APPENDIX 5

AGRICULTURAL ASSESSMENT
5075 HOLT ROAD, MUNICIPALITY OF CLARINGTON

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1. INTRODUCTION

Colville Consulting Inc. (CCI) was retained by 1559306 Ontario Limited to complete an Agricultural Assessment of the property located at 5075 Holt Road, in the Municipality of Clarington, Regional Municipality of Durham. The property is located to the west of the Community of Hampton and to the north of Taunton Road.

The lands are designated as Prime Agricultural Areas in both the Regional Municipality of Durham and the Municipality of Clarington. It is understood that the owner of the property (1559306 Ontario Limited) appealed the Official Plan amendment (OPA) 107, the Municipality of Clarington's Official Plan update, which proposed to keep these lands within the agricultural designation. It is the owners wish to have the lands included within the Region's Rural designation and the Municipality's Rural designation. This report is not intended to be an agricultural impact assessment but rather it is an assessment of the agricultural land base and the agri-food system in the area and to provide an opinion as to whether the lands are an appropriate consideration for inclusion within a Rural designation (i.e., a low priority agricultural area) or should they be included within a higher priority prime agricultural area.

1.1 Subject Lands

The Subject Lands are located on Part Lot 20, Concession 5 in the Geographic Township of Darlington, Municipality of Clarington, in the Regional Municipality of Durham, Ontario (Figure 1). The property is located to the east of Holt Road and north of Taunton Road. It is a "flag shaped" parcel with a frontage of approximately 227 metres along Taunton Road and a frontage of approximately 457 metres along Holt Road for a total area of approximately 16.56 hectares (41.02 acres).

The lands are predominately cleared although a portion of the eastern part of the property is treed. The lands are not being farmed although grassland vegetation is maintained on site and is at least mowed annually for aesthetic purposes. There are no agricultural facilities or land improvements on site. In fact, it appears a substantial amount of the area has been disturbed and modified historically. Perimeter berms have been constructed along portions of the property.

The majority of the Subject Lands are designated Prime Agricultural Area, and smaller portions designated Environmental Protection Area within the Municipality of Clarington Official Plan (Map A1). According to the Regional Municipality of Durham Official Plan Schedule "A", the Subject Lands are located within the Rural System and are considered to be part of a Prime Agricultural Area. The majority of the Subject Lands are zoned for A-25 (Agriculture Zone) in the Clarington Zoning By-law 84-63, which permits a golf driving range. The Durham Regional Official Plan and the Municipality of Clarington Official Plan have site-specific policy exemptions for the Subject Lands to permit the development of a golf driving range. As per 9A.3.1 part c) of the Region of Durham Official Plan "a golf driving range, mini-putt, clubhouse and accessory uses are permitted on the northeast corner of Taunton Road and Holt Road, within part of Lot 20, Concession 5, former Township of Darlington, known as 5075 Holt Road, Assessment #18-17-010-130-17700 within the Municipality of Clarington." As per Policy 13.3.14ii) of the

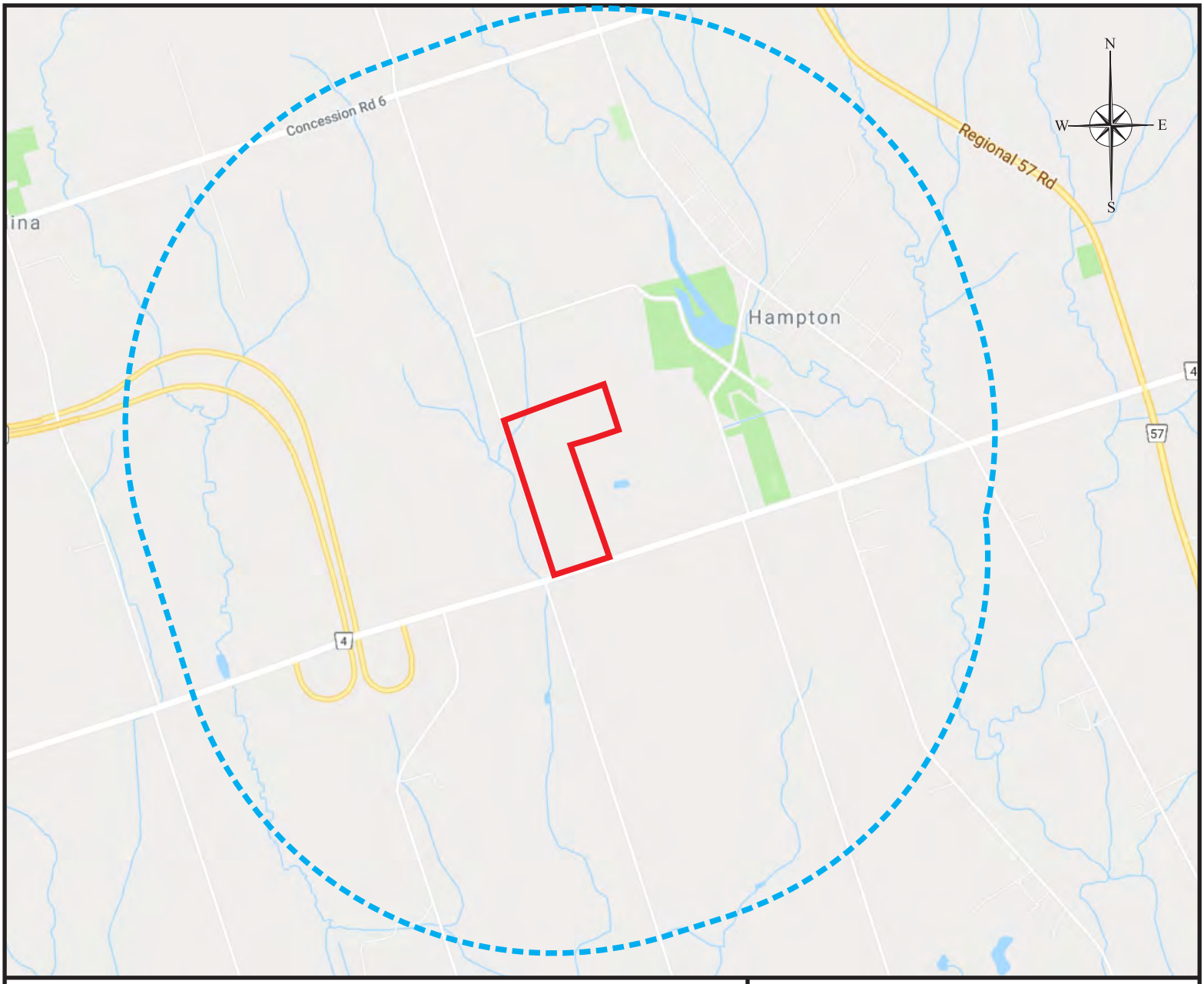


Figure 1
Location of Subject Property

Agricultural Assessment of 5075 Holt Road

Prepared for: **1559306 Ontario Ltd.**

Prepared by: COLVILLE CONSULTING INC.

DATE: June 2019

FILE: C19001

Municipality of Clarington Official Plan, Notwithstanding Section 13.3.313.5.2 a golf driving range, mini-putt, associated storage facility and clubhouse, in addition to the existing residential dwelling, are permitted at the northeast corner of Holt and Taunton Roads, known as 5075 Holt Road, Assessment No. 181701013017700 within the Municipality of Clarington.

1.2 Study Area

The Study Area includes all lands within approximately 1.5 kilometers (1500 m) of the Subject Land boundaries. The Study Area is generally bounded to the north by Concession Road 6, to the west by Solina Road, to the east by the eastern extent of the Hampton Hamlet boundary, and to the south by a utility corridor. Figure 1 shows the location of both the Study Area and the Subject Lands.

1.3 Scope of Study

This Agricultural Assessment was completed to evaluate the agricultural resources and agricultural area of the Subject lands and the surrounding study area. The study assesses the Canada Land Inventory (CLI) agricultural land classification. It documents the mix of land uses (both agricultural and non-agricultural) and the types of agricultural operations observed within the Study Area. The study assesses the level of fragmentation of agricultural lands within the Study Area.

The study then determines the agricultural priority of the lands based on these features and provides an opinion as to whether a proposed Rural designation is a reasonable consideration.

2. METHODOLOGY

2.1 Background Data Collection

The background data collected included information obtained through a review of existing published documents to obtain soil and climate resource information and agricultural drainage information. This information included:

- the regional soil series and CLI agricultural capability mapping and data obtained from sources such as AgMaps, the agricultural systems portal and the OMAFRA's digital soil Resource Database;
- the Soil Survey for Durham County, Report No. 9 of the Ontario Soil Survey, 1946;
- OMAFRA's Artificial Drainage Systems mapping (AgMaps);
- Ortho-rectified, digital aerial photography, Municipality of Clarington, 2018 imagery viewed using Google Earth™ and/or Bing to interpret land use information; and
- AgMaps to assess the level of fragmentation resulting from lot severance/creation.

The agricultural and land use policies contained in the Provincial Policy Statement (PPS 2014), the Durham Regional Official Plan (Consolidated May 2017), and the Municipality of Clarington Official Plan (Consolidated June 2018) were reviewed.

A more detailed list of the information sources reviewed is provided in Section 6 of this report.

2.2 Field Inventories

The field inventories were completed on April 30th, 2019 and included a soil survey of the Subject Lands and a reconnaissance level land use survey within the Study Area.

2.2.1 Soil Survey

The Subject Lands were traversed on foot and the soil profile was exposed at 10 locations using a hand-held Dutch auger. The physical properties of the soil, such as the mode of deposition, soil horizons and horizon depths, depth to bedrock, soil texture, drainage, and stoniness, were described and recorded on field data sheets. The slope percentage within the soil polygons was measured using a hand-held clinometer.

The method used to describe the soil profiles was consistent with the Canadian System of Soil Classification (CSSC, Agriculture and Agri-Food Canada, 1982) and the Field Manual for Describing Soils in Ontario (Ontario Centre for Soil Resource Evaluation, 1993).

2.2.2 Land Use Survey

The land use survey was completed to document the number and type of agricultural operations (both existing and retired), agricultural-related uses and secondary agricultural uses within the area, and the

extent and type of non-farm land uses in the area. Field crops observed were identified and mapped. Visual evidence of agricultural land improvements was also documented.

2.2.3 MDS Calculation

As part of the land use survey, additional information was obtained for each livestock operation that was identified within the Study Area to address the minimum distance separation (MDS). The latest version of the MDS Guidelines, developed by the OMAFRA, came into effect on March 1st, 2017.

The MDS is a land use planning tool used to minimize land use conflicts and nuisance complaints arising from odours generated by livestock operations. The MDS calculates a recommended separation distance between a livestock or manure storage and other land use(s). The MDS uses two separate formulae depending on the type of land use proposed; MDS I and MDS II. The MDS I formula is used when a proposed new non-agricultural development is proposed in proximity to livestock facilities. The MDS II formula is used to calculate the distance from proposed new, enlarged or remodeled livestock facilities and existing or approved development.

For the Subject Lands, the MDS I calculation is required. The information required to complete an MDS I calculation was obtained through a combination of sources. As per the MDS Guidelines, we attempted to gather information directly from the landowner/tenant. The information required for the calculation includes:

- the type of livestock housed in the facility;
- the maximum capacity of the barn housing livestock;
- the type of manure storage facility; and
- the size of the property upon which the livestock facility is located.

This information was collected for all existing livestock operations including those empty livestock facilities that could potentially be used to house livestock in the future. In cases where we were not able to collect information directly from the landowner we used visual observations of the livestock facility and determined the most likely type of livestock housed and the type of manure system used. These observations were supplemented with aerial photography and web mapping tools such as Google Earth. Barn capacity and lot size was determined using these on-line mapping tools.

3. AGRICULTURAL POLICIES

3.1 Provincial Policy Statement

Land Use Policy and development in the province of Ontario is directed by the Provincial Policy Statement (PPS), which was issued under the authority of Section 3 of the Planning Act and which came into effect on April 30, 2014. Section 3 of the Planning Act states that decisions affecting planning matters "shall be consistent with" policy statements issued under the Act.

3.1.1 Prime Agricultural Areas

Section 2.3 of the PPS specifically deals with agricultural policy. Section 2.3.1 states that "Prime agricultural areas shall be protected for long-term use for agriculture. Prime agricultural areas are areas where prime agricultural lands predominate. Specialty crop areas shall be given the highest priority for protection, followed by Canada Land Inventory Class 1, 2, and 3 lands, and any associated Class 4 through 7 lands within the prime agricultural area, in this order of priority.

Section 2.3.2 states that "Planning authorities shall designate prime agricultural areas and specialty crop areas in accordance with guidelines developed by the Province, as amended from time to time".

Section 2.3.3 describes the permitted uses in prime agricultural areas.

2.3.3.1 In *prime agricultural areas*, permitted uses and activities are: *agricultural uses*, *agriculture-related uses* and *on-farm diversified uses*.
Proposed *agriculture-related uses* and *on-farm diversified uses* shall be compatible with, and shall not hinder, surrounding agricultural operations. Criteria for these uses may be based on guidelines developed by the Province or municipal approaches, as set out in municipal planning documents, which achieve the same objectives.

2.3.3.2 In prime agricultural areas, all types, sizes and intensities of agricultural uses and normal farm practices shall be promoted and protected in accordance with provincial standards.

2.3.3.3 New land uses, including the creation of lots, and new or expanding livestock facilities shall comply with the minimum distance separation formulae.

However, in some limited cases, planning authorities, as per Section 2.3.6.1 b), may permit non-agricultural uses in prime agricultural areas for limited non-residential uses, provided that all of the following are demonstrated:

1. the land does not comprise a specialty crop area;

2. the proposed use complies with the minimum distance separation formulae;

3. there is an identified need within the planning horizon provided for in policy 1.1.2 for additional land to be designated to accommodate the proposed use; and

4. alternative locations have been evaluated, and

   i. there are no reasonable alternative locations which avoid prime agricultural areas; and

ii. there are no reasonable alternative locations in prime agricultural areas with lower priority agricultural lands.

"Impacts from any new or expanding non-agricultural uses on surrounding agricultural operations and lands are to be mitigated to the extent feasible" (Section 2.3.6.2).

3.1.2 Rural Lands

The PPS states that "In rural areas, rural settlement areas shall be the focus of growth and development and their vitality and regeneration shall be promoted" (Section 1.1.4.2).

As per Section 1.1.4.3, the PPS states that when "directing development in rural settlement areas in accordance with policy 1.1.3, planning authorities shall give consideration to rural characteristics, the scale of development and the provision of appropriate service levels".

The PPS defines Rural areas as "a system of lands within municipalities that may include rural settlement areas, rural lands, prime agricultural areas, natural heritage features and areas, and resource areas" and Rural lands as "lands which are located outside settlement areas and which are outside prime agricultural areas".

This study will assess the Subject Lands as a potential candidate for inclusion within Rural lands based on the agricultural characterization of the Subject Lands and immediate surrounding area.

3.2 Greater Golden Horseshoe Growth Plan

3.2.1 Growth Plan Policies

The most recent version of the Growth Plan for the Greater Golden Horseshoe (GGH) came into effect on May 2, 2019. The objective of the plan is to provide a long-term plan that works to manage growth, build complete communities, curb urban sprawl and protect the natural environment.

The Subject Lands are located in the GGH Agricultural System which is discussed in Section 4.2.6 of the Plan. The Agricultural System includes a continuous and productive land base, comprised of prime agricultural areas, including specialty crop areas, and rural lands, as well as a complementary agri-food network that together enable the agri-food sector to thrive. The following policies in section 4.2.6 provide guidance within the Plan to protect and promote Agricultural Systems throughout the GGH:

1. An Agricultural System for the GGH has been identified by the Province.
2. Prime agricultural areas, including specialty crop areas, will be designated in accordance with mapping identified by the Province and these areas will be protected for long-term use for agriculture.
3. Where agricultural uses and non-agricultural uses interface outside of settlement areas, land use compatibility will be achieved by avoiding or where avoidance is not possible, minimizing and mitigating adverse impacts on the Agricultural System. Where mitigation is required, measures should be incorporated as part of the non-agricultural uses, as

appropriate, within the area being developed. Where appropriate, this should be based on an agricultural impact assessment.

4. The geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network will be maintained and enhanced.

5. The retention of existing lots of record for agricultural uses is encouraged, and the use of these lots for non-agricultural uses is discouraged.

6. Integrated planning for growth management, including goods movement and transportation planning, will consider opportunities to support and enhance the Agricultural System.

7. Municipalities are encouraged to implement regional agri-food strategies and other approaches to sustain and enhance the Agricultural System and the long-term economic prosperity and viability of the agri-food sector, including the maintenance and improvement of the agri-food network by:

   a) providing opportunities to support access to healthy, local, and affordable food, urban and near-urban agriculture, food system planning and promoting the sustainability of agricultural, agri-food, and agri-product businesses while protecting agricultural resources and minimizing land use conflicts;

   b) protecting, enhancing, or supporting opportunities for infrastructure, services, and assets. Where negative impacts on the agri-food network are unavoidable, they will be assessed, minimized, and mitigated to the extent feasible; and

   c) establishing or consulting with agricultural advisory committees or liaison officers.

8. Outside of the Greenbelt Area, provincial mapping of the agricultural land base does not apply until it has been implemented in the applicable upper- or single-tier official plan. Until that time, prime agricultural areas identified in upper- and single-tier official plans that were approved and in effect as of July 1, 2017 will be considered the agricultural land base for the purposes of this Plan.

9. Upper- and single-tier municipalities may refine provincial mapping of the agricultural land base at the time of initial implementation in their official plans, based on implementation procedures issued by the Province. For upper-tier municipalities, the initial implementation of provincial mapping may be done separately for each lower-tier municipality. After provincial mapping of the agricultural land base has been implemented in official plans, further refinements may only occur through a municipal comprehensive review.

Mapping has been completed for the GGH and is shown on-line using the Agricultural System Portal (http://www.omafra.gov.on.ca/english/landuse/gis/WCAG_AGOL/index.html?appid=3cbd2393a1e548949450e21d90646353). The Implementation Procedures for the Agricultural System for the Greater Golden Horseshoe took effect on February 9, 2018.

3.2.2 Agricultural System for the Greater Golden Horseshoe

The Province has introduced an Agricultural System approach to land use planning across the agricultural land base within the Greater Golden Horseshoe. The purpose is "to identify and protect a continuous, productive land base for agriculture across municipalities, as well as provide support for the agri-food supply chain the sector depends on" (http://www.omafra.gov.on.ca/english/landuse/agsys-ggh.htm). The agricultural system is comprised of two components; the agricultural land base and the agri-food network.

As shown in the Agricultural Systems Portal, the Subject Lands and the majority of the Study Area, are located within the agricultural land base and are considered to be part of a prime agricultural area. Lands included within the prime agricultural area are intended to be part of a much larger, continuous, productive agricultural land base that provides for farming and farm-related business opportunities that support the local agri-food industry.

Directly south of the Hamlet of Hampton is a narrow strip of land that is identified as Candidate Area for inclusion within the prime agricultural area. This area contains several farm operations.

Other lands within the Study Area include urban/non-farm land uses in Hamlet of Hampton and natural areas. These lands are not part of the agricultural land base.

The agri-food network includes many agricultural related features such as regional infrastructure and transportation networks, on-farm buildings and infrastructure, agricultural services, farm markets, distributors and primary processing, as well as small towns and hamlets that are supportive of agriculture and are important to the viability of the agri-food sector. To ensure the long-term viability of a healthy agricultural system, land use planners must ensure that there are opportunities within the agricultural land base for key infrastructure, services and assets which support the agricultural industry. This includes agri-food network (AFN) features such as cold storage facilities, abattoirs, food processors, grain dryers, distribution centres, and food hubs/co-ops.

3.3 Official Plan of the Regional Municipality of Durham

The Subject Lands are located within the Rural System and are designated as Prime Agricultural Area in the Durham Regional Official Plan Schedule A – Map A Regional Structures (Appendix A). The lands to the south of the Subject Lands are shown as part of the Greenlands System and designated Major Open Space areas.

The Durham Regional Official Plan was consolidated on May 11, 2017 and provides guidance on the use of rural and agricultural lands such as those present on the Subject Lands. Policies related to the Rural System and Prime Agricultural Areas are discussed in Section 9 and Sub-Section 9A, respectively.

Sub-Section 9A outlines the agricultural policies.

9A 1.1 Prime Agricultural Areas consist of areas where *prime agricultural lands* predominate. They also include areas of lesser agricultural significance (Canada Land Inventory Classes 4 to 7 soils) and additional areas where there is a local concentration of farms which exhibit

characteristic of ongoing agriculture. Agricultural areas shall be used primarily for agriculture and farm-related uses

9A 1.2 The Region shall discourage fragmentation of the agricultural land base.

9A 1.3 The Region shall encourage the consolidation of agricultural parcels of land.

9A 1.4 The Region shall pursue actions by the Federal and Provincial Governments, and any other authorities having jurisdiction, to support the Region's agricultural industry.

9A 1.5 The intrusion of urban type land uses into Prime Agricultural Areas shall not be permitted.

9A 1.6 Marginal agricultural land, *key natural heritage* & *hydrologic features* & *woodlands* located within Prime Agricultural Areas, shall be considered as significant elements of the agricultural land base.

9A 1.7 New land uses and lot creation, as permitted by the policies of this Plan, and new or expanding livestock facilities shall comply with the *Minimum Distance Separation formulae*

9A 1.8 Prime Agricultural Areas shall be protected as a significant element of the Region's economy and a secure source of food.

Site-Specific policy exemption 9A.3.1 part c) of the Region of Durham Official Plan states that "a golf driving range, mini-putt, clubhouse and accessory uses are permitted on the northeast corner of Taunton Road and Holt Road, within part of Lot 20, Concession 5, former Township of Darlington, known as 5075 Holt Road, Assessment #18-17-010-130-17700 within the Municipality of Clarington."

3.4 Municipality of Clarington Official Plan

Map A1 – Land Use in the Official Plan Municipality of Clarington (Appendix B) shows that the Subject Lands are primarily designated Prime Agricultural Area and a small portion is mapped as Environmental Protection Area (EPA).

The lands to south of the Subject Lands also designated Prime Agricultural Area and EPA. Further east and south of Hampton the lands are designated Rural. These are the same lands that are identified as Candidate Areas for inclusion in the GGH's prime agricultural areas.

Policy 13.5.2 states that:

The development of non-agricultural uses, kennels, commercial or industrial agri-businesses and landscape industry uses may be considered in Rural areas subject to a site specific zoning by-law amendment, the provisions of sections 13.5.3 to 13.5.6 and the following:

a) Not be located on prime agricultural land, unless a study has demonstrated that the soil capability is suitable;

b) Be compatible with the existing and/or designated land uses in the surrounding areas and do not generate excessive amounts of odour, traffic and other nuisances;

c) Not require large scale modifications of terrain, vegetation or both, or largescale buildings and structures and do not adversely affect the character of the area;

d) Be located on a parcel that is of appropriate size for the use;

e) Be in conformity with the Minimum Distance Separation Formulae;

f) Not be in conflict with, detract or hinder any surrounding agricultural operations from carrying on normal farm practices; and

g) Meet the requirements of the Regional Official Plan and applicable Provincial Plans.

Policy 13.3.14ii) of the Municipality of Clarington Official Plan states that notwithstanding Section 13.3.313.5.2 a golf driving range, mini-putt, associated storage facility and clubhouse, in addition to the existing residential dwelling, are permitted at the northeast corner of Holt and Taunton Roads, known as 5075 Holt Road, Assessment No. 181701013017700 within the Municipality of Clarington.

4. STUDY FINDINGS

4.1 Physiography

The Subject Lands are located within the South Slope physiographic region (Chapman and Putnam, 1984). This physiographic region lies between the Oak Ridges Moraine to the north and the Iroquois Plain to the south. It has been classified as a drumlinized till plain that often includes an overlying thin veneer (up to 1 m thick) of aeolian sand deposits.

4.2 Climate

Climate data is available through Environment Canada's National Climate Data and Information Archive's online database. Climate Normals and Extremes for Bowmanville (1981-2010) were obtained from the online database (Appendix C).

Bowmanville receives an average of 865.5 mm of precipitation annually (Environment Canada website); 773.3 mm of rainfall and 93.1 cm of snowfall. The daily average temperature ranges from a high of 20.0°C to a low of -5.6°C.

The Ministry of Agriculture and Food Factsheets provide data on crop production and growing seasons across Ontario. The rate of development of crops from planting to maturity is mainly dependent upon temperature. Regions within the Hampton area begin to experience average temperatures greater than 10°C starting May 4th before reaching temperatures greater than 12.8°C for 3 consecutive days around May 17th. During this time and up until the season's average ending date, September 26th, the area accumulates an average of 2730 crop heat units (CHU).

On average, the last spring frost in the Hampton area occurs on May 9th. The first fall frost is expected on September 28th. This provides the surrounding area with a growing period of between 140 and 160 days. The climate in the Hampton area provides a good overall growing period that can support a wide range of crops.

4.3 Regional Soils

4.3.1 Soil Series

The *Soil Survey of Durham County, Report No. 9* of the Ontario Soil Survey (Webber & Morwick, 1971) includes a soil map that shows the distribution of the various soil series mapping in the county. The digital Provincial Soil Resource database is compiled and administered by OMAFRA and includes most of the soil surveys completed in Ontario. Much of this information is accessible from the Province's Agricultural Information Atlas. This is an interactive online application that enables users to obtain agricultural information for Ontario such as soils and drainage, as well as data layers from other Government of Ontario ministries (e.g., lot boundaries). The database was accessed in March and April, 2019.

The Soil Survey of Durham County mapping shows that the soils on the Subject Lands are predominantly comprised of Brighton Sandy Loam (99.51%) as well as a small amount of Bondhead Loam (0.49%).

Brighton Series

The Brighton soil series is the well drained member of the soil catena that includes the imperfectly drain Tecumseth and poorly drained Granby soil series. The Brighton soils have developed from light brownish grey, aeolian sand deposits and are stonefree. In general, very gently sloping to level topography characterizes the Brighten series. In spite of the generally nearly level topography, external and internal drainage is good where the depth of the sands exceeds one metre.

The Brighton soils often have a sandy loam textured A horizon which is generally deep and can extend to a depth of 40 cm. The sandy loam textured B horizon generally extends to a depth of between 60 and 80 cm. The parent material (C horizon) generally consists of calcareous, sand. A transition horizon between the B and C horizon is sometimes present.

These soils are rated CLI Class 2FM and have only moderate limitations due to low inherent fertility and naturally low levels organic matter. A range of crops can be grown on these soils although they are often droughty during mid-summer and application of commercial fertilizers and manure is often necessary to obtain good yields.

Bondhead series

The Bondhead soil series have developed from loamy textured, morainal till deposits. These soils are well drained and often occur on moderate to steep slopes. Bondhead soils can be slightly stony although some stony phases of the soil have been mapped. The surface reaction of these soils is slightly acid to neutral, however, on eroded slopes the surface reaction can be strongly alkaline where the plough layer has mixed with the alkaline parent material. Erosion can become a severe limitation for these soils on steep topography; however, due to the gently sloping topography on the Subject Lands, erosion is not expected to be an issue.

These are typically good agricultural soils and on lands with nearly level slopes they are rated CLI Class 1 and have few limitations for agriculture.

Table 1 shows the area and percentage of these two soils as mapped according to the regional scale mapping.

Table 1: Regional soils for Subject Lands

Soil Series	Area (Ha)	% of Subject Lands
Bondhead Loam	16.48	99.51%
Brighton Sandy Loam	0.08	0.49%
Totals	16.56	100%

The Regional soil survey mapping is shown in Figure 2.

Legend

Subject Lands

Soil Symbol

Soil Sereis Name → BDH

Slope Class → E2 ← Stoniness

Soil Series

BDH - Bondhead Loam
BGH - Brighton Sandy Loam

Slope Classes (%)

A a - Level slopes (0.0 - 0.5%)
B b - Nearly level slopes (0.5 - 2.0%)
C c - Very Gentle slopes (2.0 - 5.0%)
D d - Gentle slopes (5 - 9%)
E e - Moderate slopes (9 - 15%)
F f - Strong slopes (15 - 30%)
G g - Very Strong slopes (30 - 45%)
Simple Slopes (uniform, lengths > 50 metres) denoted in upper case
Complex Slopes (short, irregular slopes) denoted in lower case

Stoniness/Rockiness

0 - Non
1 - Slightly
2 - Moderately
3 - Very
4 - Exceedingly
5 - Excessively

CLI Class → $4T^{20}$ ← Percentage of Area; ← CLI Subclass (Limitations)

CLI AGRICULTURAL CAPABILITY CLASSES

Class 1 - Soils in this class have no significant limitations to use for common field crops

Class 2 -Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.

Class 4 - severe limitations that restrict the choice of crops, or require special conservation practices and very careful management, or both.

CLI AGRICULTURAL CAPABILITY SUBCLASSES

T Topography - limitations from both the percent of slope and the pattern or frequency of slopes in different directions.

F Low Fertility - soils having low fertility; limitations may be due to lack of plant nutrients.

M Moisture Deficiency - Lower moisture holding capacities and are more prone to droughtiness

Figure 2
Regional Soils and CLI Mapping

Agricultural Assessment of 5075 Holt Road

Prepared for:
1559306 Ontario Ltd.

Prepared by:
COLVILLE CONSULTING INC.

DATE: June 2019

FILE: C19001

4.3.2 CLI Agricultural Land Classification

The Canada Land Inventory (CLI) is an interpretative system for assessing the effects of climate and soil characteristics on the limitations of land for growing common field crops. The CLI system has seven soil classes that descend in quality from Class 1, which has few limitations, to Class 7 soils which have no agricultural capability for common field crops. Class 2 through 7 soils have one or more significant limitations, and each of these are denoted by a capability subclass. There are thirteen subclasses described in CLI Report No. 2 (1971). Eleven of these subclasses have been adapted to Ontario soils. More information regarding the CLI Classification system is provided in Appendix D.

Figure 2 shows that the majority of the property mapped as the Brighton soil series consists of CLI Class 2FM lands (approximately 99.51%). A very small portion in the north west corner that corresponds to the area mapped as Bondhead is rated as 80% CLI Class 1 and 20% CLI Class 4T. This is summarized in Table 2.

Table 2: Regional CLI Capability Ratings for Subject Lands

CLI Rating	Area (Ha)	% of Subject Lands
CLI Class 1	0.06	0.39
CLI Class 2	16.48	99.51
CLI Class 4	0.02	0.10
Totals	16.56	100.00%

4.4 Refined Soil Resources

4.4.1 Detailed Soil Survey

A soil survey of the Subject Lands was completed on April 30, 2019. As described in the methodologies section of this report, the Subject Lands were traversed on foot and the soil profile was exposed at 10 locations using a hand-held Dutch auger. The physical properties of the soil, such as the mode of deposition, soil horizons and horizon depths, depth to bedrock, soil texture, drainage, and stoniness, were described and recorded on field data sheets. The slope percentage within the soil polygons was measured using a hand-held clinometer.

We found that there is a significant difference between the provincial mapping and the actual soils found on site. Not because the provincial mapping was significantly inaccurate; rather due to the extensive level of disturbance that has taken place on this site. We did identify both the Brighton and Bondhead soil series, however, in many areas the soils have been disturbed and the natural soil horizons are no longer present. It was evident that in some areas the soils were scraped and placed in perimeter berms. In other locations it appears that fill had been imported to the site and spread to fill low areas. The surface drainage has been adversely affected. Ponded areas have been created and poor soil conditions were observed.

Granby soils, which are the poorly drained member of the Brighton Catena were observed to the east of the residence located on the property. These soils are very poorly drained and have a peaty surface up to 35 cm in depth. Figure 3 shows the soil distribution based on the results of the refined soil survey and which are summarized in Table 3. The disturbed areas including the perimeter berms have been mapped as "Not Mapped".

Photographs taken during the site visit showing the current condition of the Subject Lands are provided in Appendix E.

Table 3: Refined soils for Subject Lands

Soil Series	Area (Ha)	% of Subject Lands
Brighton Sandy Loam	3.79	22.81%
Bondhead Loam	2.26	13.56%
Granby Sandy Loam	4.88	29.33%
Not Mapped	5.70	34.29%
Totals	16.63	100.00%

4.4.2 Agricultural Capability/Productivity

The results of the detailed soil survey were used to refine the CLI capability ratings for the Subject Lands. The agricultural capability for common field crops was interpreted using OMAFRA's *Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for the Application of the Canada Land Inventory in Ontario*.

The detailed soil survey confirmed that the Subject Lands have a mix of prime and non-prime agricultural lands with CLI capability ratings of CLI Class 2, 3, 4, and 5 as well as a large portion of Disturbed lands. The refined CLI capability rating for the Subject Lands is shown Figure 3 and summarized in Table 4. Table 4 shows that the majority of the Subject Lands (9.57 ha or 57.54%) are not considered to be prime agricultural lands. The majority of the Subject Lands consist of lower capability lands (i.e., CLI Classes 4, 5 and Not Mapped).

Table 4: Refined CLI Capability Ratings for Subject Lands

CLI Rating	Area (Ha)	% of Subject Lands
CLI Class 2	5.8	34.87%
CLI Class 3	1.26	7.57%
CLI Class 4	1.95	11.72%
CLI Class 5	1.92	11.55%
Disturbed	5.7	34.27%
Totals	16.63	100.00%

Legend

Subject Lands

Soil Symbol

Soil Sereis Name → BDH[80]

Slope Class → E2 ← Stoniness

Soil Series

BDH - Bondhead Loam
BDH-D - Bondhead Loam - Disturbed
BGH - Brighton Sandy Loam
BGH-D - Brighton Sandy Loam - Disturbed
GNY - Granby Sandy Loam
GNY-P - Granby Peaty Phase

Slope Classes (%)

A a - Level slopes (0.0 - 0.5%)
B b - Nearly level slopes (0.5 - 2.0%)
C c - Very Gentle slopes (2.0 - 5.0%)
D d - Gentle slopes (5 - 9%)
E e - Moderate slopes (9 - 15%)
F f - Strong slopes (15 - 30%)
G g - Very Strong slopes (30 - 45%)
Simple Slopes (uniform, lengths > 50 metres) denoted in upper case
Complex Slopes (short, irregular slopes) denoted in lower case

Stoniness/Rockiness

0 - Non
1 - Slightly
2 - Moderately
3 - Very
4 - Exceedingly
5 - Excessively

CLI Class → $4T^{20}$ ← Percentage of Area
CLI Subclass (Limitations)

CLI AGRICULTURAL CAPABILITY CLASSES

Class 2 - Soils in this class have only moderate limitations for to use for common field crops

Class 3 - Soils in this class have moderately severe limitations that restrict the range of crops or require moderate conservation practices.

Class 4 - severe limitations that restrict the choice of crops, or require special conservation practices and very careful management, or both.

CLI AGRICULTURAL CAPABILITY SUBCLASSES

T Topography - limitations from both the percent of slope and the pattern or frequency of slopes in different directions.

F Low Fertility - soils having low fertility; limitations may be due to lack of plant nutrients.

M Moisture Deficiency - Lower moisture holding capacities and are more prone to droughtiness

Figure 3
Refined Soils and CLI Mapping

Agricultural Assessment of 5075 Holt Road

Prepared for:
1559306 Ontario Ltd.

Prepared by:
COLVILLE CONSULTING INC.

DATE: June 2019

FILE: C19001

4.4.3 Evaluation of Agricultural Productivity

The Hoffman Productivity Indices (HPI) are used to relate the productivity of land to the CLI Capability (based on expected yields). Assuming the same level of management is applied to different CLI classes, the productivity for each class will differ. Hoffman (1971) determined the average yields produced for common field crops on CLI classes 1 through 4 lands. He determined that CLI Class 2 lands produce yields approximately 20% less than CLI Class 1 lands and therefore has a value of 0.80 relative to a CLI Class 1 soil. The value for a CLI Class 3 soil is 0.64 and for a CLI Class 4 soil the value is 0.49. The values for CLI Classes 5, 6, & 7 were obtained through extrapolation.

The HPI was calculated for the Subject Lands to assess the relative productivity of the lands for common field crop production.

An HPI rating above 0.9 is considered to be equivalent in productivity to a CLI Class 1 soil. An HPI of between 0.73-0.89 is equivalent in productivity to a CLI Class 2 soil and an HPI in the range of 0.58-0.72 is equivalent in productivity to a CLI Class 3 soil.

Table 5 below show the results of the HPI calculations using the refined soil survey results. As shown in Table 5, the overall productivity of the Subject Lands was calculated to have an HPI of 0.43 which is equivalent in productivity to CLI Class 4 lands. The low level of productivity is due to the relatively high percentage of Not Mapped (Disturbed) lands on the Subject Lands and the CLI Class 5W (very poorly drained) lands.

Table 5: Relative Agricultural Productivity for Subject lands

CLI CLASS	AREA (HA)	Percentage	Points	HPI	Total Productivity Index Range
1	0.00	0.00	1.00	0.00	0.90 – 1.00
2	5.8	34.87%	0.80	0.28	0.73 – 0.89
3	1.26	7.57%	0.64	0.05	0.58 - 0.72
4	1.95	11.72%	0.49	0.06	0.43 - 0.57
5	1.92	11.55%	0.33	0.04	0.28 - 0.42
6	0.00	0.00	0.17	0.00	0.10 - 0.27
7, O, & NM	5.7	34.27%	0.02	0.01	0.00 – 0.09
	16.63	100.0%		**0.43**	CLI Class 4

4.5 Land Use

A reconnaissance level land use survey was completed on April 30, 2019.The mix of land uses and cropping patterns observed within the study area was recorded and mapped. Figures 4 show the land uses observed during the land use survey for the Subject Lands. Many of the farm and non-farm land uses observed are numbered on the figures and the descriptions of these land uses are contained in Appendix F.

4.5.1 Subject Lands

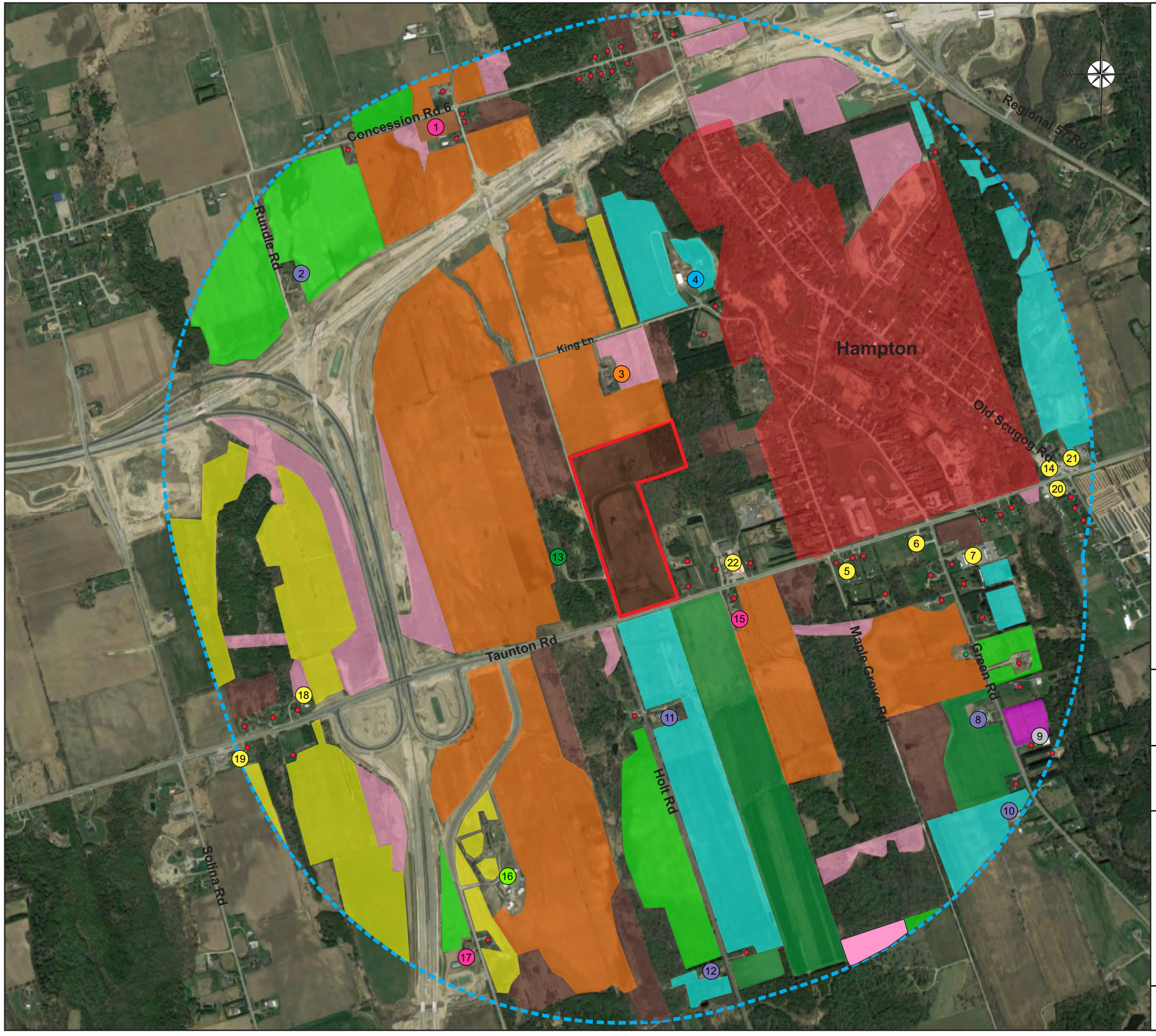
The Subject Lands are uncultivated and do not appear to have been farmed for at least 15 years based on aerial photography. The majority of the Study Area Subject Lands is in common field crop production (soybeans and corn). These crops are the most common crop grown throughout the broader study area. There is a mix of agricultural operations observed within the study area and includes livestock operations or hobby farms (dairy, beef, equestrian and poultry) and cash crop operations (producing field crops such as corn and soybeans).

4.5.2 Study Area

Those farms that appear to have been retired have been mapped as 'Retired'. These former farm operations still have infrastructure that could be utilized with some significant financial investment to modernize. Where former farm operations were observed in which the majority of the farming infrastructure has been removed or is in very poor condition, these operations have been mapped as 'Remnant'.

There are ten agricultural operations located within one kilometer of the Subject Lands, with two of these being active operations as well as three retired livestock operations and five hobby farms. The active operations include an equestrian operation (#4), one cash crop operations (#'s 1 & 21). The hobby farms in the area are all relatively small properties, including one with a handful of beef cattle (#2), Chickens and fresh eggs (#'s 8 & 11), and two hobby horse farms (#'s 10 & 12). In addition, two retired farm operations were noted (#3 & 9) along with a remnant farm operation (#17) are located within the Study Area.

There are approximately 64 non-farm land uses observed adjacent to the Subject lands, including 50 non-farm residences, 9 commercial operations, one industrial operations and one recreational use.



Legend

- Subject Lands
- Study Area
- Non-farm Residence
- Abandoned Non-farm Residence
- Hobby Farm
- Retired Farm
- Industrial
- Orchard
- Commercial
- Equestrian Operation
- Cash Crop Operation
- Recreational
- Soybeans
- Corn
- Sod
- Idle
- Residential
- Cultivated
- Scrub
- Orchard
- Forage/Pasture

0 250 M 500 M

1:12,375

Figure 4
Land Use Mapping

Agricultural Assessment of
5075 Holt Road

Prepared for:

1559306 Ontario Ltd.

Prepared by:

COLVILLE CONSULTING INC.

DATE: June 2019

FILE: C19001

4.6 Land Improvements

OMAFRA's Agricultural Information Atlas provides artificial drainage mapping for the Province. This online tool was accessed to obtain drainage mapping for the lands within the Study Area. Agricultural land improvements include investments made to improve the long-term value and productivity of agricultural lands. This includes methods such as the installation of tile drainage, ditching, irrigation, land levelling, and soil stabilization. Tile drainage installation is a factor used to evaluate the level of investment in land improvements in the area. Although this information is not always complete it is available using the Agricultural Information Atlas available through Land Information Ontario. Tile drainage mapping used for this analysis is shown in Figure 5.

The OMAFRA information shows that there no tile drainage installed in the Subject Lands.

It is also noted that there are is not a significant amount of tile drainage located in the surrounding study area. This suggests there isn't a high level of investment in agriculture in the area.

4.7 Cropping Pattern

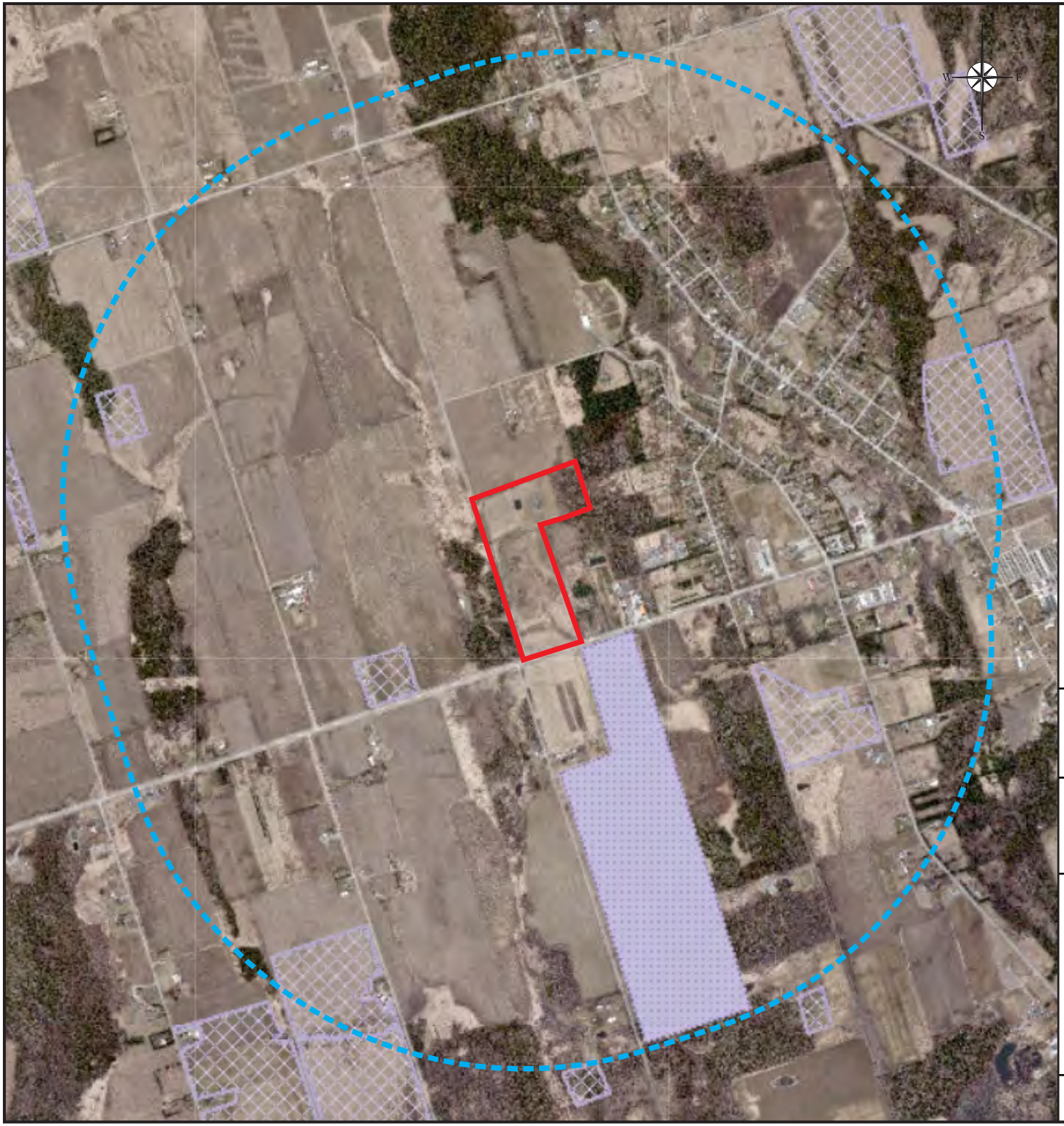
The lands in crop production (predominantly corn and soy, including some cultivated areas) comprise the largest area within the Study Area. Other significant land uses include commercial and forested lands. Commercial lands within the study area consist primarily of tree faming and nursery operations.

Smaller areas within the study area consist of idle and scrub lands. Idle lands are lands which are not currently cultivated but have been cultivated within five years. These lands generally do not contain any woody vegetation. Scrublands have not been cultivated for several years and have transformed to a combination of cultural meadows and early successional woody species.

4.8 Fragmentation of Agricultural Lands

Fragmentation of agricultural lands can have a negative impact on the viability of agricultural lands and its long-term preservation for agricultural purposes. Fragmentation of farm lands generally reduces the economic viability of the area by reducing the efficiency of which lands can be farmed and increasing the operating costs for farms comprised of several small and separated parcels. Larger farm parcels can accommodate a wider range of agricultural activities and ensure long term viability of the property. Whereas, smaller farm parcels cannot offer the same flexibility and are not viable as standalone parcels. They generally cannot support a family farm without there being a second source of income (off farm) that is required to maintain the agricultural operation. Agricultural areas which have been fragmented also often have a higher occurrence of non-farm land uses which in turn means that there is a greater potential for conflict arising between farm and non-farm land uses.

Areas with relatively low levels of fragmentation are considered to be more viable economically for agriculture and they generally have fewer sources of non-farm land use conflicts. In most cases, these areas have a higher priority for protection. Generally speaking, the more fragmentation experienced in an agricultural area the lower the area's agricultural priority.



Legend

Subject Lands

Study Area

Agricultural Tile Drainage

Random

Systematic

Figure 5
Tile Drainage Mapping

Agricultural Assessment of 5075 Holt Road

Prepared for:

1559306 Ontario Ltd.

Prepared by:

COLVILLE CONSULTING INC.

DATE: June 2019

FILE: C19001

Based on our review of lot fabric available on the Agricultural Information Atlas website we have noted that the lands within the study area on the north side of Taunton Rd. have a relatively high degree of fragmentation (lots mostly 10-15 ha or under).

The transportation network in this area also significantly isolates agricultural lands from larger contiguous, high capability, agricultural lands to the north, west and south of the Subject Lands and adjoining lands north of Taunton Road. The transportation network includes the construction of a 400 series highway (Hwy 407) to the north and the connector between Highway 401 and the 407 to the west of the Subject Lands (Hwy 418); the Hamlet of Hampton and Taunton Road.

The parcels south of Taunton Rd. generally consist of larger, contiguous parcels (most parcels around 20-30 ha). These lands will have a higher agricultural priority than the more fragmented and isolated lands to the north of Taunton Road.

4.9 Minimum Distance Separation

The Minimum Distance Separation is a tool used to minimize potential impacts and conflicts between non-farm and farm land uses. In Rural and Agricultural designated areas, new non-farm land uses, such as the proposed gas station development, are required to meet the Minimum Distance Separation I formula as contained in The Minimum Distance Separation Implementation Document: Formulae and Guidelines for Livestock Facility and Anaerobic Digester Odour Setbacks, Publication 853 of the Ontario Ministry of Agriculture, Food and Rural Affairs, 2016.

Section 2.3.3.3 of the PPS states that "New land uses, including the creation of lots, and new or expanding livestock facilities shall comply with the minimum distance separation formulae." The MDS is a tool used to determine the separation distance between livestock facilities and non-compatible land uses. It deals specifically with odour and does not account for noise, dust or other farm generated products. It is applied to all farm operations that have infrastructure reasonably capable of housing livestock. The MDS I formulae provides the minimum distance separation between existing livestock facilities (and empty livestock facilities) and new non-agricultural use.

The MDS I formulae applies to all existing livestock facilities and empty livestock facilities. An empty livestock facility is one that may be retired or no longer used to house livestock; however it appears to be reasonably capable of housing livestock. The MDS is not applied to barns that are in poor condition and not suitable for housing livestock.

The MDS I formulae does not apply to lands proposed to be located within the area to be redesignated for non-agricultural uses. As per MDS I guideline #1 the MDS formula is only applied to livestock operations located within an agricultural or rural designation (unless specifically stated in the municipality's Official Plan). The Municipality of Clarington does not specifically require the application of the MDS I formula for farm operations located within urban areas.

The MDS I formula was applied to all livestock facilities identified within one and a half kilometers (1,500 m) of the Subject Lands. The factors used to determine the MDS I setback requirements for these facilities include: the type of livestock; the maximum capacity of the barn for livestock; type of manure system and

the type of land use (Type A or Type B). For an Official Plan Amendment to permit development on land outside of a settlement area, the type of land use is considered to be a Type B land use.

Specific information regarding each farm operation was obtained primarily from the land owners. In cases where this information was not directly available, we relied on best judgement to determine the MDS I factors most likely applicable to the farm operation and from the interpretation of aerial photography. In some cases, the building capacity was estimated based on the building dimensions as measured using aerial photography (e.g., Google Earth®). Where information is not readily apparent or available, the most likely scenario (e.g., type of livestock or manure system) is used in the MDS I calculation.

The factors required to determine the MDS I setback requirements were collected during the land use survey. The MDS I factors were input to OMAFRA's the AgriSuite software to determine the MDS I requirements.

The MDS I setback requirements were determined for seven farm operations within the Study Area; Farm Operation #'s 2, 3, 4, 8, 10, 11 and 12. As shown in Figure 6, the MDS for these farm operations will not encroach on the Subject Lands.

Table 6 below summarizes the MDS factors used in the calculation. The MDS I setback requirements are summarized in Table 7 and shown in Figure 6.

Table 6: MDS Calculation Factors

Farm Identification	Factor A Odour Potential	Factor B Housing Capacity	Factor D Manure Storage Type	Factor E Encroaching Land Use	Total Lot Size (ha)
Farm #2	0.8 Beef, Feeders (7 – 16 months), Yard/Barn	287.75 Capacity for 103 units	0.7 V4. Solid, outside, no cover, 18-30% DM, with covered liquid runoff storage	2.2 Type B –New or expanding zone or designation for a commercial use outside of a settlement area	17.61
Farm #3	0.7 Horses, Medium-framed, mature; 227 – 680kg (including unweaned offspring)	163.33 Capacity for 9 units	0.7 V3. Solid, outside, no cover, >=30% DM	2.2 Type B –New or expanding zone or designation for a commercial use outside of a settlement area	4.05
Farm #4	0.7 Horses, Medium-framed, mature; 227 – 680kg (including unweaned offspring)	173.33 Capacity for 6 units	0.7 V3. Solid, outside, no cover, >=30% DM	2.2 Type B –New or expanding zone or designation for a commercial use outside of a settlement area	17.10
Farm #8	0.7	261.23	0.7	2.2	14.30

	Chickens, Layer hens (for eating eggs; after transfer from pullet barn), floor run	Capacity for 3,796 units	V3. Solid, outside, no cover, >=30% DM	Type B –New or expanding zone or designation for a commercial use outside of a settlement area	
Farm #10	0.7 Horses, Medium-framed, mature; 227 – 680kg (including unweaned offspring)	160 Capacity for 8 units	0.7 V3. Solid, outside, no cover, >=30% DM	2.2 Type B –New or expanding zone or designation for a commercial use outside of a settlement area	2.05
Farm #11	0.7 -Horses, Medium-framed, mature; 227 – 680kg (including unweaned offspring) -Chickens, Layer hens (for eating eggs; after transfer from pullet barn), floor run	253.33 Capacity for 23 units Capacity for 50 units	0.7 V4. Solid, outside, no cover, 18-30% DM, with covered liquid runoff storage	2.2 Type B –New or expanding zone or designation for a commercial use outside of a settlement area	24.80
Farm #12	0.7 Horses, Medium-framed, mature; 227 – 680kg (including unweaned offspring)	204 Capacity for 11 units	0.7 V4. Solid, outside, no cover, 18-30% DM, with covered liquid runoff storage	2.2 Type B –New or expanding zone or designation for a commercial use outside of a settlement area	5.12

Table 7: MDS Setback Requirements

Farm Identification	Calculated MDS Setback – Livestock Housing	Calculated MDS Setback - Manure	Can MDS Requirement be Met
Farm #2	355m	355m	Yes
Farm #3	176m	176m	Yes
Farm #4	187m	187m	Yes
Farm #8	282m	282m	Yes
Farm #10	172m	172m	Yes
Farm #11	273m	273m	Yes
Farm #12	220m	220m	Yes

The MDS separation requirements calculated for the livestock facilities range from 172m to 355m.

The MDS I factors for four livestock facilities were input to the MDS I software provided by OMAFRA to determine the MDS I requirements. The MDS calculation shows MDS I setback requirements based on a reasonable, although conservative, interpretation of the factors used. The MDS reports generated by the AgriSuite software are provided in Appendix G and the MDS I setback requirements are shown in Figure 6. As shown in this figure, the proposed development is removed from these livestock facilities and it is not constrained by the MDS I setbacks requirements.

Legend

- Subject Lands
- 1500 Meter Study Area
- Non-farm Residence
- Hobby Farm
- Retired Farm
- Active Farm
- Commercial
- Remnant Farm
- Greenhouse
- Minimum Distance Separation required from Livestock Facility
- Minimum Distance Separation Required From Manure Storage Area

0 250 M 500 M

1:14,375

Figure

Minimum Distance Separation

Agricultural Assessment of 5075 Holt Road

Prepared for:

1559306 Ontario Ltd.

Prepared by:

COLVILLE CONSULTING INC.

DATE DATE: June 2019

FILE: FILE: C19001

5. AGRICULTURAL PRIORITY

Rural lands are generally located on low priority agricultural lands. High priority lands are typically part of a prime agricultural area.

The Subject Lands and the immediate surrounding lands are clearly low priority agricultural lands. Although not specifically defined in policy, there are a number of other issues that should be considered when assessing agricultural priority. These include:

- agricultural capability of the lands;
- current land use;
- amount of land under active cultivation;
- amount of capital investment in agricultural infrastructure;
- existing degree of fragmentation to the surrounding agricultural land base;
- the ability of the site to comply with the requirements of MDS I; and
- proximity to adjacent urban and rural settlement areas.

5.1 Agricultural Capability

As determined through the completion of a soil survey of the Subject Lands and an evaluation of the CLI capability and assessment of the HPI, the Subject Lands contain a mix of prime and non-prime lands. The majorities of the lands, approximately 57%, are non-prime and based on the HPI evaluation; overall the Subject Lands are equivalent in productivity to CLI Class 4 lands. CLI Class 4 lands are not considered to be prime agricultural lands. Therefore, these lands would be considered to be low priority lands based on agricultural capability.

5.2 Current Land Use

The Subject Lands are not in agricultural production and have not been cultivated for agricultural crops for at least 15 years based on interpretation of aerial photography. The lands immediately to the east and west are not in agricultural production. The lands immediately to the north are cultivated for common field crop production (soybeans – 2019) but the lot is only approximately 10.65 ha in size. There is no infrastructure associated with this lot.

A small hobby farm, approximately 4 ha in size, is located 160 metres north of the Subject Lands. This property does not abut the Subject Lands and is likely the original farm from which all the surrounding lots have been severed from. The original farmhouse has been demolished and a new dwelling has been constructed. The old barn still remains but appears to be in poor condition. It also appears that only a small portion of the lands are cultivated and what crops are grown are for personal consumption.

An equestrian operation located at 191 King Lane is the only farm operation located between the boundaries of Hampton, the new highways and Taunton Road. It is located on a 17 ha parcel and is immediately adjacent to the hamlet. As a result of highway construction, there are no other large and active farm operations in close proximity to the Subject Lands. The recent loss of farm infrastructure and agricultural lands related to highway construction, the relatively small amount of investment in

agricultural infrastructure and the presence of non-farm land uses in this area suggests that these are low priority lands.

5.3 Amount of Land Under Cultivation

There are no portions of the Subject Lands that are cultivated for agricultural purposes. Aside from the 10 ha lot to the north of the Subject Lands, none of the lands between Holt Road and the Hamlet of Hampton boundaries, and between Taunton Road and King Lane are being cultivated for agricultural purposes. The small portion of land being cultivated for agricultural production is indicative of low priority lands.

Some of the lands to the west of Holt Road are being cultivated, however they have been isolated from the larger contiguous blocks of agricultural lands. Access to these lands is limited to one location along Hold Road to the west of King Lane. The former farm operation no longer exists and a significant portion of this area is not farmed.

5.4 Amount of Capital Investment in Agricultural Infrastructure

There is no investment in agricultural infrastructure on or adjacent to the Subject Lands. The lack of investment is also indicative of low priority lands.

5.5 Degree of Fragmentation

As discussed in Section 4.7 of this report, the agricultural land base has been significantly fragmented as a result of several factors; highway construction, lot severance and the presence of natural heritage features. The degree to which the agricultural land base has been fragmented reduces the agricultural priority of the lands in this area.

5.6 Ability to comply with MDS

As demonstrated in Section 4.8, any development related to the golf driving range and ancillary uses would be able to meet the MDS I setback requirements. The MDS is not a constraint to development of the proposed driving range nor is it a constraint for other lands located north of Taunton, between the Subject Lands and the Hampton boundaries.

5.7 Proximity to Rural Settlement Areas

The Hamlet of Hampton is a Rural Settlement Area. The Subject Lands are in close proximity (only approximately 250 m) to the Hamlet of Hampton's western boundary. The intervening lands are not in agricultural production and are used for non-agricultural uses. Lands that are close to urban and rural settlement area have a lower agricultural priority because of the potential for conflict arising between agricultural uses/operations and non-agricultural uses.

In addition, lands in close proximity to settlement areas generally have a higher real estate value than agricultural lands. A farmer wanting to expand land holding will likely invest in lands removed from settlement areas to minimize cost and avoid potential conflict.

6.0 SUMMARY & CONCLUSION

The Subject Lands and the lands immediately adjacent to the Subject Lands north of Taunton Road are low priority agricultural lands not desirable agricultural lands for several reasons. A farmer is not likely to make the investments necessary to improve the soil and drainage conditions on site due to the significant level of disturbance of the soils and overall low productivity of the lands. There is no agricultural infrastructure, land improvements or other agricultural investments on the Subject Lands. The parcel is only approximately 16.56 hectares in size, which is considered to be small for traditional agricultural purposes, and the Subject Lands are located in close proximity to a rural settlement area which generally increases the potential for conflict to arise between farm operations and non-farm land uses.

Also reducing the agricultural priority of the Subject Lands and immediate surrounding area is the result of these lands being severed and isolated by highway/road construction. They have been effectively separated from the larger, contiguous and productive, agricultural land base that provides better, long-term opportunities for farming and farm-related business that support the local agri-food industry.

Although a permitted non-agricultural use by zoning, in my opinion, the golf driving range and all of the ancillary uses considered for these lands would be best located in a Rural area. The inclusion of the Subject Lands and those lands north of Taunton Rd., east and south of the new highway construction, and west of the Hamlet of Hampton's boundaries within the Region's and Municipality of Clarington's Rural designations is a reasonable consideration. Including these lands within the Rural designation will have an insignificant impact on the agricultural land base and the local agri-food industry.

Sincerely,

Sean Colville, B.Sc., P.Ag.
President, Colville Consulting Inc.

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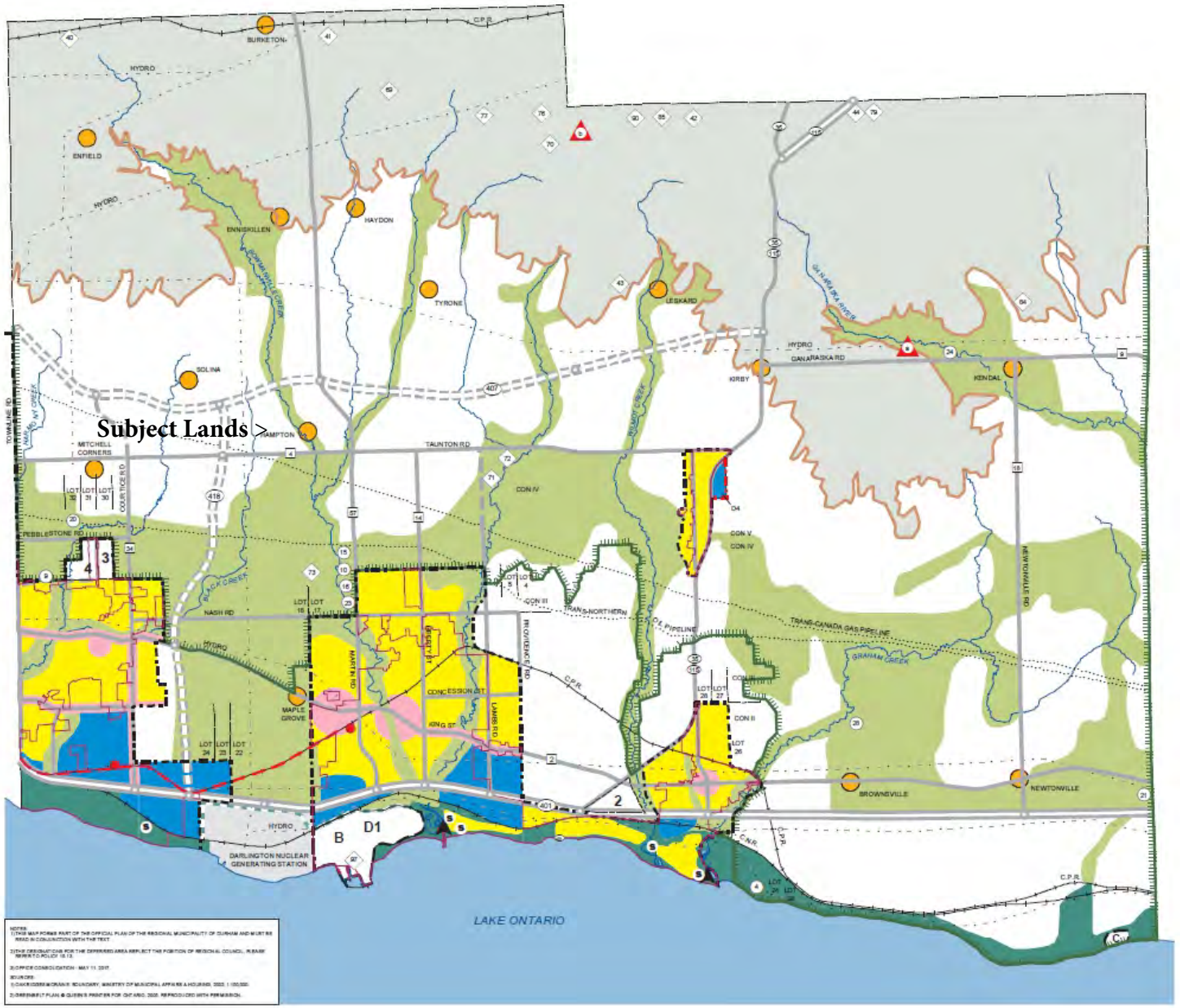
Appendix A

Schedule A – Map A Regional Structures



OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM

SCHEDULE 'A' - MAP 'A5' REGIONAL STRUCTURE

LEGEND

URBAN SYSTEM

- URBAN AREA BOUNDARY
- URBAN AREA BOUNDARY DEFERRED
- URBAN GROWTH CENTRE
- REGIONAL CENTRE
- LIVING AREAS
- REGIONAL CORRIDOR
- AREAS DEVELOPABLE ON FULL/PARTIAL MUNICIPAL SERVICES
- EMPLOYMENT AREAS
- AREAS DEVELOPABLE ON PRIVATE WELLS & MUNICIPAL SEWER SYSTEMS
- AREAS DEVELOPABLE ON MUNICIPAL WATER SYSTEMS & PRIVATE WASTE DISPOSAL SYSTEMS
- BUILT BOUNDARY
- AREAS DEVELOPABLE ON PRIVATE WELLS & PRIVATE WASTE DISPOSAL SYSTEMS
- MUNICIPAL SERVICE

RURAL SYSTEM

- PRIME AGRICULTURAL AREAS

RURAL SETTLEMENTS :

- HAMLET
- COUNTRY RESIDENTIAL SUBDIVISION (SEE TABLE E2 FOR DESCRIPTION)
- RURAL EMPLOYMENT AREA (SEE TABLE E3 FOR DESCRIPTION)
- SHORELINE RESIDENTIAL
- REGIONAL NODE (SEE SECTION 9C FOR DESCRIPTION)
- AGGREGATE RESOURCE EXTRACTION AREA (SEE TABLE E1 FOR DESCRIPTION)

GREENLANDS SYSTEM

- MAJOR OPEN SPACE AREAS
- OAK RIDGES MORAINE AREAS
- WATERFRONT AREAS
- OAK RIDGES MORAINE BOUNDARY
- GREENBELT BOUNDARY
- TOURIST ACTIVITY/ RECREATIONAL NODE
- WATERFRONT PLACE
- OPEN SPACE LINKAGE
- WATERFRONT LINKS

TRANSPORTATION SYSTEM

SEE SCHEDULE C FOR DESIGNATIONS

THE FOLLOWING IS SHOWN SELECTIVELY, FOR EASE OF INTERPRETATION OF OTHER DESIGNATIONS ONLY.

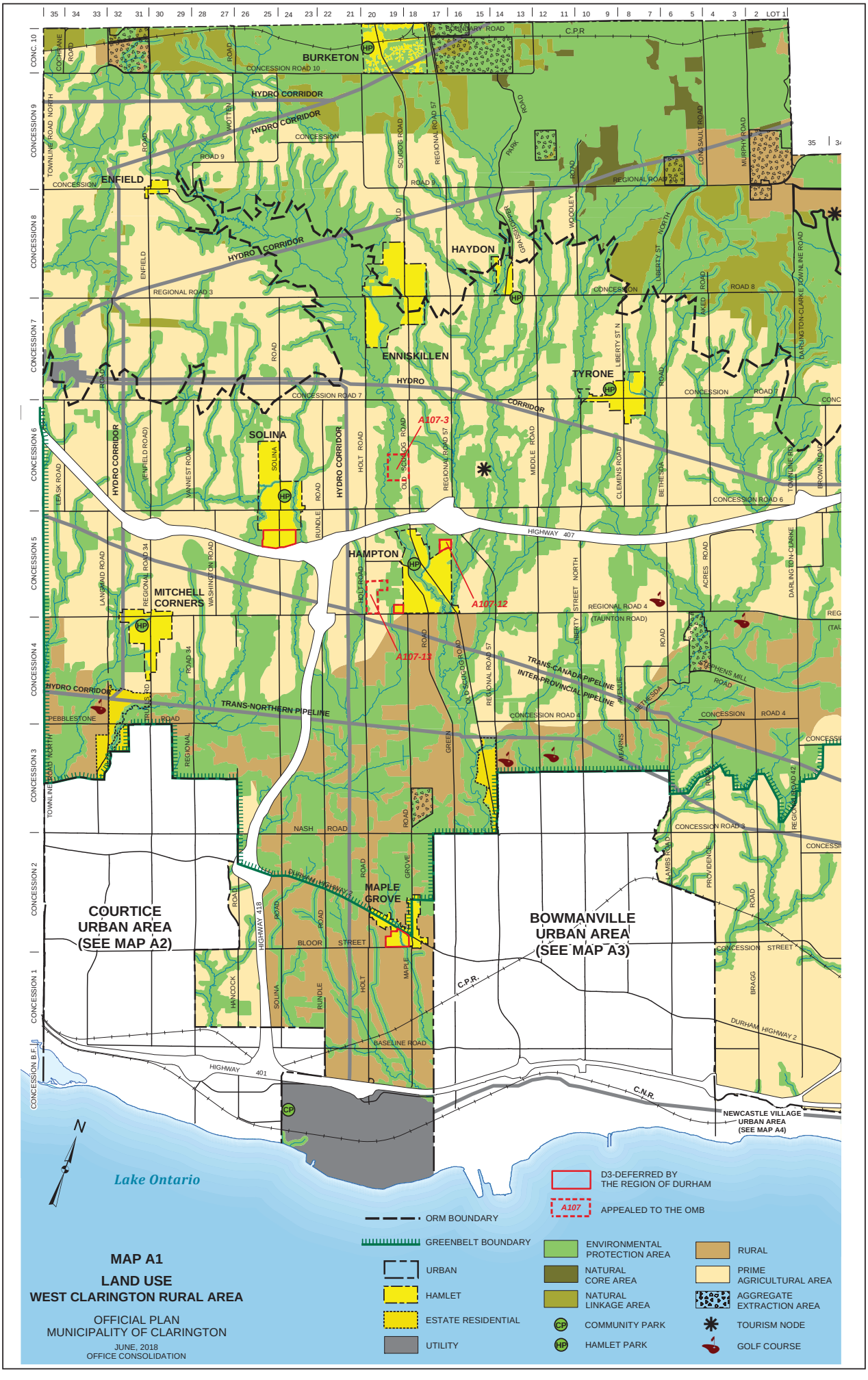
EXISTING		FUTURE
	ARTERIAL ROAD	
	FREEWAY	
	INTERCHANGE	
	GO RAIL	
	GO STATION	

SPECIAL AREAS

- 2 — SPECIAL STUDY AREA
- A — SPECIFIC POLICY AREA
- D2 — DEFERRED BY MINISTER OF MUNICIPAL AFFAIRS
- APPEALED TO O.M.B.
- LANDS APPEALED TO OMB, REFER TO POLICY 14.13.7

Appendix B

Map A1 – Land Use



MAP A1

LAND USE
WEST CLARINGTON RURAL AREA

OFFICIAL PLAN
MUNICIPALITY OF CLARINGTON

JUNE, 2018
OFFICE CONSOLIDATION

Appendix C

Climate Data

Climate Normals 1981-2010 Station Data							
Metadata including Station Name, Province, Latitude, Longitude, Elevation, Climate ID, WMO ID, TC ID							
STATION_NAME	PROVINCE	LATITUDE	LONGITUDE	ELEVATION	CLIMATE_I	WMO_ID	TC_ID
BOWMANVILLE MOSTERT	ON	43°55'00.000	78°40'00.000	99.1 m	6150830		

Legend
A = WMO "3 and 5 rule" (i.e. no more than 3 consecutive and no more than 5 total missing for either temperature or precipitation)
B = At least 25 years
C = At least 20 years
D = At least 15 years

1981 to 2010 Canadian Climate Normals station data														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Temperature														
Daily Average (°C)	-5.6	-4.4	-0.2	6.4	12.4	17.5	20	19.2	15	8.7	3.4	-2.2	7.5	C
Standard Deviation	3.1	2.3	1.7	1.4	1.8	1.2	1.2	1.2	1	1.1	1.3	2.9	1.9	C
Daily Maximum (°C)	-1.4	0	4.3	11.3	18	23.1	25.8	24.8	20.4	13.7	7.2	1.6	12.4	C
Daily Minimum (°C)	-9.9	-8.8	-4.6	1.5	6.8	11.8	14.3	13.5	9.5	3.6	-0.4	-6	2.6	C
Extreme Maximum (°C)	13	12.5	21.5	29	33	33.5	36	35	32.2	26	21.1	17.5		
Date (yyyy/dd)	1995/14	2002/25	1995/15	1990/25	1988/30	1995/19	1988/08	2001/07	1973/04	1997/06	1971/02	1982/03		
Extreme Minimum (°C)	-34	-30	-26	-14.4	-5	-1	2.8	-0.5	-3.3	-8.3	-17.8	-34.5		
Date (yyyy/dd)	1981/12	1979/17	1984/12	1972/07	1978/04	1980/12	1968/30	1982/29	1974/23	1974/21	1967/16	1980/25		
Precipitation														
Rainfall (mm)	32.2	32.8	41	68	75.9	83.8	63.2	78.1	98.7	70.6	83.1	46.1	773.3	C
Snowfall (cm)	31	17.7	14.1	2.6	0	0	0	0	0	0.1	5.6	22	93.1	C
Precipitation (mm)	63.1	50.5	55	70.6	75.9	83.8	63.2	78.1	98.7	70.8	88.6	68.1	866.5	C
Extreme Daily Rainfall (mm)	46.2	42.2	47.6	43.4	36.4	50.6	51.1	81.2	84	48.6	71.4	41.1		
Date (yyyy/dd)	1995/15	1985/23	1980/20	1984/04	1996/20	1982/10	1974/02	1986/26	1986/10	1995/05	1985/03	1972/12		
Extreme Daily Snowfall (cm)	29	19.4	20.8	10.2	0	0	0	0	0	12.2	15.5	24		
Date (yyyy/dd)	1999/02	1980/11	1976/01	1975/03	1968/01	1968/01	1966/01	1966/01	1966/01	1969/21	1974/28	1992/10		
Extreme Daily Precipitation (mm)	46.2	42.2	47.6	43.4	36.4	50.6	51.1	81.2	84	48.6	71.4	41.1		
Date (yyyy/dd)	1995/15	1985/23	1980/20	1984/04	1996/20	1982/10	1974/02	1986/26	1986/10	1995/05	1985/03	1972/12		
Extreme Snow Depth (cm)	78	59	40	14	0	0	0	0	0	0	18	41		
Date (yyyy/dd)	1999/16	1982/06	1982/09	1994/07	1981/01	1981/01	1981/01	1981/01	1981/01	1981/01	1997/15	1992/12		
Days with Maximum Temperature														
<= 0 °C	16.7	13.3	7	0.33	0	0	0	0	0	0	1.3	10.8	49.4	C
> 0 °C	14.3	15	24	29.7	31	30	31	31	30	31	28.7	20.2	315.9	C
> 10 °C	0.23	0.41	3.9	16.7	30	30	31	31	30	24.3	7.5	1.1	206.1	C
> 20 °C	0	0	0.18	1.3	9.3	23	30.1	28.9	15.7	2.2	0	0	110.6	C
> 30 °C	0	0	0	0	0.14	0.86	2.2	1	0.1	0	0	0	4.3	C
> 35 °C	0	0	0	0	0	0	0.05	0	0	0	0	0	0.05	C

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Days with Minimum Temperature														
> 0 °C	2.4	2.7	6	17.4	28.9	30	31	31	29.1	22.6	13.4	5.1	219.4	C
<= 2 °C	30.2	27.6	28.6	17.7	5.2	0.24	0	0.05	2.4	12.9	22	28.7	175.6	C
<= 0 °C	28.6	25.5	25	12.6	2.1	0	0	0.05	0.95	8.4	16.6	26	145.8	C
< -2 °C	24.7	21.9	18.6	5.5	0.14	0	0	0	0.05	3.4	10.4	20.2	105	C
< -10 °C	14	11.1	5.4	0.19	0	0	0	0	0	0	0.76	8.1	39.4	C
< -20 °C	3.4	1.7	0.23	0	0	0	0	0	0	0	0	0.76	6	C
< - 30 °C	0.18	0	0	0	0	0	0	0	0	0	0	0	0.18	C
Days with Rainfall														
>= 0.2 mm	5.5	5.3	8	11.8	12.2	12	10.4	11.5	13	13	12.7	7.4	122.7	C
>= 5 mm	1.9	1.9	2.6	4.6	5.2	5.1	4	4.4	5.7	5.1	4.9	3.1	48.4	C
>= 10 mm	1.1	1.2	1.5	2.3	2.9	2.7	2.2	2.6	3.3	2.1	2.8	1.5	26.2	C
>= 25 mm	0.18	0.23	0.09	0.29	0.33	0.9	0.24	0.67	0.76	0.29	0.52	0.24	4.7	C
Days With Snowfall														
>= 0.2 cm	7.8	6.3	4	1.1	0	0	0	0	0	0.1	2.1	6.5	27.9	C
>= 5 cm	2.5	1.2	1	0.1	0	0	0	0	0	0	0.29	1.6	6.6	C
>= 10 cm	0.55	0.32	0.41	0.05	0	0	0	0	0	0	0.1	0.43	1.9	C
>= 25 cm	0.05	0	0	0	0	0	0	0	0	0	0	0	0.05	C
Days with Precipitation														
>= 0.2 mm	12.5	10.8	11.2	12.5	12.2	12	10.4	11.5	13	13	14.3	13	146.4	C
>= 5 mm	4.4	3.2	3.6	4.8	5.2	5.1	4	4.4	5.7	5.1	5.2	4.7	55.3	C
>= 10 mm	1.7	1.5	2.1	2.3	2.9	2.7	2.2	2.6	3.3	2.1	2.9	2.1	28.3	C
>= 25 mm	0.23	0.32	0.09	0.33	0.33	0.9	0.24	0.67	0.76	0.29	0.52	0.29	5	C
Degree Days														
Above 24 °C	0	0	0	0	0	0.5	3.5	1.6	0.2	0	0	0	5.8	C
Above 18 °C	0	0	0	0.2	4.5	33.2	74.6	59.1	15.9	0.1	0	0	187.4	C
Above 15 °C	0	0	0	1.4	20.1	88.6	156.6	133.2	48.2	2.2	0	0	450.3	C
Above 10 °C	0	0	1	13.7	94	224.2	310.8	284.7	154.6	31.7	2.7	0.2	1117.5	C
Above 5 °C	0.6	0.7	11.9	72	230	374.1	465.8	439.5	298.5	123.3	29.9	4.9	2051.3	C
Above 0 °C	15.3	18.7	63.1	195.4	384.8	524.1	620.8	594.5	448.5	269.8	116	36.9	3287.9	C
Below 0 °C	190.2	143.1	67.7	3.6	0	0	0	0	0	0.1	14.1	104.4	523.2	C
Below 5 °C	330.5	266.3	171.5	30.2	0.2	0	0	0	0.1	8.7	78	227.4	1112.8	C
Below 10 °C	484.8	406.7	315.6	121.9	19.2	0.2	0	0.2	6.2	72	200.7	377.7	2005.2	C
Below 15 °C	639.8	547.8	469.6	259.6	100.3	14.6	0.8	3.7	49.8	197.5	348	532.5	3164.1	C
Below 18 °C	732.8	632.5	562.6	348.4	177.7	49.1	11.8	22.5	107.5	288.4	438	625.5	3996.9	C

1981 to 2010 Canadian Climate Normals station data (Frost-Free)	Frost-Free:	Code					
Average Date of Last Spring Frost	9-May	C					
Average Date of First Fall Frost	28-Sep	C					
Average Length of Frost-Free Period	141 Days	C					
Probability of last temperature in spring of 0 °C or lower on or after indicated dates	10%	25%	33%	50%	66%	75%	90%
Date	25-May	17-May	13-May	8-May	5-May	4-May	29-Apr
Probability of first temperature in fall of 0 °C or lower on or after indicated dates	10%	25%	33%	50%	66%	75%	90%
Date	17-Sep	23-Sep	24-Sep	29-Sep	3-Oct	4-Oct	9-Oct
Probability of frost-free period equal to or less than indicated period (Days)	10%	25%	33%	50%	66%	75%	90%
Days	123	129	134	140	145	147	157

Appendix D

Site Photos

Canada Land Inventory Soil Capability Classification for Agriculture

The Canada Land Inventory (CLI) classification system was developed to classifying soil capability for agricultural use for use across Canada. CLI is an interpretative system which assesses the effects of climate and soil characteristics on the limitations of land for growing common field crops. It classifies soils into one of seven capability classes based on the severity of their inherent limitations to field crop production. Soils descend in quality from Class 1, which is highest, to Class 7 soils which have no agricultural capability for the common field crops. Class 1 soils have no significant limitations. Class 2 through 7 soils have one or more significant limitations, and each of these are denoted by a capability subclass.

In Ontario the document, "Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario" (OMAFRA, 2008) provides a Provincial interpretation of the CLI classification system. These guidelines are based on the "Canada Land Inventory, Soil Capability Classification for Agriculture" (ARDA Report No. 2, 1965) and have been modified for use in Ontario. In Ontario, CLI Classes 1 to 4 lands are generally considered to be arable lands and Classes 1 to 3 soils and specialty crop lands are considered to be prime agricultural lands.

The following definitions were taken from Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario (2008).

Definitions of the Capability Classes

Class 1 - Soils in this class have no significant limitations in use for crops. Soils in Class 1 are level to nearly level, deep, well to imperfectly drained and have good nutrient and water holding capacity. They can be managed and cropped without difficulty. Under good management they are moderately high to high in productivity for the full range of common field crops

Class 2 - Soils in this class have moderate limitations that reduce the choice of crops, or require moderate conservation practices. These soils are deep and may not hold moisture and nutrients as well as Class 1 soils. The limitations are moderate and the soils can be managed and cropped with little difficulty. Under good management they are moderately-high to high in productivity for a wide range of common field crops.

Class 3 - Soils in this class have moderately severe limitations that reduce the choice of crops or require special conservation practices. The limitations are more severe than for Class 2 soils. They affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management these soils are fair to moderately high in productivity for a wide range of common field crops.

Class 4 - Soils in this class have severe limitations that restrict the choice of crops, or require special conservation practices and very careful management, or both. The severe limitations seriously affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. These soils are low to medium in productivity for a narrow to wide range of common field crops, but may have higher productivity for a specially adapted crop.

Class 5 - Soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible. The limitations are so severe that the soils are not capable of use for sustained production of annual field crops. The soils are capable of producing native or tame species of perennial forage plants and may be improved through the use of farm machinery. Feasible improvement practices may include clearing of bush, cultivation, seeding, fertilizing or water control.

Class 6 - Soils in this class are unsuited for cultivation, but are capable of use for unimproved permanent pasture. These soils may provide some sustained grazing for farm animals, but the limitations are so severe that improvement through the use of farm machinery is impractical. The terrain may be unsuitable for the use of farm machinery, or the soils may not respond to improvement, or the grazing season may be very short.

Class 7 - Soils in this class have no capability for arable culture or permanent pasture. This class includes marsh, rockland and soil on very steep slopes.

Definitions of the Prime and Non-prime Agricultural Lands

In Ontario, CLI Classes 1, 2 and 3 and specialty crop lands are considered prime agricultural lands. Non-prime agricultural lands are comprised of CLI Class 4-7 lands.

Organic soils (Muck) are not classified under the CLI system but are mapped and identified as O in the provincial mapping.

Definitions of the Capability Subclasses

Capability Subclasses indicate the kinds of limitations present for agricultural use. Thirteen Subclasses were described in CLI Report No. 2. Eleven of these Subclasses have been adapted to Ontario soils.

Subclass Definitions:

Subclass E - Erosion: Loss of topsoil and subsoil by erosion has reduced productivity and may in some cases cause difficulties in farming the land e.g. land with gullies.

Class	Soil Characteristics
2E	Loss of the original plough layer, incorporation of original B horizon material into the present plough layer, and general organic matter losses have resulted in moderate losses to soil productivity.
3E	Loss of original solum (A and B horizons) has resulted in a plough layer consisting mostly of Loamy or Clayey parent material. Organic matter content of the cultivated surface is less than 2%.
4E	Loss of original solum (A and B horizons) has resulted in a cultivated layer consisting mainly of Sandy parent material with an organic matter content of less than 2%; shallow gullies and occasionally deep gullies which cannot be crossed by machinery may also be present.
5E	The original solum (A and B horizons) has been removed exposing very gravelly material and/or frequent deep gullies are present which cannot be crossed by machinery.

Subclass F - Low natural fertility*:* This subclass is made up of soils having low fertility that is either correctable with careful management in the use of fertilizers and soil amendments or is difficult to correct in a feasible way. The limitation may be due to a lack of available plant nutrients, high acidity, low exchange capacity, or presence of toxic compounds.

Class	Upper Texture Group (>40 and <100 cm from surface)	Lower Texture Group (remaining materials to 100 cm depth)	Drainage Class	Additional Soil Characteristics[1]
2F	Sandy	Sandy or very gravelly	Rapid to imperfect	Neutral or alkaline parent material with a Bt horizon within 100 cm of the surface
3F	Sandy	Sandy or very gravelly	Any drainage class	Neutral or alkaline parent material with no Bt horizon present within 100 cm of surface
3F	Sandy	Loamy or Clayey	Any drainage class	Acid parent material
3F	Loamy or clayey	Any Texture Group	Any drainage class	Acid parent material
4F	Sandy	Sandy or very gravelly	Any drainage class	Acid parent material
4F	Very gravelly	Any texture	Rapid to imperfect	Neutral to alkaline parent material
5F	Very Gravelly	Any texture	All drainage classes	Acid parent material

[1] "Acid" means pH<5.5; "Neutral" pH 5.5 to 7.4; "Alkaline" pH>7.4 as measured in 0.01 M CaCl2 (CSSC, 1998). PH 's measured in distilled water tend to be slightly higher (up to 0.5 units).

Bt horizon should be fairly continuous and average more than 10cm thickness

			class	material with no Bt horizon present within 100 cm of surface
3F	Sandy	Loamy or Clayey	Any drainage class	Acid parent material
3F	Loamy or clayey	Any Texture Group	Any drainage class	Acid parent material
4F	Sandy	Sandy or very gravelly	Any drainage class	Acid parent material
4F	Very gravelly	Any texture	Rapid to imperfect	Neutral to alkaline parent material
5F	Very Gravelly	Any texture	All drainage classes	Acid parent material

[1] "Acid" means pH<5.5; "Neutral" pH 5.5 to 7.4; "Alkaline" pH>7.4 as measured in 0.01 M CaCl2 (CSSC, 1998). PH 's measured in distilled water tend to be slightly higher (up to 0.5 units).
Bt horizon should be fairly continuous and average more than 10cm thickness

Subclass M – Moisture deficiency: Soils in this subclass have lower moisture holding capacities and are more prone to droughtiness.

Class	Soil Texture Groups		Drainage	Additional Soil Characteristics
	Upper materials1	Lower materials2		
2M	15 to 40 cm of loamy or finer materials	Sandy to Very Gravelly	Well	
2M	40 to < 100 cm of sandy to very gravelly material.	Loamy to Very Fine Clayey	Well	
2M	Sandy		Rapid to well	Well developed Bt3 horizon occurs within 100 cm of surface
3M	Sandy material to > 100cm		Rapid	Bt horizon absent within 100 cm of surface
4M	Very Gravelly to > 100 cm		Rapid	Bt horizon present within 100 cm of surface
5M	Very gravelly to > 100cm		Very r id	Bt horizon absent within 100cm

Subclass T - Topography

The steepness of the surface slope and the pattern or frequency of slopes in different directions are considered topographic limitations if they: 1) increase the cost of farming the land over that of level or less sloping land; 2) decrease the uniformity of growth and maturity of crops; and 3) increase the potential of water and tillage erosion.

Determination of Subclass T for Very Gravelly and Sandy Soils

Slope %	<2		2-5		5-9		9-15		15-3)		30-60		>60	
Slope type	S	C	S	C	S	C	S	C	S	C	S	C	S	C
Class				2T	2T	3T	3T	4T	5T	5T	6T	6T	7T	7T

Determination of Subclass T for Loamy, Clayey and Very Fine Clayey Soils

Slope %	<2		2-5		5-9		9-15		15-30		30-60		>60	
Slope type	S	C	S	C	S	C	S	C	S	C	S	C	S	C
Class				2T	3T	3T	4T	4T	5T	5T	6T	6T	7T	7T

S = Simple Slopes >50 m in length

C =Complex Slopes <50 m in length

Subclass W - Excess water:

The presence of excess soil moisture, other than that brought about by inundation, is a limitation to field crop agriculture. Excess water may result from inadequate soil drainage, a high water table, seepage or runoff from surrounding areas.

Soil Textures and Depths	**Depth to Bedrock** (cm)	**Soil Class** (Drainage in place or feasible)	**Soil Class** (Drainage not feasible)
Very gravelly, sandy, or loamy extending >40 cm from the surface, or, <40 cm of any other textures overlying very gravelly, sandy or loamy textures	>100	2W	4W,5W
>40 cm depth of clayey or very fine clayey textures, or, < 40 cm of any other texture overlying clayey or very fine clayey textures	>100	3W	5W
<40 cm of peaty material overlying any texture	>100	3W	5W
All textures	50-100	4W	5W
All textures	0-50	NA	5W

Appendix E

Canada Land Inventory

Photo 1: Very poorly drained - Granby Peaty Phase

Photo 2: Peaty surface overlying sands – Granby Peaty Phase

Photo 3: Morainal till derived soil – well drained Bondhead Sandy Loam

Photo 4: Pooly drained Granby soil profile

Photo 5: Rapidly drained Brighton soil – It appears that the surface (i.e., topsoil) has been removed. Soil is exposed at the surface and vegetation growth is poor.

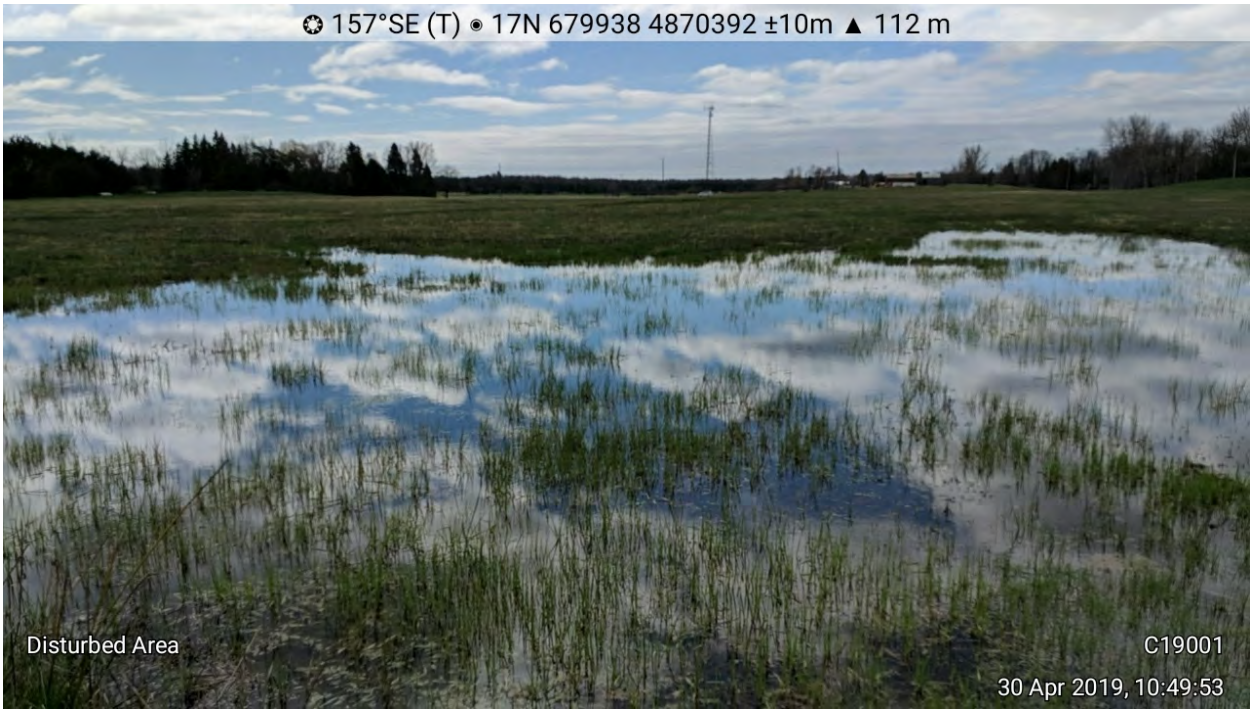


Photo 6: Located within a large area of disturbance a ponded area has formed.

Photo 7: No soil profile development indicative of a highly disturbed site.

Photo 8: Relatively large areas within the disturbed lands are very poorly drained. Sparse vegetation is an indication of poor fertility in the disturbed area.

Photo 9: Site is disturbed. It is poorly drained and shows sands overlying till.

Photo 10: Likely till derived soil which has had the topsoil scraped off and placed in adjacent perimeter berm. Poor vegetative cover indicative of site disturbance and poor fertility.

Photo 11: Rock pile indicative of the presence of morainal till.

Photo 12: Gravelly material likely derived from fill imported to the site.

Photo 13: Good example of the Brighton soil located in the south west corner of the property.

Photo 14: View from top of perimeter berm looking south west.

Appendix F

Soil Data Sheet

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
1	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	0	B	m	1	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
	GF	VP	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	OH			0	35					
	B	g		35	45			5	LS	
	C	kg		45	70			10	LS	
	R			70						

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

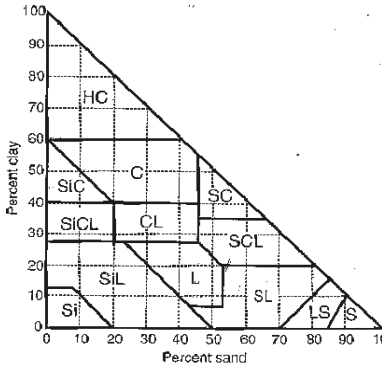
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	0

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: R-refusal at 70cm due to gravel content
WT @ surface - upwelling observed



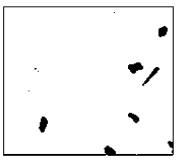
Contrast - the difference between the mottle colour and the matrix colour, using the Munsell Soil Color Charts.

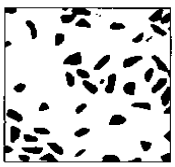
	Difference from matrix in		
	Hue* pages	Value* units	Chroma* units
Faint	0	≤2	≤1
	1	0	0
Distinct	0	3 - 4	2 - 4
	1	≤2	≤1
Prominent	0	≥4	≥4
	1	≥2	≥1
	2+	≥0	≥0

*Hue, Value, and Chroma differences are determined using the Munsell Soil Color Charts (see page 25) e.g. common, fine, distinct brown (10YR 5/3) mottles. Values in the table are taken from 1982 CanSIS manual for describing soils in the field.

Abundance - the proportion of the exposed surface occupied by mottles (%) (refer to Appendix II for additional area percentage charts).

Few <2% Common 2 - 20% Many >20%





Size - the diameter of the mottle if round, or, the greatest dimension if length is not more than 2 or 3 times the width, or, the width if the mottle is long and narrow.

Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
2	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	GF	B	m	1	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		PO	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A	h		0	35				L	
	AAB			35	45				FSL	
	B	mg		45	70				FSL	
	C	kg		70	100				FSL-LFS	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

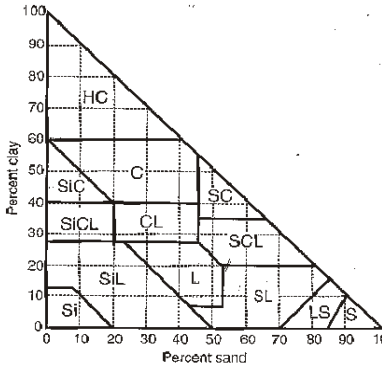
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Bondhead



Contrast - the difference between the mottle colour and the matrix colour, using the Munsell Soil Color Charts.

	Difference from matrix in		
	Hue* pages	Value* units	Chroma* units
Faint	0	≤2	≤1
	1	0	0
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	1	≤2	≤1
Prominent	0	≥4	≥4
	1	≥2	≥1
	2+	≥0	≥0

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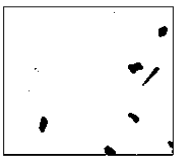

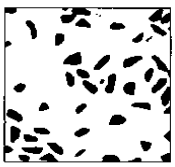

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Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
3	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	MT	C	u	4	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		mw	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A	p		0	30				L-SL	
	B	t		30	60				L-SL	
	B	m		60	85				FSL	
	C	k		85	100			3	SL	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

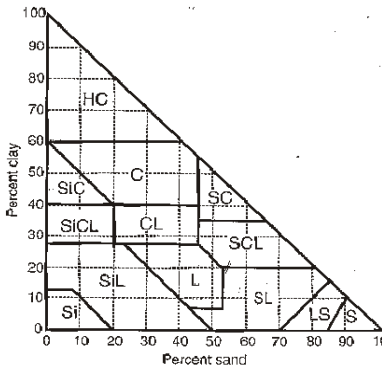
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Bondhead



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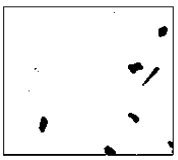
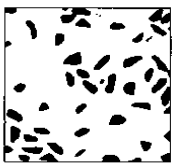




Size - the diameter of the mottle if round, or, the greatest dimension if length is not more than 2 or 3 times the width, or, the width if the mottle is long and narrow.

Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
4	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	GF	C	u	2.5	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		R	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A	p		0	35				FSL	
	B	mg		35	65				LFS	
	BC	k		65	75				LFS-FS	
	C	k		75	100				FS	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

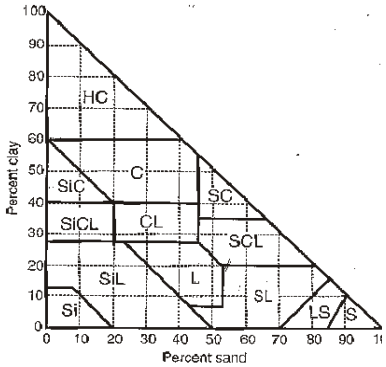
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Adjacent to farmer pond location
pond filled



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	1	0	0
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	1	≤2	≤1
Prominent	0	≥4	≥4
	1	≥2	≥1
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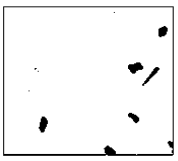
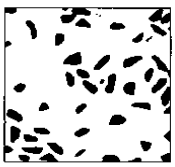
Abundance - the proportion of the exposed surface occupied by mottles (%) (refer to Appendix II for additional area percentage charts).

Few <2% Common 2 - 20% Many >20%





Size - the diameter of the mottle if round, or, the greatest dimension if length is not more than 2 or 3 times the width, or, the width if the mottle is long and narrow.

Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
5	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	GF	C	u	2.5	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		R	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	B	m	1	0	30				S	
	B	m	2	30	45				S	
	BC	k		45	65				S	
	C	k		65	100				S	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

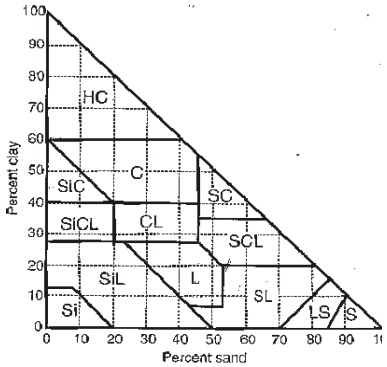
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: WT not present
A horizon not present - stripped away



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	1	0	0
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	1	≤2	≤1
Prominent	0	≥4	≥4
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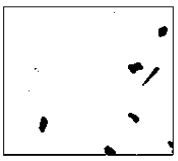

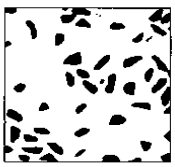

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Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
6	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
		C	m	2	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		PO	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A			0	90				SL-LS	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

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RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

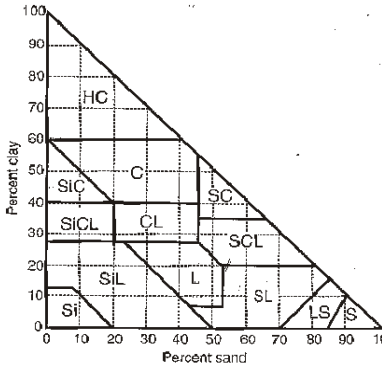
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Disturbed profile
AB+C mixed - anthropogenic
Constricting layer @ 90cm likely from construction



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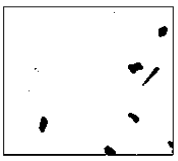

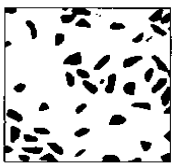

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Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
7	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	GF	B	m	1	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
	MT	PO	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A	p		0	60				FSL	
	B	g		60	75				LFS	
II	B	tg		75	95				CL	
II	C	kg		95	105			s	L-SL	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

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Stoniness/Rockiness

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1	Slightly
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Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

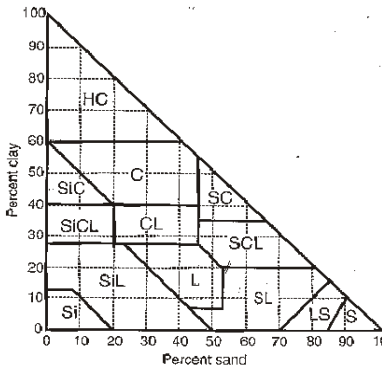
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES:
- Brighter sand over fill
- Large stones in area
- Still a disturbed site
- WT @ 40



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	1	0	0
Distinct	0	3 - 4	2 - 4
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	1	≥2	≥1
	2+	≥0	≥0

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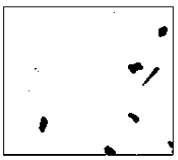
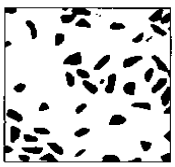
Few <2% Common 2 - 20% Many >20%





Size - the diameter of the mottle if round, or, the greatest dimension if length is not more than 2 or 3 times the width, or, the width if the mottle is long and narrow.

Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
8	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	MT	C	u	3	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		mw	1	1	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	B			0	25				L	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

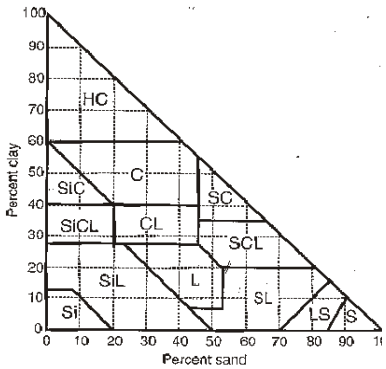
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Gravelly loam - likely *illegible*
Veg cover sparse - looks like topsoil stripped and poured **



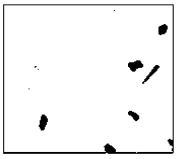
Contrast - the difference between the mottle colour and the matrix colour, using the Munsell Soil Color Charts.

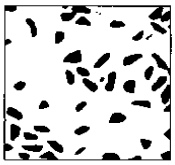
	Difference from matrix in		
	Hue* pages	Value* units	Chroma* units
Faint	0	≤2	≤1
	1	0	0
Distinct	0	3 - 4	2 - 4
	1	≤2	≤1
Prominent	0	≥4	≥4
	1	≥2	≥1
	2+	≥0	≥0

*Hue, Value, and Chroma differences are determined using the Munsell Soil Color Charts (see page 25) e.g. common, fine, distinct brown (10YR 5/3) mottles. Values in the table are taken from 1982 CanSIS manual for describing soils in the field.

Abundance - the proportion of the exposed surface occupied by mottles (%) (refer to Appendix II for additional area percentage charts).

Few <2% Common 2 - 20% Many >20%





Size - the diameter of the mottle if round, or, the greatest dimension if length is not more than 2 or 3 times the width, or, the width if the mottle is long and narrow.

Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
9	30 4 19		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	GF	B	m	1.5	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		w	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A	p		0	30				LS	
	B	m		30	60				FSL	
	BC			60	80				FS	
	C	k		80	100				FS	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

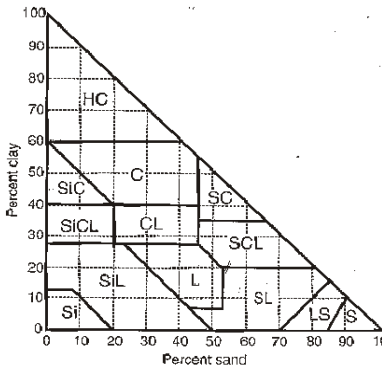
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Ap low in om brownish colour not dark



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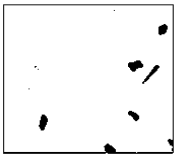
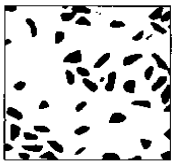
	Hue* pages	Value* units	Chroma* units
Faint	0	≤2	≤1
	1	0	0
Distinct	0	3 - 4	2 - 4
	1	≤2	≤1
Prominent	0	≥4	≥4
	1	≥2	≥1
	2+	≥0	≥0

*Hue, Value, and Chroma differences are determined using the Munsell Soil Color Charts (see page 25) e.g. common, fine, distinct brown (10YR 5/3) mottles. Values in the table are taken from 1982 CanSIS manual for describing soils in the field.

Abundance - the proportion of the exposed surface occupied by mottles (%) (refer to Appendix II for additional area percentage charts).

Few <2% Common 2 - 20% Many >20%





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Fine <5mm Medium 5 - 15mm Coarse >15mm

SOIL DATA SHEET

Site No.	Date (DD/MM/YY)	GPS Coordinates	Project Number:
10	30		C14001

Surveyor	Observation Type	Project Name
SMC	A	Holt Rd

MODE OF DEPOSITION	NO. 1	SLOPE CLASS	SLOPE POSITION	SLOPE %	LENGTH
	GF	d	m	6	
	NO.2	DRAINAGE CLASS	STONINESS	ROCKINESS	
		w	x	x	
	NO.3				

HORIZONS				DEPTH (cm)		COLOURS		%	FIELD TEXTURE	CONSISTENCY
D	Ma	Suffix	Mod.	Upper	Lower	Matrix Colours	Mottle Colours	C.F.		
	A	p		0	20				LS	
	B	m		20	35				LS	
	B	t		35	55				LS	
	C	k	1	55	75				L	
	C	k	2	75	100				LS	

Mode of Deposition

MT	Morainal Till
LA	Lacustrine
GF	Glacial Fluvial
GL	Glacio Lacustrine
AL	Aluvial

Slope Class

Aa	0-0.5%
Bb	0.5-2.0%
Cc	2-5%
Dd	5-9%
Ee	9-15%
Ff	15-30%
Gg	30-45%

Drainage Class

RA	Rapidly
WE	Well
MW	Mod. Well
IM	Imperfectly
PO	Poorly
VP	Very Poorly

Stoniness/Rockiness

X	Non
1	Slightly
2	Moderately
3	Very
4	Excessively
5	Exceedingly

Consistency

L- Loose
FR - Friable
F - Firm
VF - Very Firm

Depth to (cm):

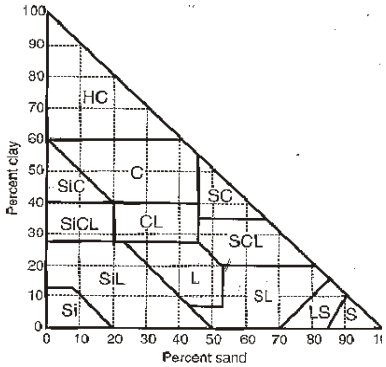
Bedrock	
Constricting Layer	
Carbonates	
Gley Colours	
Water Table	

Mottles

Horizon	Abun.	Size	Contrast

Abundance	Size	Contrast
F - Few	F - Fine	Faint
C - Common	M - Medium	Distinct
M - Many	L - Large	Prominent

NOTES: Heavier textured ck1 but keeping as brighton



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Prominent	0	≥4	≥4
	1	≥2	≥1
	2+	≥0	≥0

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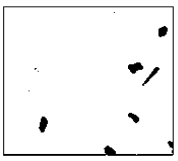

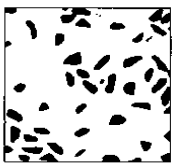

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Fine <5mm Medium 5 - 15mm Coarse >15mm

Appendix G

Land Use Notes

Land Use Survey Notes – April 30, 2019 – C19001 5075 Holt Rd, Clarington			
Weather	**Temperature**	**Cloud Conditions**	**Wind**
	11 ˚C	Partially Cloudy	4km/h West

Site No.	Type of Operation	Description of Operation
1	Industrial	Two pole barns on site. One is brand new. Not a livestock facility.
2	Hobby Farm	"Dean and Sandi Bradley and Family" Poor condition field stone bank barn. Barn is in poor condition, old roof, missing barn boards. Appears to be a retired dairy operation. Manure scraper on site, not active. Three beef cattle observed outside on site.
3	Retired Livestock Operation	Uncapped cement silo, old bank barn in poor/fair condition on site. Fence surrounding old pasture is in poor to fair condition. Talked with client who said they do not have horses and have not had livestock for many years.
4	Equestrian Operation	Large equestrian operation with riding stable. Talked with neighbour on site, six stalls on site, manure stored out back and removed 2/3 times a year by a landscaping company. Horses/donkey observed in paddocks.
5	Commercial	RV Storage area
6	Commercial	T & C small engine repair
7	Commercial	"Hampton Storage" Refurbished barns used as a commercial storage facility. Indoor and outdoor with camper/trailer storage.
8	Hobby Farm	Chickens with fresh eggs for sale, 20-30 hens observed on site. Grape field on site appear to be in production. Small greenhouse at back of property.
9	Orchard	Appears to a retired orchard. Mostly retired with some tree lefts at front of property.
10	Hobby Farm	Small hobby farm, One horse observed on site. 5-6 stables assumed to be present on site. Barn in good condition.
11	Hobby Farm	"Thee Egg Shack" Self-serve eggs on site. Old bank barn in fair condition, concrete silo with partially destroyed cap. One horse observed on site. Manure stored outside
12	Hobby Farm	Hobby horse farm. Small stable on site,

		fencing in good condition, Lean-to in paddock.
13	Recreational	"The Marksman Club" Gun Club adjacent to Subject Lands
14	Commercial	"Coffee Time"
15	Workshop Industrial	Livestock housing has been converted to a workshop. No longer part of an existing farm operation
16	Cash Crop Operation	"Windylea Farms" Old barn has been demolished/ abandoned house still standing. New structures built on site, as part of cash cropping operation adjacent new highway. Talked to Landowner, no livestock on site.
17	Implement Shed	One implement shed on site. Implement shed appears to have previously been part of livestock operation. Livestock has since been removed as part of highway expansion.
18	Commercial	"Kitchen and Bath showroom"
19	Commercial	"Thursty Pools" Sales, service, and installation
20	Commercial	Mixed commercial. Lindo Mexico, Subway, Stefano's
21	Commercial	"Nicholls Tirecraft Auto Centre Hampton"
22	Commercial	"Patty's Market" Appliance store

Appendix H

MDS Reports

Minimum Distance Separation I

C19001
Prepared By: Brett Espensen, Agricultural Technician, Colville Consulting Inc

Description: 5075 Holt Road Agricultural Assessment

Application Date: Friday, May 3, 2019

Municipal File Number:

Proposed Application: Other Type B land use
Type B Land Use

Applicant Contact Information
1559306 Ontario Limited

Location of Subject Lands
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 5, Lot: 20

Roll Number: 1817

Calculation Name: ***Site 10***
Description: Hobby Farm

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 4, Lot: 18
Roll Number: 18170100801970000000

Total Lot Size: 2.05 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Horses, Medium-framed, mature; 227 - 680 kg (including unweaned offspring)	8	8.0	186 m²

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V3. Solid, outside, no cover, >= 30% DM

Design Capacity (NU): 8.0

Potential Design Capacity (NU): 8.0

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.7	**X**	**160**	**X**	**0.7**	**X**	**2.2**	**=**	**172 m (566 ft)**	**TBD**

Storage Base Distance 'S'
(minimum distance from manure storage) (actual distance from manure storage)
172 m (566 ft) **TBD**

Calculation Name: ***Site 11***
Description: Hobby Farm

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 4, Lot: 20
Roll Number: 18170101300160000000

Total Lot Size: 24.8 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Horses, Medium-framed, mature; 227 - 680 kg (including unweaned offspring)	23	23.0	534 m²
Solid	Chickens, Layer hens (for eating eggs; after transfer from pullet barn), floor run	50	0.3	5 m²

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V4. Solid, outside, no cover, 18-30% DM, with covered liquid runoff storage

Design Capacity (NU): 23.3

Potential Design Capacity (NU): 46.7

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.7	**X**	**253.33**	**X**	**0.7**	**X**	**2.2**	**=**	**273 m (896 ft)**	**TBD**

Storage Base Distance 'S' (minimum distance from manure storage)	(actual distance from manure storage)
273 m (896 ft)	**TBD**

Calculation Name: ***Site 12***

Description: Hobby Farm

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 4, Lot: 21
Roll Number: 18170101300180000000

Total Lot Size: 5.12 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Horses, Medium-framed, mature; 227 - 680 kg (including unweaned offspring)	11	11.0	255 m²

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V4. Solid, outside, no cover, 18-30% DM, with covered liquid runoff storage

Design Capacity (NU): 11.0

Potential Design Capacity (NU): 22.0

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.7	**X**	**204**	**X**	**0.7**	**X**	**2.2**	**=**	**220 m (721 ft)**	**TBD**

Storage Base Distance 'S' (minimum distance from manure storage)	(actual distance from manure storage)
220 m (721 ft)	**TBD**

Calculation Name: ***Site 2***
Description: Hobby Farm

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 5, Lot: 22
Roll Number: 18170101301830000000
Total Lot Size: 17.61 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Beef, Feeders (7 - 16 months), Yard/Barn	103	34.3	431 m²

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V4. Solid, outside, no cover, 18-30% DM, with covered liquid runoff storage
Design Capacity (NU): 34.3
Potential Design Capacity (NU): 68.7

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.8	**X**	**287.75**	**X**	**0.7**	**X**	**2.2**	**=**	**355 m (1163 ft)**	**TBD**

Storage Base Distance 'S' (minimum distance from manure storage)	(actual distance from manure storage)
355 m (1163 ft)	**TBD**

Calculation Name: ***Site 3***
Description: Retired Livestock Operation

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 5, Lot: 20
Roll Number: 18170101301750000000
Total Lot Size: 4.05 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Horses, Medium-framed, mature; 227 - 680 kg (including unweaned offspring) [Livestock barn is currently unoccupied]	9	9.0	209 m²

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V3. Solid, outside, no cover, >= 30% DM
Design Capacity (NU): 9.0
Potential Design Capacity (NU): 9.0

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.7	**X**	**163.33**	**X**	**0.7**	**X**	**2.2**	**=**	**176 m (578 ft)**	**TBD**

Storage Base Distance 'S' (minimum distance from manure storage)	(actual distance from manure storage)
176 m (578 ft)	**TBD**

Calculation Name: ***Site 4***
Description: Equestrian Operation

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 5, Lot: 19
Roll Number: 18170101301580000000
Total Lot Size: 17.1 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Horses, Medium-framed, mature; 227 - 680 kg (including unweaned offspring)	6	6.0	139 m²

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V3. Solid, outside, no cover, >= 30% DM
Design Capacity (NU): 6.0
Potential Design Capacity (NU): 12.0

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.7	**X**	**173.33**	**X**	**0.7**	**X**	**2.2**	**=**	**187 m (613 ft)**	**TBD**

Storage Base Distance 'S' (minimum distance from manure storage)	(actual distance from manure storage)
187 m (613 ft)	**TBD**

Calculation Name: ***Site 8***
Description: Hobby Farm

Farm Contact Information
Not Specified

Location of existing livestock facility or anaerobic digester
Regional Municipality of Durham, Municipality of Clarington
DARLINGTON, Concession: 4, Lot: 18
Roll Number: 18170100801910000000
Total Lot Size: 14.3 ha

The barn area is an estimate only and is intended to provide users with an indication of whether the number of livestock entered is reasonable.

Manure Type	Type of Livestock/Manure	Existing Maximum Number	Existing Maximum Number (NU)	Estimated Livestock Barn Area
Solid	Chickens, Layer hens (for eating eggs; after transfer from pullet barn), floor run	3,796	25.3	353 m²

⚠ The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Existing Manure Storage: V3. Solid, outside, no cover, >= 30% DM

Design Capacity (NU): 25.3

Potential Design Capacity (NU): 50.6

Factor A (Odour Potential)		Factor B (Size)		Factor D (Manure Type)		Factor E (Encroaching Land Use)		Building Base Distance F' (minimum distance from livestock barn)	(actual distance from livestock barn)
0.7	**X**	**261.23**	**X**	**0.7**	**X**	**2.2**	**=**	**282 m (924 ft)**	**TBD**

Storage Base Distance 'S' (minimum distance from manure storage)	(actual distance from manure storage)
282 m (924 ft)	**TBD**

Preparer Information

Brett Espensen
Agricultural Technician
Colville Consulting Inc

Phone #1: 905-935-2161
Email: brett@colvilleconsultinginc.com

Signature of Preparer: _____ Date: _____
Brett Espensen, Agricultural Technician

Appendix I

Curriculum Vitae

COLVILLE CONSULTING INC.

SEAN M. COLVILLE, B.Sc., P.Ag.

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EDUCATION

B.Sc. Geology, Acadia University, 1986
Soil Science, University of Guelph, 1984

PROFESSIONAL AFFILIATIONS

Ontario Institute of Agrology
Agricultural Institute of Canada

POSITIONS HELD

2003 – Present	Colville Consulting Inc., St. Catharines, Ontario. President
2001 – 2003:	ESG International Inc., St. Catharines, Senior Project Manager/Office Manager
1998 – 2001:	ESG International Inc., Guelph, Senior Project Manager
1988 – 1998:	ESG International Inc., Guelph, Project Manager
1984 – 1988:	MacLaren Plansearch Ltd., Halifax, Nova Scotia, Soil Scientist
05/1982 - 09/1983:	Nova Scotia Department of Agriculture and Marketing, Nova Scotia, Assistant Soil Scientist

EXPERIENCE

Sean M. Colville, B.Sc., P.Ag., president of Colville Consulting Inc., established the firm in June of 2003 to provide consulting services for clients involving matters related to agriculture and the natural environmental. Sean has over 30 years of consulting experience which includes agricultural resource evaluation studies, soil survey and interpretation of agricultural capability, agricultural impact assessment and alternate site assessments, and soil and microclimatic rehabilitation/restoration projects. Sean has extensive experience interpreting agricultural land use policies involving development applications and settlement expansion proposals.

Sean is a Professional Agrologist (P.Ag.), and a member of the Ontario Institute of Agrology and the Agricultural Institute of Canada. Sean has been recognized by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) as an expert in the identification of Prime Agricultural Areas and in the interpretation of the Minimum Distance Separation requirements for livestock operations.

Sean has been qualified to present expert testimony before the Ontario Municipal Board, the Consolidated Joint Board the Assessment Review Board, Ontario Superior Court proceedings and the Normal Farm Practices Protection Board for projects involving land use planning matters as they relate to agriculture, impact assessment, resource evaluation and soil science.

Agricultural Impact Assessment, Alternative Site Studies, Minimum Distance Separation

Sean specializes in agricultural impact assessment and alternative site studies for development applications and urban boundary expansion proposals. His experience includes well over 100 agricultural impact assessments and soil surveys for a wide variety of projects including Class EAs for linear facilities, waste management facilities, municipal services, impact assessments for aggregate operations, residential, commercial, recreational, industrial and institutional developments. Many of these projects require the interpretation of agricultural land use policies, inventory and assessment of the agricultural resources, land use, land tenure, an assessment of conflict potential including determination of minimum distance separation requirements, identification of prime agricultural lands and areas, and interpretation of the agricultural priority of lands proposed for development.

Sean has been retained by both municipalities and private sector clients to prepare agricultural impact assessment for settlement area expansion proposals and the development of secondary plans. Sean has also been retained by municipalities to complete peer review studies of agricultural impacts assessments and minimum distance separation calculations for various development applications.

The list below provides some examples of the studies completed by Sean. The bolded bullets identify examples of settlement area expansion.

- Agricultural Impact Assessment, Milton (2018)
- Agricultural Impact Assessment for Port Colborne Quarries Inc. (2018)
- Agricultural Impact Assessment for Twenty Road East Group, Hamilton (2017)
- Agricultural Impact Assessment for Mayfield West Secondary Plan Update, Town of Caledon (2017)
- Agricultural Impact Assessment for the Book Road Land Owners Group, City of Hamilton (2016)
- Agricultural Impact Assessment for Schuyler Farms Limited, County of Norfolk (2015)
- Minimum Distance Separation for single family residence, Dundas, City of Hamilton (2015)
- Agricultural Impact Assessment & Comparative Analysis of Alternative Sites for Employment Land Options - Northumberland County (2015)
- Agricultural Impact Assessment and Alternative Site Assessment for North West Quadrant, Niagara Falls, Regional Municipality of Niagara (2014)
- Agricultural Impact Assessment for Smith Farm - Airport Employment Growth District, City of Hamilton (2014-15)
- Agricultural Alternate Site Study in Cavan-Monaghan Township for Brookfield Residential (2014)
- Agricultural Impact Assessment and Alternative Site Analysis for Angus Manor, Township of Essa, Simcoe County (2014)
- King Township Official Plan: Review and Update of Agricultural Policies, King Township (2014)
- Agricultural Impact Assessment for Vision Georgetown, Town of Halton Hills (2013-14)
- Agricultural Impact Assessment for Bolton Residential Expansion Study, Town of Caledon (2013-14)
- Agricultural Impact Assessment for Canadian Motor Speedway racetrack in Fort Erie (2007-2012)
- Agricultural Impact Assessment for multiple sites in City of Niagara Falls (2011)
- Agricultural Impact Assessment of the Zone 6 Reservoir and Feedermain, Class EA - Regional Municipality of Peel (2009)
- Agricultural Impact Assessment of the North Bolton Elevated Tank and Feedermain, Class EA - Regional Municipality of Peel (2009)
- Agricultural Impact Assessment of the Alloa Reservoir, Pumping Station and Feedermain, Class EA - Regional Municipality of Peel (2008)
- Urban Boundary Expansion – Mayfield West Phase II Secondary Plan Agricultural Impact Assessment – Town of Caledon (2008 - Present)
- Urban Boundary Expansion – South Albion/Bolton Community Plan Agricultural Impact Assessment – Town of Caledon(2009)
- Urban Boundary Expansion - Agricultural Screening Study for the Township of West Lincoln's Growth Management Study, Regional Municipality of Niagara (2007)
- Urban Boundary Expansion - Agricultural Studies for Niagara Gateway Estates, Town of Grimsby, Regional Municipality of Niagara (2003)
- Urban Boundary Expansion - Agricultural Impact Assessment and Alternative Site Study for Regional Official Plan Amendment #9 Secondary Plan – City of Hamilton (2003)
- Niagara Region Mid-Term Waste Disposal Alternatives Study (2003)

Soil Survey and Resource Evaluation

As a Pedologist (soil scientist), Sean is highly experienced in completing soil surveys, soil resource evaluations and assessing the productivity of soil for common field crops using the Canada Land Inventory system (CLI) of soil classification and for soil suitability for production of specialty crops using the system developed by the Ontario Ministry of Agriculture and Food. He has extensive experience interpreting the soil landscape, glacial landforms and soil forming processes; is skilled in the use of aerial photography for stereoscopic interpretation and identification of soil landforms for soil map production. Sean is recognized by the Ontario Ministry of Agriculture, Food and Rural Affairs as a Consulting Pedologist and a qualified soil scientist capable of preparing soil capability assessments based on the Canada Land Inventory (CLI) Soil Capability Classification for Agriculture (ARDA, 1965).

Sean has lead and participated in a number of large soil survey programs in Ontario, Nova Scotia and New Brunswick. Sean's soil survey experience includes:

- conducting well over 200 soil surveys of various size and scale to assess the soil capability for identification of prime and non-prime agricultural lands for agricultural impact assessments and other studies;
- conducting soil surveys along linear facilities to determine depth of topsoil and subsoil, assess soil capability along the route to determine baseline conditions and identify areas that pose limitations to construction;
- the preparation of soil maps, CLI maps and reports for solar farm applications to address the Ontario Power Authority's requirements for ground-mounted solar project on agricultural lands;
- conducting county level soil survey reports that included the delineation, evaluation and mapping of soils series and the assessment of the soil capability for selected areas in Cumberland County, Colchester County, Hants County and Kings County, Nova Scotia;
- conducting county level soil survey reports that included the delineation, evaluation and mapping of soils series and the assessment of the soil capability for selected areas in Westmoreland County, New Brunswick; and
- conducting soil surveys for paired watershed studies assessing the benefits and effectiveness of no-till cultivation compared to traditional methods in Oxford County, Ontario.

LEAR Studies

Sean is very familiar with Land Evaluation and Area Review (LEAR) methodologies and has prepared a LEAR study to identify Prime Agricultural Areas in the Town of Mono, County of Dufferin. Sean has also applied LEAR methodologies when completing alternate site studies to assist municipalities identify low priority agricultural lands for settlement area expansion purposes and to assist development proponents justify choice of location, to ensure that proposed settlement area expansion or proposed development applications is consistent with the Provincial Policy Statement.

Agricultural Rehabilitation and Monitoring

Sean has prepared a number of rehabilitation plans for the aggregate industry and for highway and pipeline construction projects. Sean also has experience assessing the economic impacts for compensation related to the temporary or permanent loss of use of agricultural land often associated with the construction of linear facilities. Specific examples agricultural rehabilitation and monitoring studies include:

- Development and implementation of a soil reclamation plan for TransCanada Pipelines. This involved an investigation as to the extent of contamination and debris along a pipeline easement, as well as an analysis of the soil quality, the level of degradation and the development of mitigation measures to restore the agricultural capability of the site for specialty crop production;
- Development of progressive agricultural rehabilitation plan for Vineland Quarry and Crushed Stone Limited's quarry expansion project in Vineland, Ontario. The rehabilitation plan included the restoration of a significant portion of the sites climate to a condition suitable for the production of grape and tender fruit trees;
- Prepared progressive agricultural rehabilitation plans for the expansion of LaFarge's Fonthill pit located on the Fonthill Kame. This area has special soil and microclimatic characteristics that make it suitable for the production of specialty crops. The rehabilitation plans considered both the soils and microclimatic conditions in the design in order to restore the site following extraction to conditions suitable for the production of specialty crops;
- Development of a progressive agricultural rehabilitation plan for Walker Brothers Quarries Ltd. quarry expansion project in Niagara Falls, Ontario. Also prepared and implemented the vegetation screening and naturalization concepts for which annual monitoring reports are prepared for review by the City of Niagara Falls and the Ministry of Natural Resources; and
- Soil and crop monitoring, and post construction monitoring of soil and crops for various TransCanada Pipeline, Union Gas, and Enbridge pipeline construction projects. Projects often included the development of restoration recommendations to improve soil conditions and crop yields.

Publications

Rees, H.W.; Duff, J.P.; Colville, S.; Soley, T. and Chow, T.L. 1995. Soils of selected agricultural areas of Moncton Parish, Westmoreland County, New Brunswick. New Brunswick. Soil Survey Report No. 15. CLBRR Contribution No. 95-13, Research Branch, Agriculture and Agri-Food Canada, Ottawa, Ont.

Rees, H.W.; Duff, J.P.; Soley, T.; Colville, S.; and Chow, T.L. 1996. Soils of selected agricultural areas of Shediac and Botsford parishes, Westmoreland County, New Brunswick. New Brunswick. Soil Survey Report No. 16. CLBRR Contribution No. 95-13, Research Branch, Agriculture and Agri-Food Canada, Ottawa, Ont. 127 pp. with maps.

Brett Espensen, B.A., EMAGP

EDUCATION

B.A. Honours, Major in Environmental Governance and Geography, University of Guelph, 2013
Graduate Certificate, Environmental Management and Assessment, Niagara College, 2014

POSITIONS HELD

May 2014 – Present	Colville Consulting Inc., St. Catharines, Ontario.
May – July, 2011-2013	PRT Growing Services Ltd

EXPERIENCE

Brett Espensen, Environmental and Agricultural Consultant at Colville Consulting Inc., has over 5 years of formal educational training and experience in Environmental Planning. Brett has completed Minimum Distance Separation (MDS) Requirements, Alternative Site Assessments, Agricultural Impact Assessments, and Environmental Impact Statements in his role as an Agricultural Consultant at Colville.

Through his education, Brett has gained a broad base knowledge of Environmental Planning and Management, which he has taken with him to his work with Mr. Sean Colville, P. Ag., at Colville Consulting. His work at Colville includes the interpretation of regional and local land use policies, creation and interpretation of land use maps, environmental protection policies, and species at risk regulations. He has participated in the completion of Agricultural Impact Assessments, Environmental Impact Studies, and the Ministry of Natural Resources Species at Risk permitting process. Brett has also been actively involved in the supervision of interns from the Environmental Management and Assessment Graduate Program at Niagara College. He has completed work both in the field—doing land use surveys—and in the office, through the preparation of reports and mapping.

Some Colville Consulting projects that Brett has been involved in include:

- Agricultural Impact Assessment of Activa Holdings in the Kitchener area, Region of Waterloo
- Agricultural Impact Assessment for Elle B Inc. in the Laurentian Valley area, Renfrew County
- Agricultural Impact Assessment for Mayfield West Phase 2 Secondary Plan Update, Town of Caledon
- Land Evaluation Study for Golder Associates Ltd., Region of Waterloo
- Agricultural Impact Assessment for Titan Trailers Inc., Delhi, Ontario
- Minimum Distance Separation (MDS I) Report - Dundas, Ontario
- Minimum Distance Separation (MDS I) Report - Stayner, Ontario
- Supervision of post-construction reclamation crews during vegetation remediation over TransCanada pipelines in the Region of Peel
- Environmental Impact Statement for proposed fuel station, City of Hamilton
- Acoustic Monitoring for Bat roosting identification, in the Vineland area, Regional Municipality of Niagara

ADDITIONAL QUALIFICATIONS AND TRAINING

- Brett has completed basic industrial Workplace Hazardous Materials Information System (WHMIS) training
- Extensively acquainted with the Occupational Health and Safety Act
- Valid Drivers Licence – Class G
- Standard First Aid Training