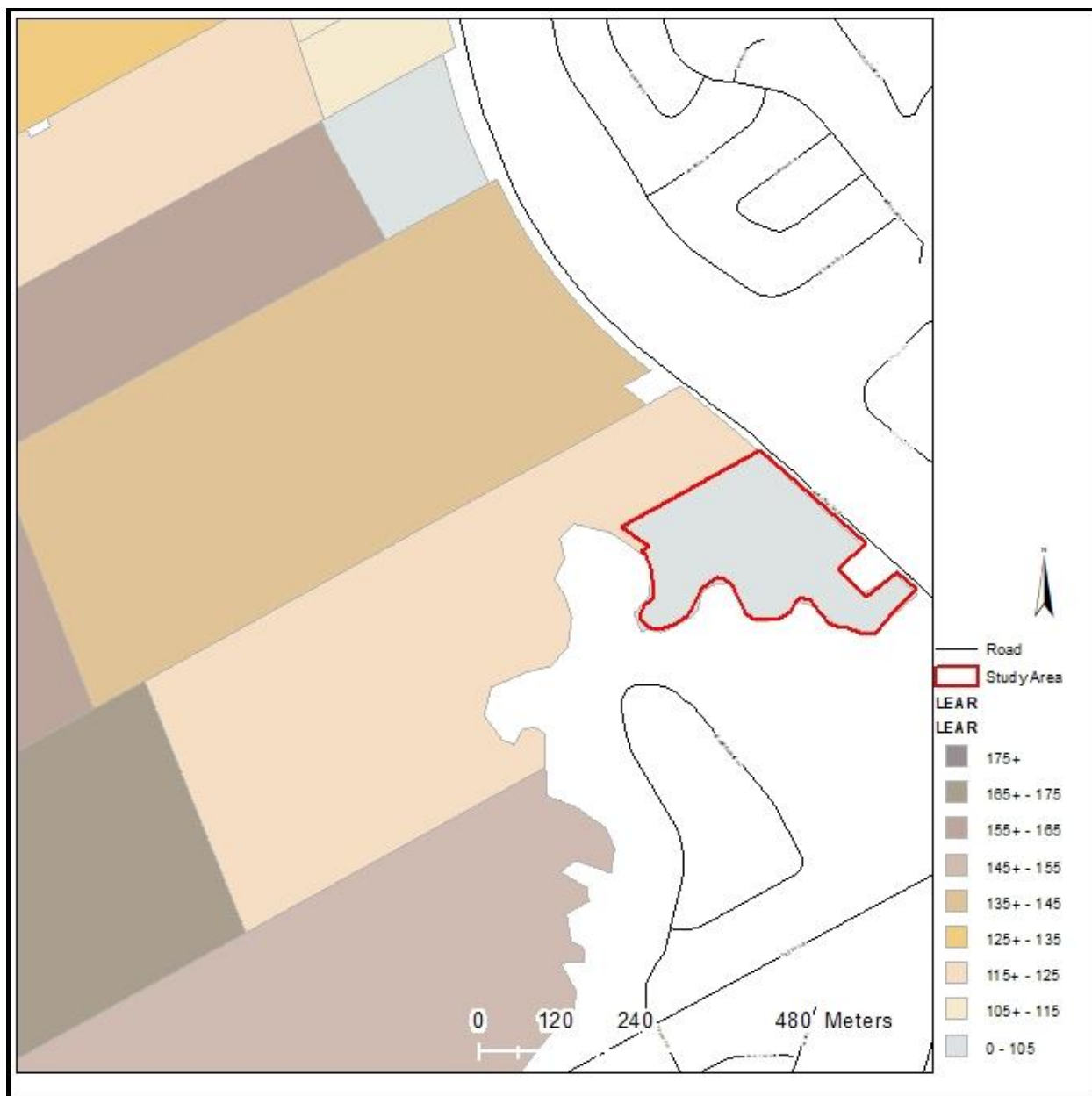


Figure 2 Current LEAR Mapping

approximately 6.6 hectares in area, with approximately 2 hectares of open field and 4.6 hectares of bush. The site is bordered to the north by a City of Ottawa public works yard, to the west by Mud Creek and subdivisions, to the south by Mud Creek and to the east by Rideau Valley Drive and the Rideau River. There are subdivisions across the Rideau River from the site. The site surrounds two residential lots located at 4306 and 4314 Rideau Valley Drive. The site is accessible from Rideau Valley Drive.

The open field was bare soil interspersed with broad leaf weeds and was not seeded at the time of inspection. There was no evidence of crop residues, suggesting that it has been

some time since the field was actively cropped. Air photo evidence suggests that the field was last in crop in 2023 and has been sporadically cropped since at least 1999. The bush consisted mostly of dense underbrush with mature hardwood trees. There is a small open meadow west of the two residences on Rideau Valley Drive.

The site is currently zoned as AG3. The zoning to the north is Rural Institutional, to the west is Village Residential to the east the narrow strip between the site and the Rideau River is Rural Countryside, across the river is Village Residential and to the south across Mud Creek is Development Reserve.

The site is currently classified as Castor series soils with a CLI classification of 2W and has a LEAR score of 87 (Figure 2). The CLI classification is taken from the Ontario Ministry of Agriculture, Food and Agribusiness AgMaps web tool while the LEAR score for the property is taken from Volume 2 of the City of Ottawa Land Evaluation and Area Review (LEAR) for Agriculture. Volume 1 of the City of Ottawa Land Evaluation and Area Review (LEAR) for Agriculture identifies a LEAR score of 125 as a threshold for inclusion in the City's Agricultural Resource Area.

METHODOLOGY

A detailed soil inspection was performed on June 9th, 2025. The subject parcel was initially located on GeoOttawa to identify visible landscape features, general land use, zoning and LEAR mapping. OMAFA AgMaps was used to determine existing soil classification information for the parcel. The soils inspection was conducted following the procedures of the Field Manual for Describing Soils in Ontario. This manual provides guidance on site description, soil profile and horizon description and soil taxonomic classification.

Eight locations distributed across the study area were selected (Figure 3). At each site the coordinates were recorded with a WAAS Differential GPS and plotted using ArcMap. For each sample location, drainage, slope, slope position stoniness class and rockiness class were noted. The soil at each sample point was augured using a 5 x 18 cm Edelman soil auger in 20 cm sections and placed on a plank to determine the thickness and classification of each soil horizon. The horizon designation, field texture and structure were observed and recorded. Samples of the A horizon were collected for hydrometer determination of texture. The presence of soil drainage characteristics (gleying and mottling) was also observed and which depth they occurred were noted if present. The soil depth to a maximum of 1 meter was measured using a slide hammer tile probe.

From the observations at each soil test hole, the soil type (series) was determined, using the descriptions and soil associations key from The Soils of the Regional Municipality of Ottawa-Carleton. The Soil Association Key provides an algorithm for determining the soil

series and the report contains detailed descriptions of each series. The Canada Land Inventory classification was determined using Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario. These guidelines provide a set of assumptions for applying the classification, definitions of capability classes and subclasses, information requirements for classification, determination of classes and subclasses, conventions for assigning classes and subclasses and class and subclass climate criteria.

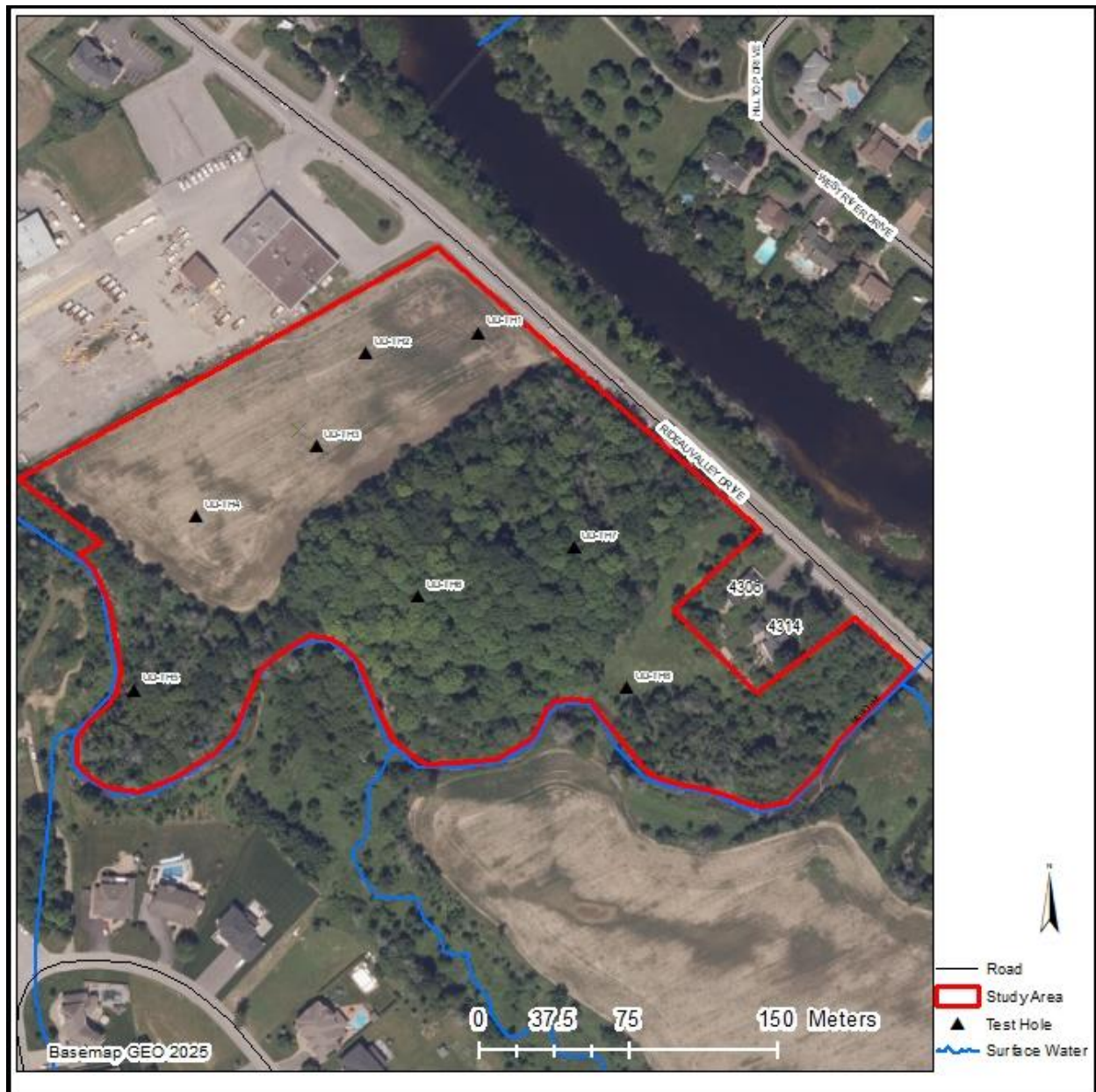


Figure 3 Test Hole Locations

RESULTS

Eight test holes were drilled distributed across the subject parcel (Figure 3). The test hole observations are provided in Table 1. Photographs of test hole profiles are provided in Appendix I, field sheets with site and profile descriptions are provided in Appendix II and laboratory test results are provided in Appendix III.

All 8 test holes were classified as Castor (CST) series soils. The soil series were classified from the horizonation, horizon thicknesses and texture, presence and or absence of drainage characteristics, following the soil association key and descriptions provided in The Soils of The Regional Municipality of Ottawa-Carleton. Castor soils are developed on medium to fine textured materials underlain by moderately fine to fine textured materials. Most Castor soils are poorly drained and occur on level to nearly level landscapes with slow to very slow runoff. Permeability of the upper layers tend to be moderate to low, over finer textured materials with much lower permeability. In addition, the small parcel size may render tile drainage uneconomical.

The Castor series found in the open field part of the parcel as well as most of the bush are classified as CLI 3W (Figure 4). CLI 3 soils have moderately severe limitations that restricts the range of crops that can be produced, or the soils require special conservation practices. These limitations affect one or more of timing and ease of tillage, timing of seeding and harvesting, choice of crops and methods of conservation. The 'W' subclass indicates the possibility of excess water due to poor to very poor soil drainage. This was evidenced by the presence of gleyed soils as well as indications observed in the bush of the prior presence of pooled water. These soils can be improved through the installation of subsurface drainage, but the effectiveness may be hindered by the low permeability of the soil.

The soils found in the bush area in a band adjacent to the CLI 3 soils are classified as CLI class 4W. CLI 4 soils have severe limitations that restrict the range of crops or require special conservation practices. These severe limitations will impact one or more of the timing and ease of cultivation, timing of seeding and harvesting, choice of crops and methods of conservation. These soils had less developed A and B horizons, while suffering from an excess of water, likely low natural fertility and challenging topography.

There is also a band of the bush, adjacent to Mud Creek, that is classified as CLI 7. CLI 7 soils have no capacity for arable culture or permanent pasture. In this case, the classification is due to the steep slope and eroded channel from Mud Creek (Figure 4).

Table 1: Auger Hole Results

Site	Soil Code	Horizon	Depth (cm)		Texture	Drainage	SLOPE(%)	Probe (cm)	Class
			Upper	Lower					
TH1	CST	Ap	0	30	Loam	Poor	0	100	3W
		Bm	30	46	Silty Clay				
		Bg	46	67	Silty Clay				
		Cg	67+		Clay				
TH2	CST	Ap	0	25	Loam	Poor	1	100	3W
		Bm	25	47	Clay Loam				
		Bg	47	76	Clay Loam				
		Cg	76+		Silty Clay				
TH3	CST	Ap	0	27	Loam	Poor	0	100	3W
		Bm	27	56	Sandy Loam				
		Cg	56+		Clay				
TH4	CST	Ap	0	27	Sandy Loam	Poor	0	100	3W
		Bg	27	50	Sandy Clay				
		Cg	50+		Clay				
TH5	CST	LFH	-2	0	Organic	Poor	0	100	4WT
		Ah	0	17	Loam				
		Bg	17	62	Clay Loam				
		Cg	62+		Clay				
TH6	CST	LFH	-2	0	Organic	Poor	0	100	3W
		Ah	0	14	Silty Sand				
		Bm	14	49	Sandy Loam				
		Cg	49+		Sandy Clay				
TH7	CST	LFH	-3	0	Organic	Poor	3	100	3W
		Ah	0	17	Silty Sand				
		Bm	17	38	Loamy Sand				
		Cg	38+		Sandy Clay				
TH8	CST	LFH	-2	0	Organic	Poor	0	100	4W
		Ah	0	15	Sandy Loam				
		Bm	15	22	Loamy Sand				
		Cg	22+		Sandy Clay				

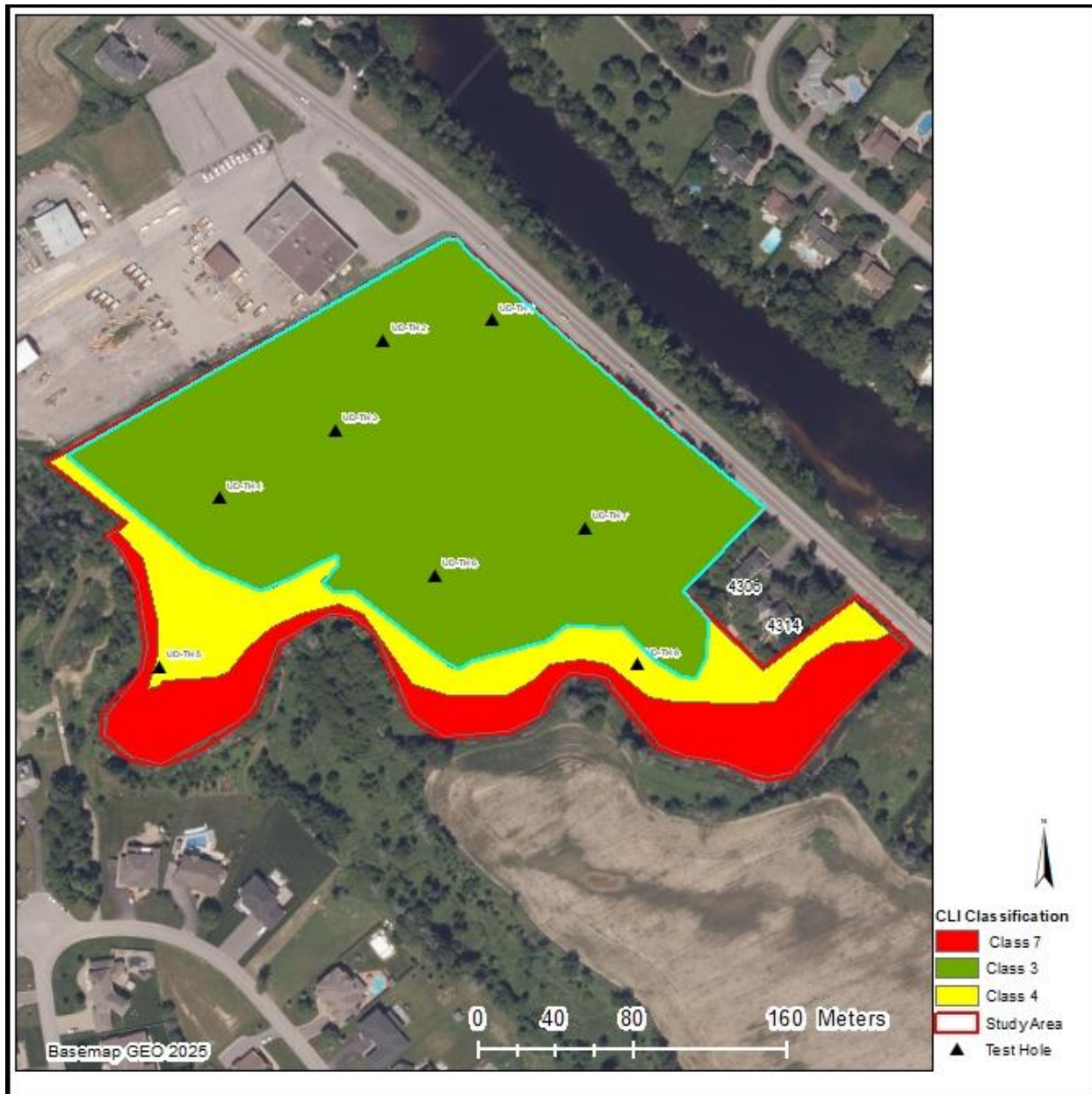


Figure 4 CLI Classification

DISCUSSION

The study area, a total of approximately 6.6 hectares is made up of approximately 4.4 hectares of CLI 3 land, 1.1 hectares of CLI 4 land and 1.1 hectares of CLI 7 land. Mitigation required for the land to meet its full agricultural potential is to install subsurface tile drainage, although due to the nature of the fine textured overburden, tile drainage may not

fully overcome problems caused by slow surface drainage after spring melt and rainfalls and the small parcel size may render installation of tile drainage uneconomical.

The site is surrounded by non-agricultural land uses, including Rural Institutional to the north and west, Village Residential with subdivisions to the east and west and Development Reserve Zone to the south. There is no other agricultural land adjoining the site and the adjoining land uses may be incompatible with some aspects of agricultural production.

The City of Ottawa has used the Land Evaluation and Area Review (LEAR) to identify lands to be protected for the long-term use of agricultural production. The lands that are typically included in the Agricultural Resource Area are CLI classes 1 to 3 with a history of agricultural use, are generally grouped with other prime agricultural land and other non-conflicting land uses with large parcel sizes. In order to consider an Official Plan amendment for removal of land with an area less than 250 hectares from the Agricultural Resource Area designation the City can consider an assessment that, based upon new information related to one or more LEAR factors, the lands are not prime agricultural land and are not part of a prime agricultural area and that a redesignation avoids the potential for adverse impacts to any adjacent agricultural land and operation.

In this case, based upon this current site-specific assessment, most of the site has been reclassified to CLI 3 and 4 from CLI 2 which will result in a lower Land Evaluation score, confirming that the LEAR score for this property is well below the threshold score of 125 for inclusion in the Agricultural Resource Area.

The small parcel size, surrounding non-agricultural land uses and the existence of CLI 3, 4 and 7 soils are reflected in a LEAR score well below 125 for this site, and are indicative of the fact that the land is not prime agricultural land and is not part of a prime agricultural area. Redesignation of the parcel would be more in keeping with the surrounding rural and residential land uses. This justifies the removal of the subject parcel from the City of Ottawa's Agricultural Resource Area.

APPENDIX I Soil Profile Photos



Photo 1 Test Hole 1



Photo 2 Test Hole 2



Photo 3 Test Hole 3



Photo 4 Test Hole 4



Photo 5 Test Hole 5



Photo 6 Test Hole 6



Photo 7 Test Hole 7



Photo 8 Test Hole 8

APPENDIX II Field Observation Forms

Project Uniform Development - Main St

SITE DESCRIPTION					
Site No.	Surveyor	Date	Township		
<u>UN-TH1</u>	<u>BEA</u>	<u>2025-06-09</u>	<u>Lts 1+2 Conc II Nepean</u>		
Soil Code 1	Soil Code 2	Geographic Location			
<u>C</u>		<u>-75.6963982 Lon</u> <u>45.2325150 Lat</u>			
Drainage	Soil Name				
<u>P</u>	<u>Caster</u>				
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.	Photo Number
<u>Humid</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>6</u>	
Stoniness	Rockiness	Calcareous	Land Use		
<u>0</u>	<u>0</u>		<u>Agriculture - bare soil, no crop seeded</u>		
Notes					
<u>Humic gleysol</u>					

HORIZON DESCRIPTION					
Horizon	Ma	Suffix	Depth	% CF	Texture
1	<u>A</u>	<u>P</u>	<u>0-30</u>	<u>0</u>	<u>Loam</u>
2	<u>B₁</u>	<u>m</u>	<u>30-46</u>	<u>0</u>	<u>Silty Clay</u>
3	<u>B₂</u>	<u>g</u>	<u>46-67</u>	<u>0</u>	<u>Silty Clay</u>
4	<u>C</u>		<u>67+</u>	<u>0</u>	<u>Clay</u>
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	<u>>1m</u>	Gley	<u>46</u>
	Distinct Mottles	<u>-</u>	Pore Size Discontinuity	<u>m</u>
	Prominent Mottles	<u>-</u>		

Project Urban Dev - Manotick

SITE DESCRIPTION					
Site No.	Surveyor	Date	Township		
<u>UD-TH2</u>	<u>BEA</u>	<u>2025-06-09</u>	<u>Part 1 & 2 Conc II Nepean</u>		
Soil Code 1	Soil Code 2	Geographic Location			
<u>C</u>		<u>-75.6971168 Lon</u>			
		<u>45.2329168 Lat</u>			
Drainage	Soil Name				
<u>P</u>	<u>Custer</u>				
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.	Photo Number
<u>Fluvial</u>	<u>0-1</u>	<u>750m</u>	<u>1A</u>	<u>3</u>	
Stoniness	Rockiness	Calcareous	Land Use		
<u>0</u>	<u>0</u>		<u>Agricultural, bare soil, no crop seed</u>		
Notes					
<u>Humic gleysol</u>					

HORIZON DESCRIPTION					
Horizon	Ma	Suffix	Depth	% CF	Texture
1	<u>A</u>	<u>p</u>	<u>0-25</u>	<u>0</u>	<u>Loam</u>
2	<u>B₁</u>	<u>m</u>	<u>25-47</u>	<u>0</u>	<u>Clay loam</u>
3	<u>B₂</u>	<u>g</u>	<u>47-76</u>	<u>0</u>	<u>Clay loam</u>
4	<u>C</u>		<u>76+</u>	<u>0</u>	<u>Silty clay</u>
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	<u>71</u>	Gley	<u>47 m</u>
	Distinct Mottles	<u>-</u>	Pore Size Discontinuity	
	Prominent Mottles	<u>-</u>		



Project Uniform Dev. Manotick

SITE DESCRIPTION					
Site No.	Surveyor	Date	Township		
00-TH3	BEA	2025-06-09	Pt Lots 1+2 Conc II Nepean		
Soil Code 1	Soil Code 2	Geographic Location			
C		-75.69774284 Lon			
		45-2319950 Lat			
Drainage	Soil Name				
P	Caster				
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.	Photo Number
Fluvial	0	-	-	6	
Stoniness	Rockiness	Calcareous	Land Use		
0	0		Agricultural bare soil no crop seeded		
Notes					
melanic brunised					

HORIZON DESCRIPTION					
Horizon	Ma	Suffix	Depth	% CF	Texture
1	A	p	0-27	0	Loam
2	B	m	27-56	0	Sandy Loam
3	C	g	56+	0	Clay / Clay loam
4					
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	7/m	Gley	- m
	Distinct Mottles	-	Pore Size Discontinuity	-
	Prominent Mottles	-		



Project Uniform Development Manotick

SITE DESCRIPTION						
Site No.	Surveyor	Date	Township			
UD-TM4	BFA	2025-06-09	Lots 1+2 Conc II Nepean			
Soil Code 1	Soil Code 2	Geographic Location				
LS1		-75.6981934 Lon 45.2316734 Lat				
Drainage	Soil Name					
D	Canku					
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.	Photo Number	
Fluvial	0	-	-	6		
Stoniness	Rockiness	Calcareous	Land Use			
0	0		Agricultural bare soil no crop seeded.			
Notes						
Humic gley soil						

HORIZON DESCRIPTION					
Horizon	Ma	Suffix	Depth	% CF	Texture
1	A	p	0-27	0	Sandy Loam
2	B	m	27-50	0	Sandy clay
3	C	g	50+	0	Clay
4					
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	71m	Gley	-
	Distinct Mottles	-	Pore Size Discontinuity	50 m
	Prominent Mottles	-		



Project Uniform Developments Manotick

SITE DESCRIPTION					
Site No.	Surveyor	Date	Township		
UD-THS	B.E.A.	2025-06-09	174 Lts 1+2 Conc II Nepean		
Soil Code 1	Soil Code 2	Geographic Location			
C		-75.0985766 Lon 45.2308834 Lat			
Drainage	Soil Name				
P	Castor				
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.	Photo Number
Fluvial	0	-	-	1	
Stoniness	Rockiness	Calcareous	Land Use		
0	0		Dense bush - scrub w/ mature hardwood		
Notes					
Steep slope at border of field, then small flat plain adjacent to creek eroded channel Humic gley soil					

HORIZON DESCRIPTION					
Horizon	Ma	Suffix	Depth	% CF	Texture
1	LFH		-2-0	0	organic
2	A	h	0-17	0	loam
3	B	g	17-62	0	clay loam
4	C	g	62+	0	clay
5					
6					
7					
8					
9					

		State		State	
Depth To:	Bedrock	71m		Mottles and Gley	62 m
	Carbonates			Gley	17 m
	Distinct Mottles	62	m	Pore Size Discontinuity	
	Prominent Mottles	62	m		



Project

Uniform Developments - Manotick

SITE DESCRIPTION

Site No.	Surveyor	Date	Township	
UD-TH6	B.E.A.	2025-06-09	Part 1 & 2 Conc II Nepean	
Soil Code 1	Soil Code 2	Geographic Location		
M		-75.6967634 Lon 45.2313218 Lat		
Drainage	Soil Name			
P	Manotick			
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.
Fluvial	0	-	-	6
Stoniness	Rockiness	Calcareous	Land Use	
0	0		mixed brush with mature hardwood	
Notes				
Humic gleysol				

HORIZON DESCRIPTION

Horizon

	Ma	Suffix	Depth	% CF	Texture
1	LFH		-2-0	0	organic
2	A	h	0-14	0	Silty sand
3	B	m	14-49	0	Sandy loam
4	C	g	49+	0	Sandy clay
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	71m	Gley	-
	Distinct Mottles	-	Pore Size Discontinuity	49 m
	Prominent Mottles	-		



Project Uniform Developments Manawaka

SITE DESCRIPTION					
Site No.	Surveyor	Date	Township		
UD-TH7	B.E.A.	2025-06-09	R46.1+2 Conc II Nepean		
Soil Code 1	Soil Code 2	Geographic Location			
CST		-75.6957732 Lon 45.2315468 Lat			
Drainage	Soil Name				
P	Custer				
Mode of Deposition	% Slope	Slope Length	Slope Class	Slope Pos.	Photo Number
Fluvial	3	250m	C	2	
Stoniness	Rockiness	Calcareous	Land Use		
0	0		Bush, mixed hardwood		
Notes					
Evidence of standing water, saturated soil Humic gleysol					

HORIZON DESCRIPTION					
Horizon	Ma	Suffix	Depth	% CF	Texture
1	LEH		-3-0	0	organic
2	A	h	0-17	0	silty sand
3	B	m	17-38	0	loamy sand
4	C	g	38+	0	sandy clay
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	71m	Gley	-
	Distinct Mottles	-	Pore Size Discontinuity	38 m
	Prominent Mottles	-		



Project

Uniform Developments Mainstake

SITE DESCRIPTION

Site No.	Surveyor	Date	Township
UD-TH8	B.E.A.	2025-06-09	Part 1 & 2 Conc II Nepean
Soil Code 1	Soil Code 2	Geographic Location	
CST		-75.695423 Lon 45.230916 Lat	
Drainage	Soil Name		
N	Carstar		
Mode of Deposition	% Slope	Slope Length	Slope Class Slope Pos.
Humid	0	-	-
Stoniness	Rockiness	Calcareous	Land Use
0	0		Small mixed meadow
Notes			
Humic gley soil			

HORIZON DESCRIPTION

Horizon	Ma	Suffix	Depth	% CF	Texture
1	LFH		0-2	0	organic
2	A	h	2-15	0	sandy loam
3	B	m	15-22	0	loamy sand
4	C	g	22+	0	sandy clay
5					
6					
7					
8					
9					

Depth To:	Bedrock	State	Mottles and Gley	State
	Carbonates	21m	Gley	22 m
	Distinct Mottles	-	Pore Size Discontinuity	
	Prominent Mottles	-		



APPENDIX III Soil Texture Analysis



Environment Testing

146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Apedaile Environmental
Project : Uniform Developments

Reception Date: 2025-06-09

Eurofins Sample No :			8681752	8681753	8681754	8681755	8681756	8681757	8681758
Matrix :			Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampling Date :			2025-06-09	2025-06-09	2025-06-09	2025-06-09	2025-06-09	2025-06-09	2025-06-09
Client Sample Identification :			UD-TH1	UD-TH2	UD-TH3	UD-TH4	UD-TH5	UD-TH6	UD-TH7
Hydrometer	RL	Unit							
Hydrometer (S/S/C) (Soil)									
Sand ^A	0.1	%	37.5	37.5	50.0	60.0	50.0	70.0	65.0
Silt ^A	0.1	%	46.3	42.5	35.0	30.0	40.0	25.0	27.5
Clay ^A	0.1	%	16.3	20.0	15.0	10.0	10.0	5.0	7.5
Eurofins Sample No :			8681759						
Matrix :			Soil						
Sampling Date :			2025-06-09						
Client Sample Identification :			UD-TH8						
Hydrometer	RL	Unit							
Hydrometer (S/S/C) (Soil)									
Sand ^A	0.1	%	67.5						
Silt ^A	0.1	%	22.5						
Clay ^A	0.1	%	10.0						

Approved by :

Addrine Thomas,
Inorganic supervisor, Ottawa

www.eurofins.ca

Page 2 of 3

4353412-V1

This certificate of analysis corrects and replaces any previous version. The analysis results refer only to what was provided for testing.
This certificate shall not be reproduced except in full, without the written approval of Eurofins Environment Testing Canada Inc.
Method references and/or additional QA/QC information available on request.



Environment Testing

146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Apedaile Environmental
Project : Uniform Developments

Reception Date: 2025-06-09

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Hydrometer (S/S/C) (Soil)									
Method : Sand/Silt/Clay (Soil, Hydrometer). Internal method AMPARTE2.									
Sand^	%			109	69-131				
Silt^	%			102	77-123				
Clay^	%			89	62-138				
Associated Samples : 8681752, 8681753, 8681754, 8681755, 8681756, 8681757, 8681758, 8681759								Prep Date: 2025-06-11 Analysis Date: 2025-06-12	

Where RPD % is reported as "-" the calculation is not available because one or both of the duplicates is within 5 times the RL.

www.eurofins.ca

Page 3 of 3

4353412-V1

This certificate of analysis corrects and replaces any previous version. The analysis results refer only to what was provided for testing.
This certificate shall not be reproduced except in full, without the written approval of Eurofins Environment Testing Canada Inc.
Method references and/or additional QA/QC information available on request.

Erik Apedaile, P.Ag.



Summary of Qualifications

I am a Professional Agrologist with thirty years of experience in biosolids management, soil and water conservation, environmental and public health policy, impact assessment of agricultural activity, soil assessment and classification, agronomy and nutrient management. I own and operate Apedaile Environmental Inc. providing consulting services in environmental monitoring, biosolids management, soil assessment and classification, and agricultural nutrient management.

I led a multidisciplinary team that studied human health effects from exposure to land applied biosolids and developed an influential set of Best Management Practices for land application of biosolids to address public health concerns. I authored a review of community and environmental health impacts from intensive hog operations for the City of Ottawa which focused on the movement of pathogens through the air, over the soil surface, and through the soil profile into groundwater. I also co-authored a human health risk assessment of land applying biosolids pellets in an urban setting for the City of Toronto. I have prepared CLI soil classification reports (including calculation of LEAR Scores) and MDS calculations in support of planning applications for development of subdivisions, establishment of solar farms, lot severances and building permits.

I have participated in clinical trials of Multiple Sclerosis and Glioblastoma Multiform, contributing data management and statistical analysis in SQL and R. I have also investigated the use of repeated transcranial magnetic stimulation of the motor cortex to encourage neuroplasticity in patients with MS and have provided support to clinician researchers with trial design, sample size calculations, and statistical analysis and modeling.

I hold a Bachelor of Science in Agriculture with a specialization in soil science from the University of Guelph, a Non-Agricultural Source Material Nutrient Management Strategy Development Certificate and an Agricultural Operation Strategy / Plan Development Certificate from the Ontario Ministry of Agriculture, Food and Rural Affairs. I am a member of the Ontario Institute of Agrologists. I have completed graduate courses in epidemiology and biostatistics at the Faculty of Medicine, University of Ottawa and keep updated on published research and reviews on agricultural, environmental, and public health aspects of biosolids management. I am interested in potential community health impacts from exposures to agricultural activity and in epidemiological aspects of infectious diseases, in particular the probabilities of infection from incident exposures and network and spatial analysis. I have extensive experience in the R coding environment for data manipulation and statistical analysis.

Experience

2000 - Present **Apedaile Environmental Inc.**

Major Projects

- City of Ottawa: Biosolids Hauling and Beneficial Use Program (with GFL Environmental) (2009 – present)
- Stantech Consulting / Taggart Construction: Tri-Township and March Ridge Sanitary Sewer Replacement. Agricultural soil classification, removal and rehabilitation plan and supervision (2022 – 2023)
- Dairy Farmers of Ontario: Management plan for disposal of waste skim milk in dairy manure lagoons (2018 – 2020)
- DSI Consulting Engineers / Bray Construction: North Kanata Trunk Sewer Phase II. Agricultural soil classification, removal and rehabilitation plan and supervision. (2018 – 2022)
- Ville de Gatineau: Valorisation des biosolids municipaux digérés granulé (2013 – 2016)
- City of Ottawa: Rural drinking water well monitoring (2009 – 2016)
- Bonnefield Chief Agrologist: developed agronomic standards for farmland leasing agreements; provided agronomic overview of Canada wide leases and review of new acquisitions (2009 – 2013)
- Jacques Whitford Environmental Ltd.: Scoping report on the fate and significance of selected contaminants on pulp and paper biosolids applied to land (for the Ontario Ministry of Environment) (2004)
- Jacques Whitford Environmental Ltd.: Biosolids Review Study – human health risk assessment of the City of Toronto’s biosolids pellets (for Toronto Public Health) (2003 – 2004)
- Ottawa Public Health: Review of community health and environmental aspects of a hog intensive livestock operation (2002-2003)
- Ottawa Public Health: Review of human health aspects of biosolids land application / developed best management practices for biosolids management (2002)
- Hershey Canada Smith Falls Plant: Program advisor for biosolids management plan and land application program development and implementation (2001 to 2009)
- Parmalat Food Inc. Winchester Plant – Program advisor for biosolids management plan and land application program development and implementation; preparation of NASM Strategy (1999 to 2017)
- City of Ottawa: Biosolids contract management, public and media relations, compliance monitoring, auditing and reporting. Project manager for the

Class EA biosolids management plan. (2000 – 2009)

2019 to 2022 **Senior Researcher Clinique Neuro-Outaouais**

- Design and data analysis for clinical trials on multiple sclerosis and glioblastoma multiform

1997 – 2000 **Manager**, Terratec Environmental Ltd. Ottawa-Carleton Biosolids Land Application Program Ottawa, Ontario

- Manage biosolids hauling and spreading operations, including supervision of staff and management of hauling and spreading resources
- Liaise with farm operators to determine site specific nutrient requirements and associated application rates
- Ensure compliance with biosolids regulations
- Provide reactive and proactive public relations to promote land application of biosolids and to address associated concerns
- License potential land application sites through the Ontario Ministry of the Environment and the Region of Ottawa-Carleton
- Establish and maintain a database of sites and spreading history

1995 – 1996 **Project Coordinator** Region of Ottawa-Carleton, Surface Water Quality Branch, Ottawa, Ontario

- Review storm water management plans and municipal development applications
- Analyze and interpret monitoring data using statistical analysis tools
- Inspect construction sites to ensure storm water best management practices are being implemented

1994 – 1995 **Superintendent** Region of Ottawa-Carleton, Surface Water Quality Branch, Ottawa, Ontario

- Develop and implement baseline surface water quality monitoring program
- Supervise field staff
- Develop public information programs

1993 – 1994 **Investigation Supervisor** Region of Ottawa-Carleton, Surface Water Quality Branch, Ottawa, Ontario

- Led monitoring projects to assess non-point source impacts on water quality
- Supervise field staff

1990 – 1993 **Water Quality Coordinator** South Nation River Conservation Authority, Berwick, Ontario

- Develop and implement projects to assess and improve surface water quality
- Initiate a Rural Beaches Study to investigate and remedy sources of poor rural surface

water quality

- Project Manager – Wastewater Loading Assimilation Study of the South Nation River Watershed

1989 – 1990 **Construction Supervisor and Septic System Designer**

Fondex Ltée, Hull, Quebec

- Quality control of construction materials and practices
- Design domestic septic systems

Education

1989 Honours Bachelor of Science in **Agriculture** (B.Sc. Agr), Major in Soil Science, Ontario Agricultural College, University of Guelph

2007-2009 Graduate courses in Epidemiology and Biostatistics Faculty of Medicine, University of Ottawa

Certificates, Accreditation and Awards

- Professional Agrologist - Ontario Institute of Agrologists (1989 to present)
- NASM Plan Development Certificate Ont Min of Ag, Food & Rural Affairs (2010)
- Ag Operation Strategy / Plan Development Certificate Ont Min of Ag, Food & Rural Affairs (2017)
- WEOA Exemplary Biosolids Management Award (2015)

Selected Reports and Publications

- Jacques F, Apedaile BE, Danis I, Sikati-Foko, V, Lecompte, M, Fortin J (2024) Motor Evoked Potential – A Pilot Study Looking at Reliability and Clinical Correlations in Multiple Sclerosis. J Clin Neurophysiology.
- Jacques, F. et al (2021) Avelumab in newly diagnosed glioblastoma. Neuro-Oncology Advances
- Jacques F and Apedaile BE 2020 Immunopathogenesis of COVID-19: Summary and Possible Interventions. Front. Immunol 17 September 2020
- Jacques F, Lecompte M, Sikati-Foko V, Apedaile E and Fortin M 2019 Motor evoked potentials as a new biomarker in multiple sclerosis. European Academy of Neurology Annual Congress, Oslo
- Willert C, Ollson, C and Apedaile E 2004 Biosolids Pellet Review Study Human Health and Ecological Risk Assessment
- Apedaile E, D Cole and Wyman M 2003 Intensive Hog Farms – An Examination of Community Health Issues
- Apedaile E and D Cole 2002 Health Aspects of Biosolids Land Application
- Apedaile, E 2001 A perspective on biosolids management. Can J Infect Dis
- Fischer J, Apedaile B.E and Vanclief L 1995 Seasonal loadings of atrazine and metolachlor to a southeastern Ontario river from surface water runoff and groundwater discharge. Water Quality Res J Canada