Agricultural Impact Assessment

Proposed Highway 7 Pit
3749 Highway 7 and 926 Sand Road
Township of Asphodel-Norwood
County of Peterborough

File no. 21100D

PREPARED FOR:
Drain Bros. Excavating Limited

August 2026

Your Vision

Designed | Planned | Realized

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1 Introduction

1.1 Overview

MacNaughton Hermsen Britton Clarkson Planning Ltd. (MHBC) has been retained by Drain Bros. Excavating Limited ('Drain Bros.') to complete an Agricultural Impact Assessment (AIA) for a proposed new Class A Pit above the ground water table on lands located at 3749 Highway 7 and 926 Sand Road in the Township of Asphodel-Norwood, County of Peterborough (i.e. "the subject lands").

The area proposed to be licenced is approximately 35.2 hectares (87 acres), with approximately 25 hectares (61.7 acres) proposed for extraction. The northern half of 3749 Highway 7 is under agricultural production and portions of 926 Sand Road appear to consist of fallow fields which are no longer under active agricultural production; no farm buildings are present on the subject lands. No agricultural improvements (e.g. random or systematic tile drainage or livestock fencing) have been installed on the subject lands. Surrounding land uses contain predominantly existing agricultural operations and natural features. There is an existing Sand Road Pit (Licence No. 3399) located east of the subject lands (see **Figure 1** of this report).

Drain Bros. intends to submit an application with the Ministry of Natural Resources (MNR) for a Class 'A' Licence, for a Pit Above Water under the Aggregate Resources Act, and Planning Act applications to permit aggregate extraction on the subject lands.

This report has been prepared to be consistent with the Province's Agricultural Impact Assessment (AIA) Guidance Document, released in January 2026 by the Ministry of Agriculture, Food and Agribusiness (OMAFA).

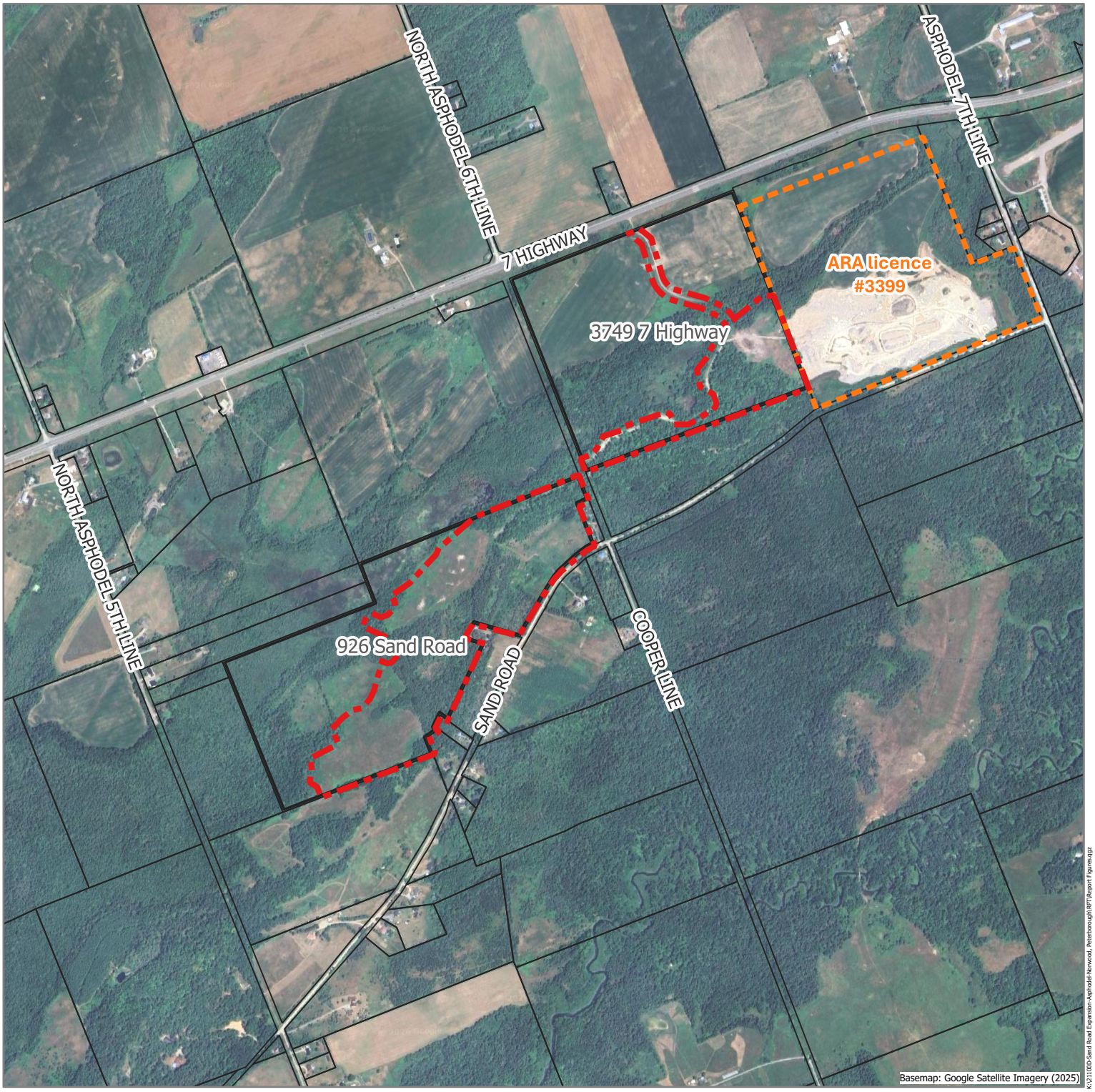


Figure 1 - Location Plan

Proposed Licence Boundary

Existing ARA Licence Boundary

Parcel Fabric

north

1.2 Data Collection and Review

In preparing the report, the following background materials at the provincial, upper tier and municipal levels were reviewed:

- Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas – Publication 851 (2014);
- Provincial Planning Statement (2024);
- Peterborough County Official Plan 1994 (June 2025 consolidation); and
- Township of Asphodel-Norwood Zoning By-law 2009-08 (2022 Consolidation).

A number of plans and reports were prepared in support of the applications and below is a list of reports that were also reviewed as part of the preparation of this Agricultural Impact Assessment:

- ARA Summary Statement & Planning Report;
- Natural Environment Report;
- Level 1 and 2 Water Report
- Traffic Impact Study;
- Soil Survey and Canada Land Inventory (CLI) Evaluation; and
- Aggregate Resources Act Site Plans.

In addition to the plans and reports that were specifically prepared in support of the ARA application, the following materials were also reviewed:

- 2021, 2016, and 2011 Census of Agriculture and OMAFA's Ontario business, agri-food, and farm data profile for Peterborough County;
- Soil data resource information including Ontario Soil Survey reports and mapping, the provincial digital soil resource database, Canada Land Inventory Agricultural Capability mapping, Soil Suitability information and mapping (for specialty crops), and information from on-site investigations;
- Crop Heat Units data from Agronomy Guide for Field Crops – Publication 811 (June 2009);
- Agriculture and Agri-Foods Canada (AAFC) Maps of current agroclimate conditions (2026);
- Aerial photography (historic and recent) with effective user scale of 1:10,000 or smaller;
- Agricultural Systems Portal (OMAFA);
- Evaluating Alternative Locations for Non-Agricultural Uses (OMAFA);
- AgMaps Application (OMAFA); and
- Make a Map: Natural Heritage Areas Application (Ministry of Natural Resources).

A land use survey was also conducted with additional information gathered from Google Satellite Imagery to gain a better understanding of the agricultural operations and activities in both the primary and secondary study areas. A summary of the land use survey is provided in Section 2.0 of this report. The potential for impacts will vary and mitigation is dependent on the type and sensitivity of the agricultural activities identified in the primary and secondary study areas.

1.3 Proposed Aggregate Extraction Operation

The subject lands are located on the south side of Highway 7 approximately 1 kilometre west of Norwood, Township of Asphodel-Norwood in Peterborough County (**Figure 1**). The subject lands are bounded to the north by Highway 7, beyond which are primarily agricultural uses, to the east by the existing Sand Road Pit, to the south by Sand Road, beyond which are woodlots and rural residential dwellings, and to the west by rural residential dwellings intermixed with woodlots. A non-provincially significant wetland is mapped on the subject lands and located to the north of the proposed extraction area. None of the area proposed for extraction is currently under agricultural production and no agricultural buildings or infrastructure are present within the proposed extraction area.

Drain Bros. is applying for a new Aggregate Resource Act (ARA) for a Class A Licence for a Pit Above Water on the subject lands. The proposed area to be licensed is 35.2 hectares (87 acres) with a limit of extraction area of 25 hectares (61.7 acres). The licensed area is proposed to be accessed from Highway 7, along the existing access driveway that provides access to the southern portion of 3749 Highway 7.

The lands are proposed to be rehabilitated to natural heritage end use. The proposed rehabilitation concept can be found in **Figure 2.**

The proposed Highway 7 Pit will have a tonnage limit of 350,000 tonnes per year. An operational entrance/exit is proposed north on Highway 7. The following hours of operation are proposed for the proposed pit:

- **Extraction and Shipping** will be permitted 6AM-7PM Monday to Friday.
- **Processing (crushing)** will be permitted 7AM-7PM Monday to Friday.
- No operations on Sundays and statutory holidays as defined in accordance with the Employment Standards Act.

Figure 2 - Rehabilitation Plan



- Licence Boundary
- Limit of Extraction
- Contours with Elevation (Metres above sea level (MASL))
- Public Road
- Internal Haul Road
- Driveway
- Watercourse (River/Stone)
- Disturbed Area
- Water Feature
- Wooded Area
- Wetland
- Monarch Habitat Cultural Meadow
- Pre-emptive Planting Adjacent to Wetlands
- Tributary 1 Planting Area
- Existing Licence Boundary
- Existing Limit of Extraction
- 120m Offset From Licence Boundary
- Parcel Fabric
- Fence (1.2m post & wire fence unless otherwise noted)
- Gate
- Building/Structure
- Proposed Final Grade
- Proposed Final Slope (Horizontal : Vertical)
- Grassland
- Woodland
- Reduced Setback (Area subject to a separate Site Plan Amendment to reduce the setback to 0 metres)
- Cross Sections (A1)

Data Source: Rehabilitation Plan from MHBC (June, 2026)

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1.4 Planning Policy Framework

Several key documents were reviewed as part of this Agricultural Impact Assessment to provide a comprehensive assessment of the policy framework from an agricultural perspective regarding the proposed pit. The following is review of the land use policy framework related to the subject lands.

1.4.1 Provincial Planning Statement, 2024

The Provincial Planning Statement (PPS) 2024 was released on August 20th, 2024, and took effect on October 20th, 2024. The new PPS integrates the 2020 Growth Plan and 2020 Provincial Policy Statement into a single planning document that is applicable province wide.

The PPS 2024 establishes the policy foundation for regulating the development and use of land in the province and provides policy direction on matters of provincial interest related to land use planning and development. It provides a vision for land use planning in Ontario that encourages an efficient use of land, resources and public investment in infrastructure. The PPS strongly encourages development that will provide long-term prosperity, environmental health and social wellbeing. This section provides an analysis of the PPS with respect to the request to aggregate resource extraction.

The PPS defines "Prime agricultural areas" as:

> "*areas where prime agricultural lands predominate. This includes areas of prime agricultural lands in associated Canada Land Inventory Class 4 through 7 Lands, and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. Prime agricultural areas may be identified by the Ontario Ministry of Agriculture and Food using guidelines developed by the Province as amended from time to time. A prime agricultural area may also be identified through an alternative agricultural land evaluation system approved by the Province.*"

Further, the PPS defines Prime agricultural land as:

> *"specialty crop areas and / or Canada Land Inventory Class 1, 2 and 3 lands, as amended from time to time, in this order of priority for protection."*

Further, the PPS defines specialty crop areas as:

> "*areas designated using guidelines developed by the province, as amended from time to time. In these areas, specialty crops are the predominantly grown, such as tender fruits (peaches, cherries, and plums), grapes, other fruit crops, vegetable crops, greenhouse crops, and crops from agriculturally developed organic soil, usually resulting from:*
>
> *a) Soils that have suitability to produce specialty crops, or lands that are subject to special climatic conditions, or a combination of both;*
>
> *b) Farmers skilled in the production of specialty crops; and*
>
> *c) A long-term investment of capital in areas such as crops, drainage, infrastructure and related facilities and services to produce, store, or process specialty crops."*

The lands and surrounding areas have not been identified or designated as a specialty crop area by the Province, County or local municipality and nor do the lands exhibit characteristics of a specialty crop production as defined by the PPS.

Peterborough County identifies prime agricultural areas and prime agricultural lands in the County within the Prime Agriculture designation (current in-effect Official Plan). In prime agricultural areas, the PPS permits agriculture uses, agriculture-related uses and on-farm diversified uses. In accordance with the PPS, all types, sizes and intensities of agricultural uses and normal farming practices are promoted and protected in prime agricultural areas.

Policy 4.3.5.1 of the PPS, 2024 permits the extraction of mineral aggregate resources as a non-agricultural use in prime agricultural areas. Policy 4.3.5.2 of the PPS requires that:

> *Impacts from any new or expanding non-agricultural uses on the agricultural system are to be avoided, or where avoidance is not possible, minimized and mitigated as determined through an agricultural impact assessment or equivalent analysis, based on provincial guidance.*

Relevant to the proposed pit, Policy 4.5.4 provides:

1. *In prime agricultural areas, on prime agricultural land, extraction of mineral aggregate resources is permitted as an interim use provided that:*
    a. *impacts to the prime agricultural areas are addressed, in accordance with policy 4.3.5.2; and*
    b. *the site will be rehabilitated back to an agricultural condition.*

Policy 4.5.4 permits the extraction of mineral aggregate resources as an interim use in prime agricultural areas on prime agricultural land, requires rehabilitation back to an agricultural condition, and requires preparation of an Agricultural Impact Assessment to demonstrate that impacts to the prime agricultural areas are addressed.

Based on the current County Official Plan, only the existing access road and a small portion of the northeastern corner of the proposed licenced area are considered a part of the prime agricultural area. Based on the Soil Survey prepared by DBH, the proposed limit of extraction area comprised no CLI class 1 to 3 soils and would not be considered prime agricultural land based on the PPS definition. Further, the access road is pre-existing and would not represent a new agricultural impact generated by the proposed pit and extraction is not proposed within this area. Provided this, no agricultural rehabilitation is required based on Provincial policy.

1.4.2 Peterborough County Official Plan 1994

The Peterborough County Official Plan came into effect in 1994 with the most recent consolidation dated June 2025. The County Official Plan serves as the upper tier Official Plan for the Township of Asphodel-Norwood. The County Official Plan designates the proposed pit 'Prime Agriculture', 'Rural', 'Environmental Constraint Area' and 'Extractive Industrial' and identifies portions of the site proposed for extraction as an 'Aggregate Resource Area'. The area proposed to be extracted is designated 'Rural' and 'Extractive Industrial' (**Figure 3** – County Official Plan Schedule A2). The area proposed to be licenced includes the lands to be extracted as well as the proposed internal access route to the

operational entrance/exit on Highway 7; this route is on lands designated 'Prime Agricultural'. The focus of this Agricultural Impact Assessment is the relevant agricultural policies of the Official Plan. The Planning Report provides an analysis of the other policies of the in-effect Official Plan.

Section 4.1.3.3 of the County Official Plan *permits mineral aggregate extraction as an interim use on prime agricultural land in prime agricultural areas, provided that the licenced area will be rehabilitated so as to restore substantially the same areas and same average soil quality for agriculture*. As provided in Section 4.1 of this report, the proposed pit will not remove prime agricultural lands under active agricultural production. Although the access road is within a prime agricultural area, the road is pre-existing and will continue to be required following the rehabilitation of the pit to access the southern portion of 3749 Highway 7.

1.4.3 Asphodel-Norwood Zoning By-Law No. 2009-08

The subject lands are zoned Rural (RU), Environmental Protection (EP), and Agriculture (A) in the Asphodel-Norwood Zoning By-Law (**Figure 4**). The northern portion of the subject lands which is not within the proposed extraction area is zoned Agriculture. A zoning by-law amendment is required to permit the proposed extractive use of the subject lands.

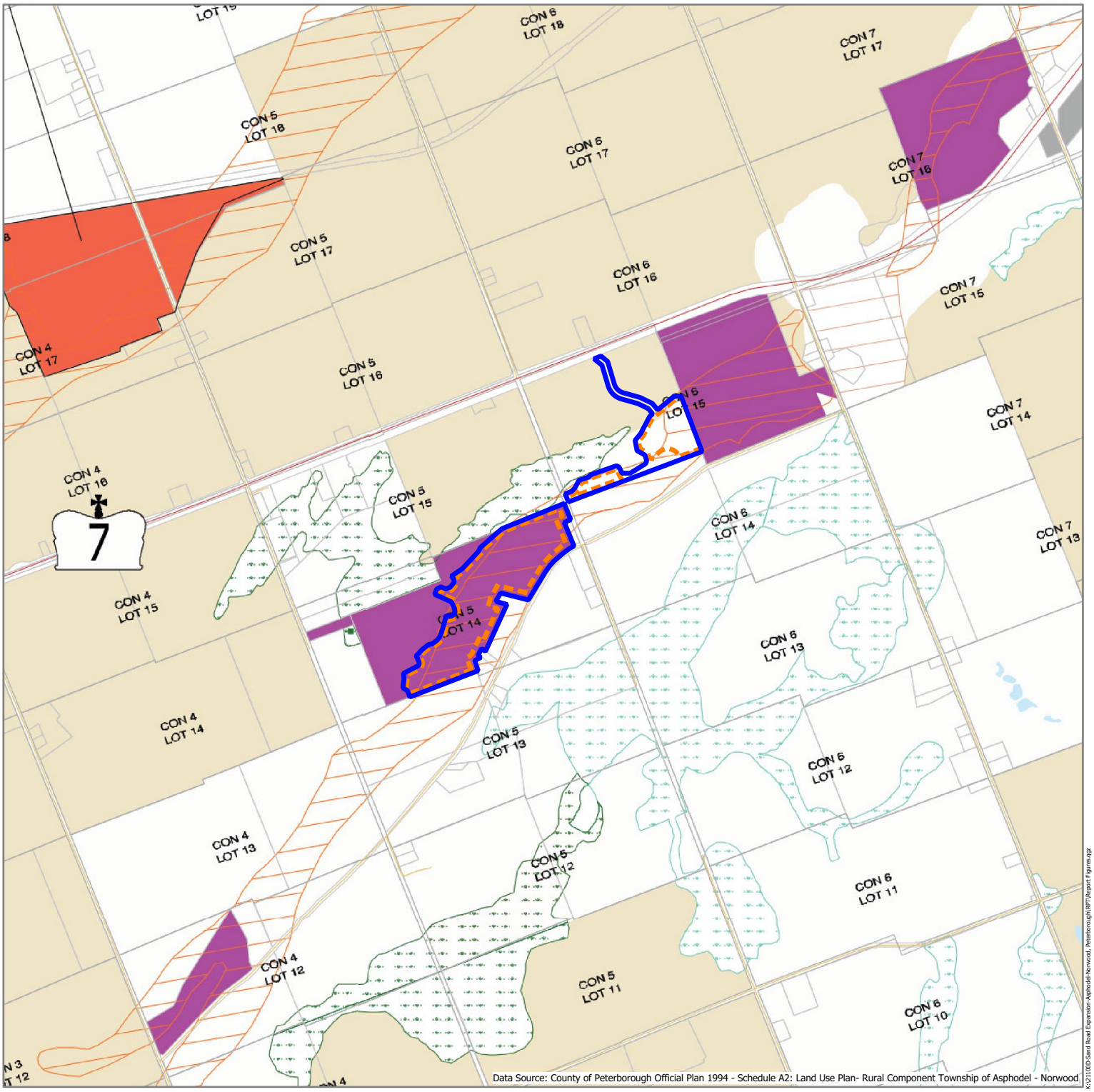


Figure 3 - County of Peterborough Official Plan 1994 - Schedule A2 Land Use Plan

Proposed Licence Boundary

Proposed Limit of Extraction

- ANSI Provincial
- ANSI Regional
- Environmental Constraint Area
- Extractive Industrial
- Aggregate Resource Area
- Hamlet Area
- Lakeshore Residential
- Prime Agriculture
- Provincially Significant Wetland
- Recreational Commercial
- Rural
- Trailer Park
- Waste Management Area

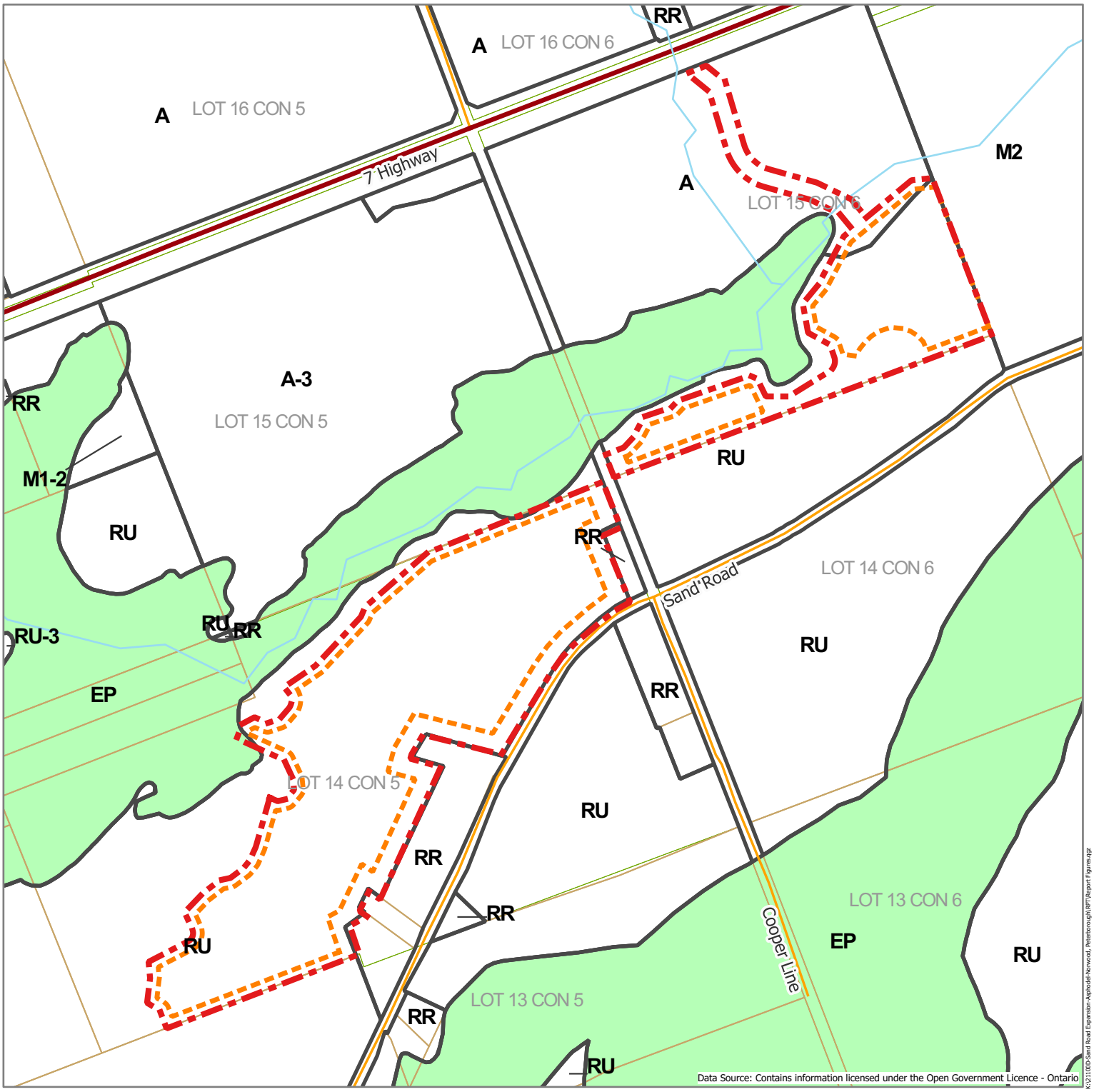


Figure 4 - Township of Asphodel-Norwood Zoning By-Law # 2009-08

Proposed Licence Boundary **Proposed Limit of Extraction**

north

Agricultural	**A**
Environmental Protection	**EP**
Extractive Industrial	**M2**
Rural Residential	**RR**
Rural	**RU**

1.5 Purpose of the Study

The purpose of this Agricultural Impact Assessment is to evaluate potential impacts on agriculture from the proposed aggregate extraction operation and to identify mitigation measures to lessen these impacts to the extent feasible. Furthermore, this report is intended to provide recommendations for mitigation of potential impacts on the surrounding agricultural system.

The report has been completed by qualified professionals, including Registered Professional Planner (RPP) certified by the Ontario Professional Planners Institute (OPPI), and an Articling Agrologist with the Ontario Institute of Agrologists (OIA). Full curriculum vitaes for both contributing authors are provided in Appendix B.

As part of this AIA, surrounding agricultural land uses, operations, and structures on properties within 1.5 kilometres of the subject lands have been documented to assess the potential impact from the proposed aggregate operation on the agricultural uses/operations within the surrounding area and determine the extent of mitigation that may be required.

Furthermore, a soil survey and Canada Land Inventory (CLI) Evaluation was completed by DBH Soil Services Inc. to document the existing soil conditions and provide a more detailed assessment of the Canada Land Inventory (CLI) classification for the soil resources. Baseline information about the soils provides an interpretation of the agricultural capability of the soil to produce various types of crops as well as provide useful information to assess impacts on soil resources and inform the final rehabilitation.

2 Study Area

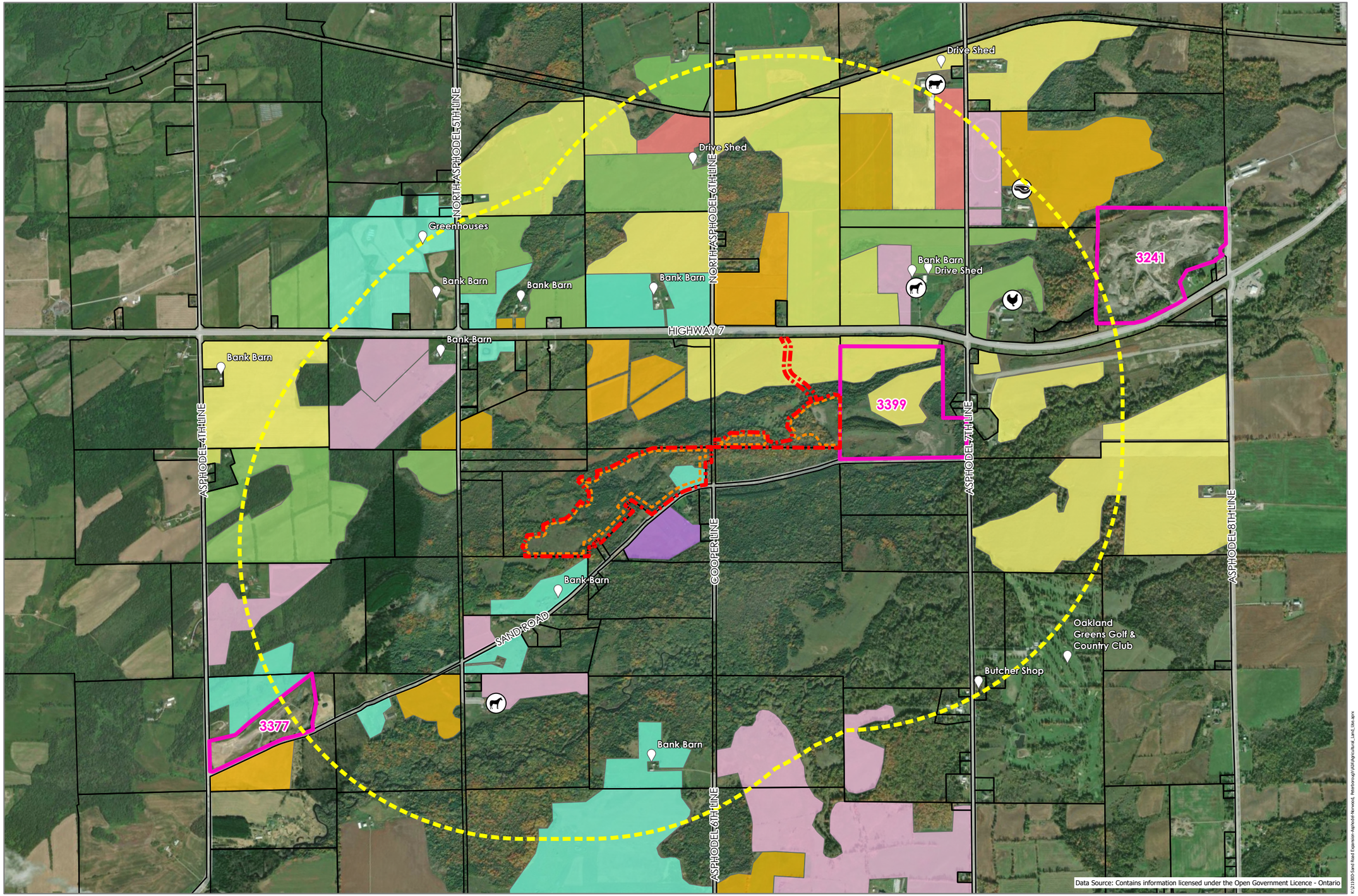
The agricultural land assessment was carried out based on a study area comprised of a 'Primary Study Area' and 'Secondary Study Area'. The Primary Study Area is comprised of the subject lands within the proposed area to be licensed that will be directly affected by aggregate extraction. The secondary study area encompasses a radius of 1.5 kilometers from the subject lands that has the potential to be directly and indirectly impacted by the proposed aggregate extraction operation. A plan identifying the adjacent properties, existing crops, and existing barns within the study area is included as **Figure 5** of this report. The inventory of existing agricultural land uses, cropping practices and structures is based on observations made during a site visit, review of air photography, and review of AAFC's 2023 Annual Crop Inventory. A review of 2021, 2016, and 2011 Census of Agriculture data was also undertaken to confirm if the Study Areas are representative of agricultural production patterns and livestock types for the broader region.

2.1 Primary Study Area

Based on the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) 'Agricultural Impact Assessment (AIA) Guidance Document' (herein referred to as 'OMAFRA AIA Guidelines'), the primary study area when conducting an Agricultural Impact Assessment for mineral aggregate resource extraction consists of the proposed license area and lands within 120 metres of the licenced area.

As shown on **Figure 1**, the predominant land use within primary area consists of extractive industrial, natural heritage system, and cash crops. The northern part of 3749 Highway 7 is planted with corn. This portion of the subject lands is excluded from the proposed extraction area but is traversed by the proposed internal access route to the operational entrance/exit on Highway 7. There is no significant agricultural activity in the proposed extraction area with only one area of fallow land observed during site visit. Agricultural uses within the primary study area consist of corn, hay, fallow, and nursery and tree production. Additionally, there is no visible sign of a barn, or extensive agricultural improvements to the lands or structures (e.g. new fencing, tile drainage) within the primary study area.

Figure 5 -Agricultural Land Use



- Proposed Pit (Primary Study Area)
- Proposed Extraction Area
- Secondary Study Area (1.5km)
- Existing ARA License
- Beef cattle ranching and farming, including feedlots
- Chicken egg production
- Dairy cattle and milk production
- Horse and other equine production
- Corn
- Fallow
- Hay
- Nursery and tree production
- Pasture
- Soybean
- Wheat

2.1.1Canada Land Inventory (CLI) Soil Capability for Agriculture

The CLI system is the recognized system in Ontario for classifying areas with mineral soils according to their inherent capability for growing common field crops (corn, wheat, soybeans, oats, barely, perennial forest crops). CLI emphasizes the inherent capability of an area for field crops and is an interpretive classification system.

The 7 different capability classes indicate the general capability of the soil for growing common field crops (ex. 3FM). A description of these classes is provided below (those in bold are most relevant to this report):

- 1 – Soils in this class have no significant limitations in use for crops.
- 2 – Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.
- **3 – Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.**
- 4 – Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.
- **5 – Soils in this class gave very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.**
- **6 – Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.**
- 7 – Soils in this class have no capacity for arable culture or permanent pasture.
- O – Organic Soils (not placed in capability classes).

The 13 different capability subclasses indicate the primary type of limitation or hazard for growing common field crops (ex. 3FM). A description of these subclasses is provided below (those in bold are most relevant to this report):

- C – Adverse climate
- D – Undesirable soils structure and/or low permeability
- E – Erosion
- F – Low fertility
- **I – Inundation by streams or lakes**
- M – Moisture limitations
- N – Salinity
- P – Stoniness
- R – Consolidated bedrock
- **S – Combination of subclasses**
- **T – Topography**
- W – Excess Water
- X – This Subclass is comprised of soils having a limitation resulting from the cumulative effect of two or more adverse characteristics

Provincial mapping identifies portions of the subject land as containing Canada Land Inventory (CLI) Classes of 3T, 3ST, 5I, and 6T soils (**Figure 6**). Class 3T soils have **moderately severe limitations** that restrict the range of crops or require special conservation practices due to **topography (T)**. Class 3ST soils also have **moderately severe limitations** caused by a **combination of factors (S), including topography (T)**. Class 5I soils exhibit **very severe limitations** that confine them primarily to perennial forage crops, though improvements are still feasible, because they are limited to **inundation (I) by streams or lakes**. Finally, Class 6T soils can produce only perennial forage crops, with no feasible improvements, as a result of **severe topographical constraints (T).**

According to DBH (**Figure 7**) the onsite soil survey identified five soil series. The soil series were identified as Bottom Land, Cramahe Gravelly Sandy Loam, Emily Loam, Lyons Loam, and Otonabee Sandy Loam. A single miscellaneous soil unit was also identified as Disturbed Soils. The following provides information on each soil series:

- Bottom Land is described as poorly drained soil that developed on recent alluvial deposits and includes areas such as river/stream flood plains. This soil may be comprised of variable soil textures. Bottom Land soils are classified as **CLI Class 5I**.
- Cramahe Gravelly Sandy Loam is described as well-drained calcareous gravelly outwash. This soil developed in poorly sorted gravelly materials deposited in kames and eskers. Slopes can exceed 25 percent. The B horizons are gravelly and cobbly sandy loam. Cramahe Gravelly Sandy Loam soils are considered as **CLI Class 5T and 6T**.
- Emily Loam is described as the imperfectly drained member of the Otonabee soil catena. This soil developed from calcareous loam and sandy loam parent materials. This soil occurs on gently sloping/undulating areas along the flanks of drumlins. Emily loam soils are considered **CLI Class 1 and 2T and 3T**.
- Lyons Loam is described as the poorly drained member of the Otonabee soil catena. This soil developed from calcareous loam and sandy loam parent materials. This soil occurs in depressional areas near Otonabee soils, on the low areas between drumlins or morainic ridges. Lyons Loam soils are considered as **CLI class 5W**.
- Otonabee Sandy Loam is described as the well-drained member of the Otonabee soil catena. This soil developed from calcareous loam and sandy loam parent materials. The Otonabee landform *is strongly drumlinized* (Soils of Peterborough) and may be stony in some areas. Otonabee Sandy Loam soils are considered **CLI Class 1 and 5T**.
- Disturbed Soils are described as soils that have been modified through human activities that effectively remove or mix the soil horizons. For the purpose of this soil survey, Disturbed Soils are associated with the wayside pit area in the southeast portion of the parcel. It appears that soil in this area has been removed for the purposes of accessing the underlying gravel and sand materials. Disturbed soils are considered as **Not Rated**.

According to the *Guidelines for Application of the Canada Land Inventory in Ontario* the DBH identified the CLI subclassification on the Study Area as follows:

- Subclass I – Inundation by Streams or Lakes
- Subclass I denotes soils subject to periodic flooding by streams and lakes which causes crop damage or restricts agricultural use
- Subclass T – Topography

- Subclass W - Excess Water

According to DBH the Study Area is comprised approximately 43.9 percent CLI class 1 – 3 soils, with CLI class 1 of approximately 27.1 percent and CLI class 2 of approximately 16.8 percent. The remainder of the Study Area is comprised of approximately 47.4 percent CLI class 5, 4.4 percent CLI class 6, and 4.4 percent Not Rated lands.

The Soil Survey revealed that 9% of the proposed Licence Area consists of CLI Class 1 and 2 soils, primarily associated with the existing access road to Highway 7. The remaining 91% of the Licence Area, which is proposed for extraction, does not fall within these high-quality soil classifications.

Table 1 – Canada Land Inventory and Soil Survey

Canada Land Inventory Class (CLI)	Study Area (ha/percent occurrence)	Proposed Licence Area (ha/percent occurrence)	Proposed Limit of Extraction Area (ha/percent occurrence)
Class 1	10.5/27.1	0.4/4.4	-
Class 2	6.5/16.8	0.5/4.6	-
Class 3	-	-	-
Class 4	-	-	-
Class 5	18.4/47.4	6.6/63.5	3.6/58.0
Class 6	1.7/4.4	1.4/13.6	1.0/18.2
Class 7	-	-	-
Not Rated (Disturbed and Organic soil)	1.7/4.4	1.4/13.8	1.4/23.8
Totals	38.8/100	10.2/100	6.0/100

Hoffman productivity Index (Soil Productivity Rating)

The Hoffman Productivity Index (HPI) is a tool that was published in Agricultural Rehabilitation and Development Administration (ARDA) Report No. 4 *The Assessment of Soil Productivity for Agriculture* and is used to relate the productivity of lands to the CLI soil capability. These indices are also referred to as the Soil Productivity Index and are used to calculate and assign a parcel or polygon a single value which represents the overall productivity of that parcel or polygon. The single value is derived from the sum of the percent occurrence of each CLI Soil Capability Class on the parcel or within the polygon multiplied by the productivity index corresponding to the soil class.

Table 2 – Soil (Hoffman) Productivity Rating and Equivalent CLI Class

	Soil (Hoffman) Productivity Rating	Corresponding CLI Class
Study Area	0.57	4
Proposed License Area	0.31	5
Proposed Limit of Extraction	0.22	6

The calculated Soil Productivity Rating for the Study Area was 0.57 or a CLI class 4 equivalent, for the proposed license area is 0.31 or a CLI class 5 equivalent, and for the proposed limit of extraction area is 0.23 or a CLI class 6 equivalent.

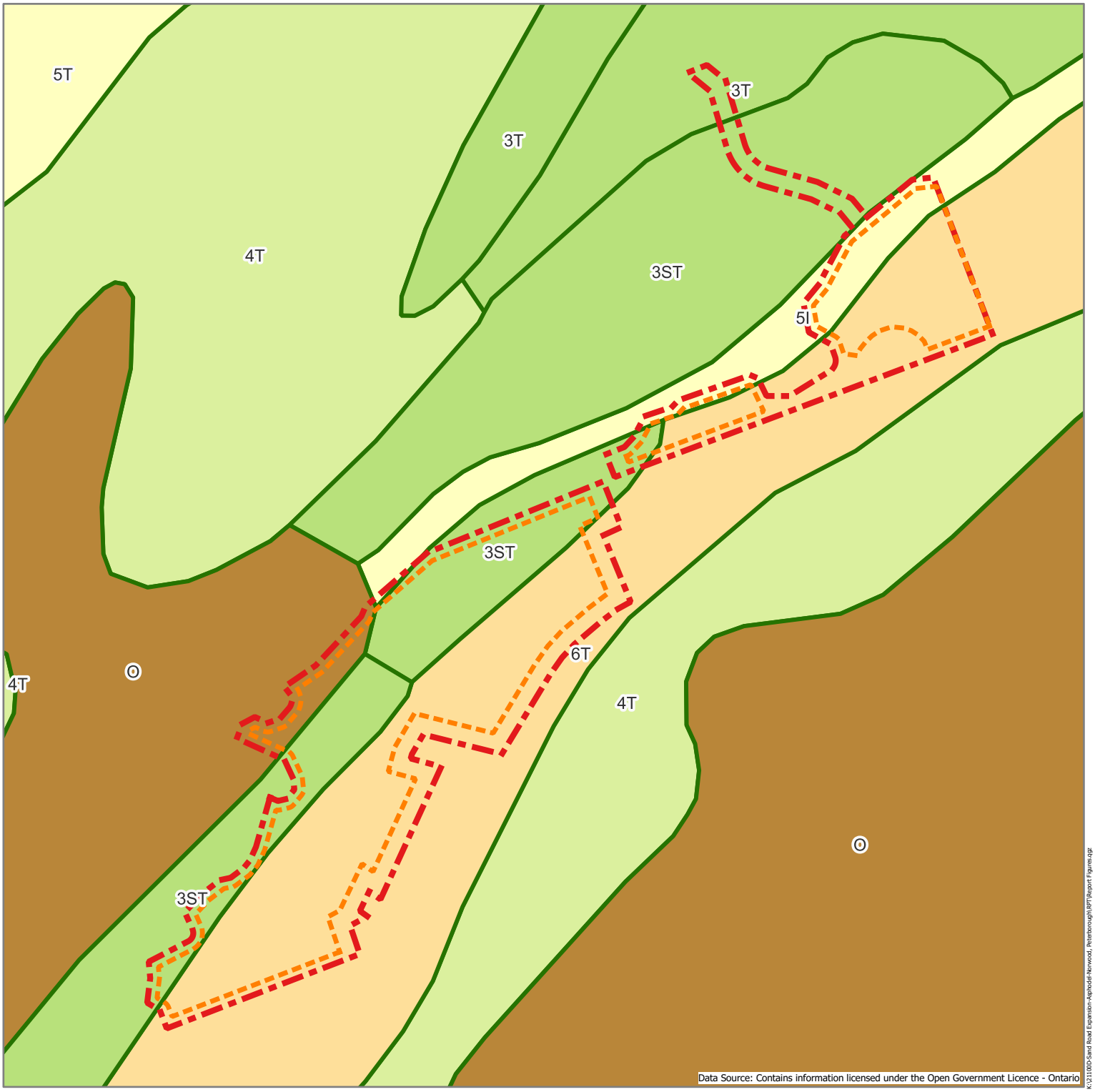


Figure 6 -Canada Land Inventory Soil Map

- Proposed Licence Boundary
- Proposed Limit of Extraction
- Soil Survey Complex
- Class 3
- Class 4
- Class 5
- Class 6
- Organic

north

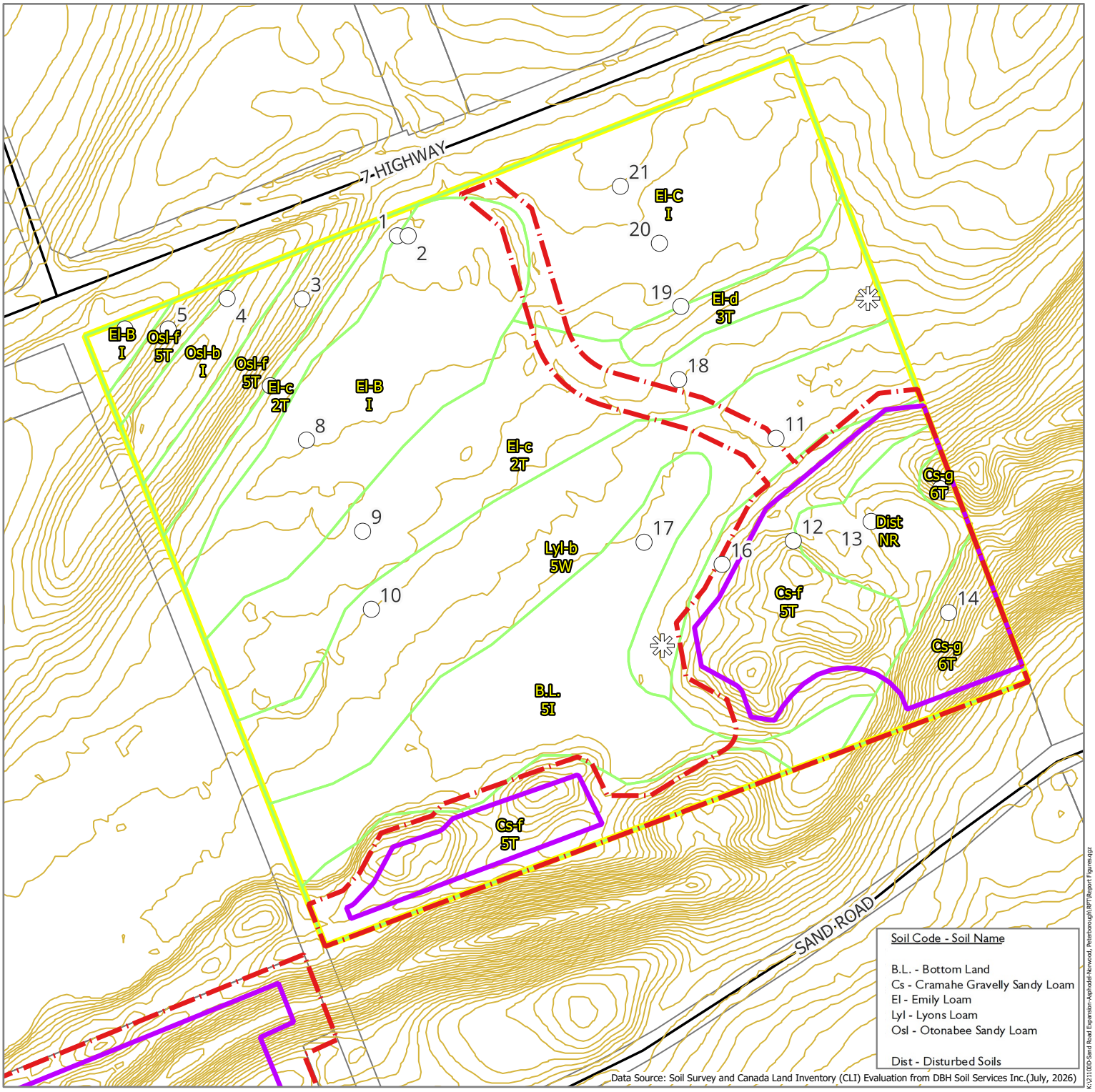


Figure 7 -DBH Detailed Soil Survey

- Hunt Blind
- Soil Inspection Location
- Contour Lines (MHBC)
- Roads (MNRF)
- Parcel Data (County of Peterborough (CoP))
- Proposed Licence Boundary
- Proposed Limit of Extraction
- Soil Polygon Boundary
- Additional Lands owned by the Applicant

Soil Code — Slope Code
Lyl-b
5W
CLI Class — CLI Subclass

CLI Subclass Limitation
I - Inundation
T - Topography
W - Excess Water

Slope Class
Aa = 0.0 - 0.5%
Bb = 0.5 - 2.0%
Cc = 2.0 - 5.0%
Dd = 5.0 - 9.0%
Ee = 9.0 - 15.0%
Ff = 15.0 - 30.0%
Gg = 30.0 - 60.0%
Slope length < 50 m
Slope length > 50 m

north

2.2 Secondary Study Area

According to the OMAFA AIA Guidelines, the secondary study area for non-agriculture uses should include those lands which may be impacted with proposed development. At a minimum, the secondary study area should include lands adjacent to the primary study area but also extend beyond those lands to fully assess the potential impact from the proposed non-agricultural use. It is important that the secondary study area encompass enough area to allow for the assessment of different types of impacts (e.g., agricultural, *agri-food network*, hydrogeological, noise, transportation).

For the purposes of this assessment, a 1500 metre radius Secondary Study Area was selected to capture the potential impact area. Land uses within this area is minimally related to active farming systems.

2.2.1Land Use Overview

As shown on **Figure 5**, the predominant land use within the secondary study area consists of a mix of agriculture (cash crops and livestock), natural heritage system. North of the subject lands is Highway 7 and further North there are typical cash crop and livestock production system, as well as east and west of the subject lands. South of the subject land is Sand Road and further south there are natural heritage features, consisting mainly of provincially significant wetlands and unevaluated wetlands. Surrounding crops typically include corn, soybean, wheat, pasture, and hay farming, according to the roadside site visit. A detailed review of livestock operations within the secondary study area is included as **Appendix A** – Secondary Study Area Review.

Based on the roadside site visit, as well as satellite and aerial imagery, the agricultural lands within the primary and secondary study areas reflect typical cropping practices common throughout southern and central Ontario, including soybean-corn rotations, wheat and hay production. No specialized cropping practices or equipment were observed or are documented within the secondary study area. There is one supportive agricultural use/facility (Hilts Butcher Shop) which supports the overall agricultural system within the secondary study area. The butcher shop is located near the southeastern boundary of the secondary study area.

There are five livestock operation in the secondary study area (**Figure 5**). These operations are described in more detail in **Appendix A** and consist of one beef cattle operation, three equine facilities, one poultry operation and one dairy operation.

Overall, the secondary study area is representative of normal livestock and cropping practices for this area.

2.2.2 Census of Agriculture, Agri-Food and Farm Data Profile for the County of Peterborough

The 2021, 2016, and 2011 Census of Agriculture and OMAFA's Ontario business, agri-food, and farm data profile for Peterborough County were reviewed to provide an overview of agricultural production patterns and parcel size in the County. Additionally, North American Industry Classification System (NAICS) data for 2011, 2016, and 2021 were utilized to determine trends in agricultural industry classification (farm types) within the County.

In terms of parcel size, in 2021 most farms (31.05%) were within the 70–129.99-acre farm size, followed by 19.93% of farms falling in the 10-69.99-acre range[1]. The amount of land in crop production has decreased since 2011[2] from 117,392 acres to 106,590 acres in 2021[3], representing a decrease in cropland of 9.02%.

The most common type of crops, vegetables, trees, and greenhouse production in the Peterborough County is "other crop" farming (50.6%), predominantly hay farming (37.4%), all other miscellaneous crop farming (9.23%), maple syrup and products production (2.37%), and fruit and vegetable combination farming (1.58%)[4]. Other crop farming declined over the last 10 years with a 37.6% decrease in the number of other crop farms from 2011 to 2021[5]. The next most common farm type in the County is oilseed and grain farming which constituted 38.5% of total crops, vegetables, trees, and greenhouse production farms in 2021, 14.77% of which was soybean farming, 11.34% was other grain farming, 8.44% was corn farming, 3.43% was wheat farming, and 0.52% dry pea and bean farming[4]. Oilseed and grain farming has experienced a 20.66% increase in the number of farms over the last 10 years[5]. Overall, the large amount of hay, soybean, corn and other grain farming within the primary and secondary study area is reflective of agricultural patterns throughout Peterborough County.

In terms of livestock, cattle ranching and farming comprised 36.73% of total farms (of which 88.95% of farms were beef cattle ranching and farming and 11.04% dairy cattle and milk production) in Peterborough County[4]. Using these metrics, cattle ranching and farming has exhibited a 4.22% decrease over the last 10 years[5]. Six livestock production farming operations were observed within the secondary study area. Other animal production comprised 11.7% of farms within the County, primarily horse and other equine production (59.4%) followed by animal combination farming (29.7%)[4].

Based on our observations, the agricultural activities within the primary and secondary study areas appear to be indicative of broader agricultural trends in Peterborough County. The surrounding crops include typical cash crops such as soybean, corn, wheat, as well as hay. Surrounding livestock includes beef cattle ranching and farming, horse and other equine production, chicken egg production, and dairy cattle and milk production. Both the Primary and secondary study areas are representative of normal agricultural production for this area and do not consist of specialized farming practices or specialty crops.

[1] Table 32-10-0232-01 Farms classified by total farm area, Census of Agriculture, 2021
[2] Table 32-10-0406-01 Land use, Census of Agriculture, 2011 and 2016, inactive
[3] Table 32-10-0249-01 Land use, Census of Agriculture, 2021
[4] Table 32-10-0231-01 Farms classified by farm type, Census of Agriculture, 2021
[5] Table 32-10-0403-01 Farms classified by farm type, Census of Agriculture, 2011 and 2016, inactive

2.2.3 Microclimate for Specialty Crop Production

Two sources were reviewed as part of this assessment to evaluate Crop Heat Units ('CHU') for the subject lands. CHU is a key climatic indicator used to assess whether a location is suitable for the production of specialty crops, including vegetables and orchards. The CHU index was originally developed for field corn and has been applied in Ontario for over 30 years. It is based on the total accumulated crop heat units during the frost-free growing season, with higher CHU values indicating longer growing seasons and greater potential for producing a wider range of crops.

It is important to note that while CHU analysis provides insight into the climatic potential for specialty crop production, the identification and protection of specialty crop areas is ultimately determined through provincial, regional, and municipal planning designations. As such, climatic suitability alone does not justify the designation of lands as a specialty crop area.

The first source reviewed was the OMAFA Agronomy Guide for Field Crops – Publication 811 (June 2009). The CHU ratings are based on the total accumulated crop heat units for the frost-free growing season in each area of the province. CHU averages range between 2500 near North Bay to over 3000 near Windsor. The higher the CHU value, the longer the growing season and greater are the opportunities for growing value crops. According to DBH, the subject lands are located within the 2700-2900 average accumulated Crop Heat Units (CH-MI) and as such, the lands are not subject to special climatic conditions. Given the typical climatic conditions, there are limited opportunities for growing speciality crops, and therefore, the subject lands have not been identified as a specialty crop area in the County of Peterborough Official Plan and do not meet the criteria as identified by the Province Despite the relatively high CHU, the lands have not been identified as a specialty crop area in any applicable planning documents (**Figure 8**).

The second source reviewed was the Agriculture and Agri-Food Canada ('AAFC') Science and Technology Branch Crop (Corn) Heat Unit mapping, which provides more recent and dynamically updated data. Based on this source, the subject lands are located within an area with approximately 3,207 to 3,455 average accumulated CHU, indicating a climate that is well suited for specialty crop production, including vegetables and orchards such as apples, plums, and peaches (**Figure 9**).

The discrepancy between the two sources is attributable to the age of the first dataset and the effects of climate change over time, as well as the start date of crop heat unit measurements. The OMAFA publication dates from 2009, whereas the AAFC CHU data are updated annually, with current information available through 2025. As well, OMAFA CHU data is measured from a May 1 start date and AAFC from an April 1 start date. Observed trends in agricultural production, including the expansion of wineries, vegetable operations, and orchards into higher latitudes, support the reliability of the more recent AAFC data.

In conclusion, while current CHU data from Agriculture and Agri-Food Canada indicate that the subject lands are climatically capable of supporting specialty crop production, it is important to emphasize that the lands are not designated as Specialty Crop Areas under provincial, regional, or municipal planning policies. Accordingly, although specialty crop production may be technically feasible based on updated CHU information, the subject lands do not function as specialty crop lands from a policy perspective.

2.2.4 Improvements for Agriculture

Agricultural uses within the subject lands (primary study area) and secondary study area consist of typical cash crop production such as corn, soybean and hay and fallow lands. There are not any agricultural building and structure on the primary study area. Our review of the AgMaps indicates that there is systematic and random tile drainage to the east, southeast, and north of the subject lands within Secondary Study Area (indicative of the poor drainage qualities of the soils in this area). No other specialized cropping practices or equipment were observed or are documented within the secondary Study Area.

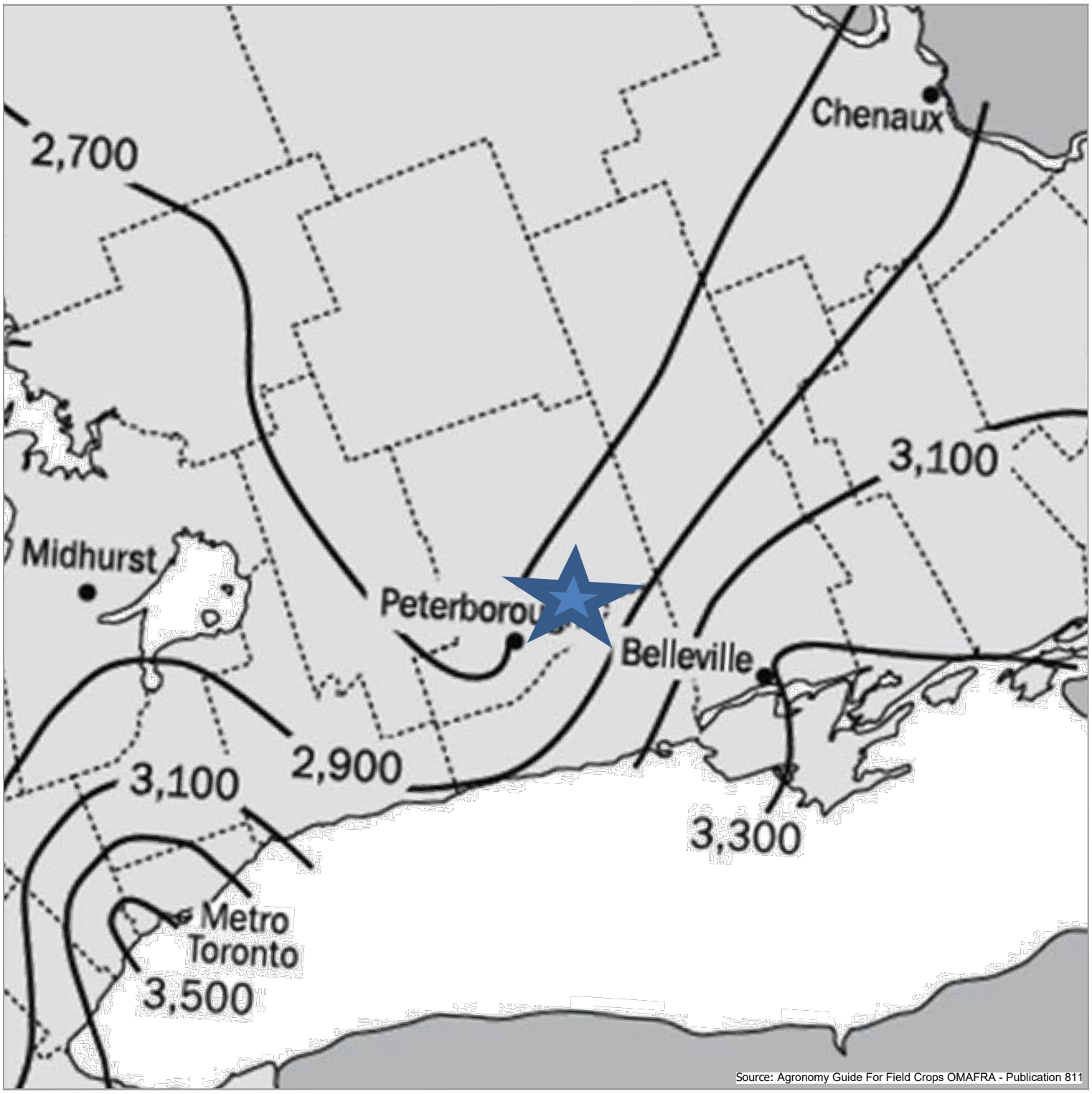


Figure 8 - Crop Heat Units

Subject Lands

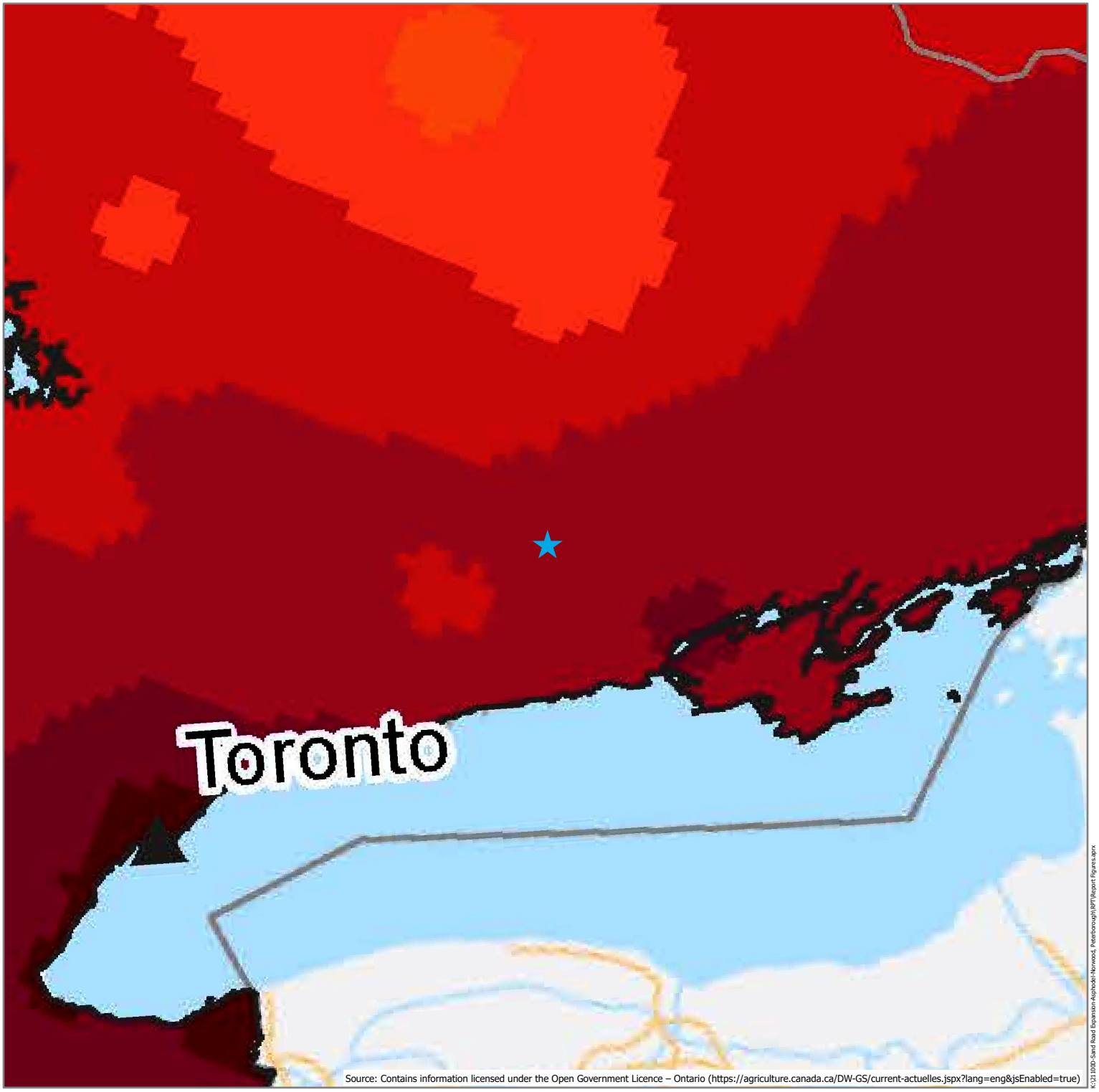


Figure 9 - Crop Heat Units Map - Agrifood Canada

3 Assessment of Impacts to Agriculture

The following section provides an assessment of the potential impacts of the proposed pit on components of the Agricultural System.

3.1 Reduction/Loss of Agricultural Land and Infrastructure

The pit is not proposed to extract any prime agricultural lands within the County's prime agricultural area that are currently under agricultural production. There is no removal of agricultural structures proposed, and therefore no loss of agricultural infrastructure is associated with the proposed pit. The access road is pre-existing and will continue to be required following the rehabilitation of the pit to access the southern portion of 3749 Highway 7. As such, there is no policy requirement to rehabilitate the lands to an agricultural condition. Overall, there is a no permanent loss of prime agricultural land that would result from the proposed pit.

3.2 Fragmentation of Agricultural Lands

Agriculture uses and activities benefit from being adjacent to the other agricultural operations and if lands are fragmented, there is potential to negatively impact farming practices on the isolated farm parcels. The proposed Pit will not result in creating new isolated agricultural lands as the aggregate extraction will not remove active agricultural land from production. There is already limited agricultural activity on lands adjacent to the proposed extraction area, and no further fragmentation of these areas is anticipated as a result of extraction. The pre-existing access road, situated on prime agricultural land south of 3749 Highway 7, will remain in use following the rehabilitation of the pit. Its continued presence does not contribute to the fragmentation of agricultural lands, as it currently serves as a farm route within adjacent farms and forested areas.

The land uses within the surrounding area, and more particularly within the secondary study area, are interspersed with existing rural residential lots, agricultural operations, a licenced aggregate operation, and natural heritage features which contribute to the existing fragmentation of the agricultural system regardless of the proposed pit. The proposed Pit will have a negligible impact on long-term agricultural land fragmentation in the area.

3.3 Compatibility Impacts

The proposed pit is not anticipated to create compatibility conflicts with nearby agricultural operations. The subject lands are in the vicinity of the natural heritage systems. As a result, the surrounding area already exhibits a degree of non-agriculture land uses.

According to OMAFA's *Minimum Distance Separation (MDS) Document – Publication 853,* Guideline #3, the extraction of mineral aggregate resources does not require an MDS I setback.

Natural Environment Assessment, Level1 and 2 Water Report, and Traffic Impact Brief were conducted to address potential impacts of proposed pit to the surrounding areas.

With the implementation of mitigation measures outlined in Section 4, including edge planning techniques and awareness and education strategies, compatibility impacts between the proposed extraction and nearby agricultural operations are not anticipated.

3.4 Economics and Community Impacts

The subject lands do not contain agricultural supportive infrastructure or services such as a farmers' market, grain elevators, agri-tourism facilities, or processing operations that are integral to the surrounding agri-food network. The lands do not produce specialized commodities upon which the local agricultural system or agri-tourism sector relies upon. Existing agricultural activity consists primarily of common cash cropping and cover cropping practices typical of the broader County.

Phased development of the pit expansion is recommended to support a gradual transition of land use over time. In conclusion, as the surrounding area is already disturbed by an existing aggregate operation, the proposed pit is not anticipated to result in significant impacts on farmland operations within the secondary study area.

3.5 Hydrogeology

Management of water resources is an important consideration for farm operations, particularly for watering field/ vegetable crops and hydrating livestock. Changes to the hydrologic and/or hydrogeologic conditions in the area surrounding the subject lands could have a negative impact on farm operations and crop yields. The proposed aggregate operation on the subject lands is proposed at a maximum depth of extraction of 1.5 metres above the maximum predicted high-water table across the site. Since aggregate extraction is above the water table, no dewatering will occur.

A Hydrogeological Assessment was conducted by Tatham Engineering Limited for the proposed Highway 7 Pit. The report concluded that, because the extraction is proposed above the water table and infiltration is expected to increase within the extraction area, no impacts to groundwater levels are anticipated.

The report also stated that interference with domestic water wells is not anticipated. It explained that the majority of domestic wells in the area are constructed within the bedrock aquifer below the proposed extraction, and that the proposed extraction will remain above the seasonally high-water table. As a result, it is not anticipated the proposed pit will have a negative impact on surrounding agricultural uses from a hydrogeological perspective.

3.6 Traffic

Paradigm Transportation Solutions Limited prepared a Traffic Impact Brief and concluded that the proposed pit would generate up to ten truck trips per hour, during the AM and PM peak hours, based on a maximum annual extraction rate of 350,000 tonnes per year. The report states that vehicle access is proposed through an all-moves driveway and all new trips use the Highway 7 entrance/exit only. This is important because the proposed haul route would be on Highway 7, and across from the proposed pit access there is an existing farm entrance which might create a potential conflict point between pit truck traffic and neighbouring farm vehicles or agricultural equipment.

The report identifies the surrounding lands as predominantly rural, with greenspace, farmland, low-density residential land uses, and mining activity; however, it does not specifically assess impacts on farm vehicles, agricultural equipment, or traffic conditions during harvest season. Therefore, while the report addresses general traffic impacts from pit truck traffic on the study-area road network, it does not specifically evaluate whether increased truck traffic would affect neighbouring farm access, movement of agricultural vehicles, or seasonal farm traffic during planting or harvest periods.

3.7 Natural Environment Impacts

RiverStone Environmental Solutions Inc. conducted a Natural Environment Report and concluded that the proposed pit was assessed for potential pathways of effects on wetlands, including direct loss of wetland area, alteration of the water balance, increased sediment and nutrient loadings, thermal loadings to the groundwater, noise and light pollution, and potential disruption of wildlife movement or dispersal corridors. The report states that the proposed extraction area has been situated outside the boundaries of all identified wetlands and a minimum 30 m buffer recommended, and that no direct loss of wetland habitat is anticipated from the proposed extraction area.

For woodlands, the report states that significant woodlands have been identified in the assessment area and within the proposed limit of extraction, and that impacts can be either direct (i.e., removal of features in the limit of extraction) or indirect (i.e., dust, soil compaction, edge effects). The report further states that areas of woodland that require removal will be replaced and that the Rehabilitation Plan will result in a net gain of woodland features and functions within the local landscape ensuring no negative impact; for agricultural land, the report states that buffer naturalization is to occur adjacent to wetlands, where the current use is agricultural field.

4 Measures to address potential Impacts

Following the identification of potential adverse impacts associated with the proposed non-agricultural use, this AIA identifies measures to address impacts to the agricultural system within the study areas.

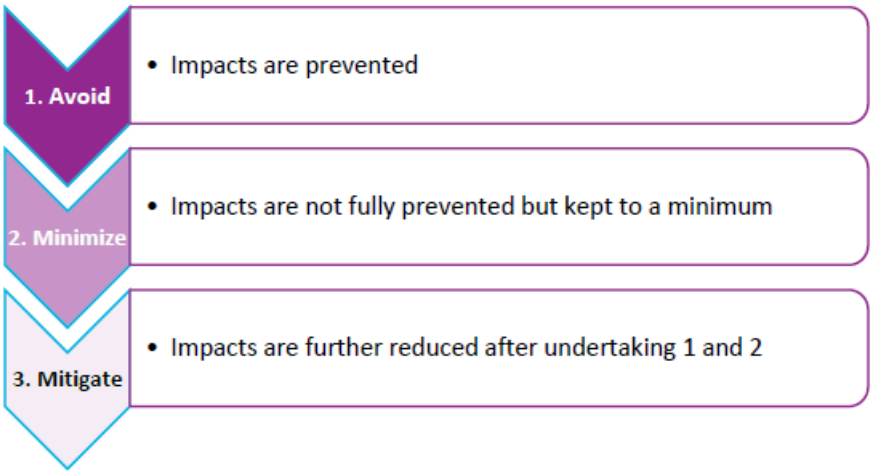
4.1 Hierarchy of Measures

The following chart illustrates the hierarchy of measures used to address potential impacts to the agricultural system. This hierarchy is consistent with provincial policy direction, and prioritizes the avoidance of impacts, followed by minimization and mitigation.

Avoidance of impacts is the highest priority and involves preventing impacts to the agricultural system wherever possible. While the proposed licence boundary extends into both the 'Rural' and 'Prime Agricultural' designations identified on Schedule A2 of the County of Peterborough Official Plan, the proposed extraction area is located entirely outside the 'Prime Agricultural' designation. As a result, no lands designated as Prime Agricultural Area will be removed from the County's agricultural land base.

Where impacts cannot be fully avoided, efforts are made to minimize impacts by limiting their extent or severity. The selection of lower-priority agricultural lands for the proposed development reflects this approach.

Mitigation measures are implemented where residual impacts remain following avoidance and minimization efforts. These measures further reduce the severity or extent of impacts on the agricultural system.



Hierarchy of measures to address potential impacts to the *agricultural system*

4.2 Measures to Avoid Impacts

Measures to avoid impacts on the agricultural system are documented throughout this AIA. While the proposed pit licence boundary extends into the Prime Agricultural Area, the proposed extraction area is located outside the Prime Agricultural designation. Accordingly, no lands designated as Prime Agricultural Area will be removed from the Town's agricultural land base. Additional measures to minimize and mitigate potential impacts on the surrounding agricultural system are summarized in Table 3.

4.3 Measures to Minimize Impacts

This section outlines measures intended to minimize impacts where avoidance is not possible. While some impacts to the agricultural system may remain, design and site selection strategies have been employed to reduce adverse effects to the extent feasible. The proposed development has been planned to prioritize lands of lower agricultural capability and to limit disruption to surrounding agricultural uses.

4.4 Measures to Mitigate Impacts

Measures to mitigate residual impacts are further described in Section 4.5. Mitigation measures are intended to reduce the severity of impacts associated with the proposed development and may include edge planning treatments between the development and adjacent agricultural lands, as well as road or access improvements that enhance land use compatibility.

4.5 Net Impacts

Once measures to avoid, minimize, and mitigate impacts have been identified, the remaining net impacts to the agricultural system are documented. Net impacts represent those effects that persist following the implementation of all proposed measures. A summary of net impacts is provided below.

The following table is consistent with Table 2 (*Minimize and Mitigate Impacts*) found in section 3.2.2 of the Province's *Agricultural Impact Assessment Guidelines*. The purpose of this table is to provide a summary of how the proposed pit minimizes or mitigates impacts on surrounding agricultural uses.

Table 3: Summary of Net Impacts

Objective	Mitigation Measure	Description
Minimize the loss of agricultural land	Select areas with less agricultural land and lower priority agricultural lands	The pit does not propose extraction on prime agricultural lands according to the County's Official Plan and the DBH soil survey.
	Rehabilitate the land	Rehabilitation to an agricultural condition is only required where mineral aggregate extraction is proposed within prime agricultural areas on prime agricultural land. The proposed extraction area is not on prime agricultural lands. The internal access route from the proposed operational entrance/exit on Highway 7 is pre-existing and will continue to be utilized as part of the operation and final rehabilitation. The Rehabilitation Plan has considered surrounding land use and approved land use designations. The portion of lands to be extracted is not currently used for agricultural purposes (nor are they cleared for crop production). Additionally, they are adjacent to natural heritage features and existing rural residential dwellings and are not contiguous with any lands under crop production (based on the 2024 site visit). As such, to meet policy directions, such as enhancing the ecological integrity of the site, the proposed rehabilitation concept incorporates natural features on the land which is compatible with the existing surrounding context. Natural features can provide ecosystem services that benefit the surrounding agricultural system.
	Phased Extraction	Each phase of extraction shall undergo progressive rehabilitation in direct correlation to the development of the pit as the extraction limits in each phase are reached and enough area is available to ensure that rehabilitation activities will not interfere with the production and stockpiling of aggregate materials.

Minimize the fragmentation of agricultural land	Maintain farm parcels	The proposed pit will not result in creating in permanently isolated agricultural lands, as lands are already fragmented by nature of nearby natural features, rural residential uses, and the existing aggregate operation. The proposed pit will not further exacerbate fragmentation in the long-term.
Minimize impacts on farmland and agricultural operations	Minimum Distance Separation	MDS I setbacks are not required for mineral aggregate resources.
	Select compatible land uses; put lower impact development adjacent to farmland and operations	The proposed pit will be buffered from nearby agricultural land uses by nature of existing vegetation and intervening uses, and through the provision of setbacks and berms incorporated on the Site Plan.
	Design to support agriculture (e.g. help farms to continue to operate; help prevent and reduce trespassing and vandalism)	Conflicts between the proposed pit and the surrounding agricultural land uses will be minimized through existing separation and the implementation of vegetative berms as required by the ARA site plans. The haul route is located on Highway 7, which are designed and meant to carry high volumes of traffic. Agricultural traffic on these provincial roads is not anticipated to be high as this type of traffic would generally avoid high volume routes and be directed towards local roads.
Minimize and mitigate changes in water quality or quantity	Implement a groundwater monitoring program	A groundwater monitoring program will be implemented as a site plan condition and a requirement under the ARA.
Mitigating impacts during construction or operations (e.g. mitigate dust, noise)	Adjust operational procedures to accommodate agriculture in the area	There are three existing pits within secondary study area, this suggests that surrounding agricultural uses are accustomed to the operational procedures associated with mineral resource extraction. Dust suppression will be applied as required by O. Reg. 244/97 under the Aggregate Resources Act and the Best Management Practices Plan. There are no specialty crops or large livestock operations in the primary study area, and no

		specialty crops within the secondary study area. Within the secondary study area, three large livestock operations are located to the northeast of the subject lands. The first is a chicken layer farm situated on Asphodel 7th Line, directly adjacent to an existing pit (Licence No. 3241) and an arterial road (Highway 7). This facility is well set back from the proposed pit, with a separation distance of over 1 kilometre. The second operation is a beef farm located immediately north of the layer farm, also on Asphodel 7th Line. Like the chicken farm, it is situated more than 1 kilometre from the proposed pit. The third major livestock operation is a dairy farm positioned at the outer edge of the secondary study area, again along Asphodel 7th Line. This livestock production is similarly well set back from the proposed pit. None of these operations are accessed via the proposed aggregate haul route on Highway 7. Instead, they are served by Asphodel 7th Line, which helps minimize potential interactions between agricultural and aggregate-related traffic. With the incorporation of the recommended noise mitigation measures recommended in the Acoustic Assessment Report, no impacts to large livestock operations existing within the secondary study area are anticipated.
	Vegetative berms	A setback of 30m or 15m applies to the extraction area from the licence boundary and berms where required to mitigate impacts on sensitive receptors will be implemented. These setbacks and berms will create buffering between the proposed pit and surrounding land uses (including agricultural operations).

	Maintain, restore, or construct farm infrastructure	The subject lands do not include any farm infrastructure that is proposed to be removed.
Mitigate ongoing impacts from new development	Implement measures that can be in place post development to support compatibility with agriculture	All planting associated with the berms and final rehabilitation will be non-invasive species and will not impact nearby agricultural uses.
Education to achieve greater compatibility between agricultural and non-agricultural uses	Education and awareness	Drain Bros. will educate their staff and truck drivers of best practices to be mindful of agricultural operations and traffic.

5 Recommendations

The following recommendations are made to reduce the impacts of the proposed new licence on the surrounding agricultural uses and operations in the Primary and secondary study area:

1. Best management practices for the use of salt on the entrance driveway shall be incorporated to help mitigate potential adverse impacts on abutting agricultural lands.
2. The use of non-invasive species shall be implemented in the final rehabilitation of lands.
3. Topsoil and subsoil removed during extraction activities shall be stored separately for utilization in berm formation and final site rehabilitation.

6 Summary

In summary, the proposed mineral aggregate extraction on the subject lands is not anticipated to have a negative impact on the long-term agricultural uses and operations on the subject lands and within the primary / secondary study areas. This opinion recognizes the following:

- Provincial and local planning policies recognizes that mineral aggregate extraction operations are an interim land use. Mineral aggregate extraction is a permitted use within prime agricultural areas in accordance with provincial policy.
- The subject lands are not within a specialty crop area.
- The proposed pit extraction area is on approximately 2500 m^2 of land which is designated 'Prime Agriculture'. The area of the subject lands proposed to be extracted is not located on prime agricultural land based on soil survey prepared by DBH.
- MDS I setbacks are not required for mineral aggregate resources.
- Agriculture will continue on the portion of lands outside of the proposed licenced area and within the County's prime agricultural area.
- Impacts from dust and noise will be mitigated through implementation of prescribed conditions and technical requirements/ recommendations and berming.
- The proposed pit will be buffered from nearby agricultural land uses by nature of existing vegetation and intervening uses, and through the provision of setbacks and berms incorporated on the Site Plan.
- Impacts on surrounding agricultural operations can be mitigated based on the recommended mitigation measures included in this report and implemented through the planning and ARA licence applications.

Respectfully submitted,

MHBC



Pierre Chauvin, BSc(Agr), MA, MCIP, RPP
Partner



Danial Salari MSc(Pl), A.Ag
Planner

A

Appendix A: Secondary Study Area Review

SECONDARY STUDY AREA – LIVESTOCK FACILITY/MANURE STORAGE SUMMARY TABLE			
Site	**Address**	**Facility Type**	**Notes**
1	3896 Hwy 7 (Telford Egg Farm)	Chicken egg production	The property contains one dwelling, one shop, one storage barn and one chicken egg production barn. Access to these buildings is via a road connected to Highway 7. However, trespassing is prohibited along this road, which restricts data collection and prevents direct observation. 
2	2380 Asphodel 7th Line (Sedgrose Farm)	Dairy cattle and milk production	The property comprises a residential dwelling, two barns, and surrounding farmland. At the entrance to the livestock operation, there is a sign indicating membership in the Ontario Federation of Agriculture (OFA), along with another sign displaying the farm's name. One of the barns is used for housing dairy cattle.

			Additionally, aerial imagery reveals covered bales—likely hay or straw—stored near the barn area. Access to the farm is provided via Asphodel 7th Line. 
3	2303 Asphodel 7th Line (Dreamach Acres-Grass Fed Beef)	Beef cattle ranching	This beef cattle ranch includes a residential dwelling, two livestock barns, and several fenced enclosures. A large portion of the property is dedicated to farmland, which appears to produce hay bales, as observed in aerial imagery. The western section of the property consists of natural heritage features, indicating the presence of environmentally significant land. Access to the livestock operation is provided via Asphodel 7th Line.

			
4	3840 Highway 7	Horse and other equine production	The property features a residential dwelling with a swimming pool, a bank barn, and a pole barn within a fenced area. Access to the site is provided via Highway 7. 

5	1965 Comstock Line	Horse and other equine production	The property includes a residential dwelling, a storage shed, and a bank barn equipped with a grain bin, all enclosed within a fenced area. The barn is situated at the end of Comstock Line, which connects to Sand Road. 
6	1928 Asphodel 6th Line (Carrot Top Organics)	Agribusiness	The property includes a residential dwelling, a vegetable farm that produces certified organic carrots, a greenhouse, and an on-site processing unit.

			
7	1948 Asphodel 7th Line, (Hilts Butcher Shop)	Agribusiness	The property consists of a residential dwelling and a processing facility that produces market-ready cuts of beef, pork, lamb, and poultry. This operation plays a significant role in supporting the local economy. 

B

Appendix B: Authors' Curriculum Vitae

Education

University of Waterloo
Master of Arts, Regional Planning and Resource Development
1997

University of Guelph
Bachelor of Science in Agriculture
1993

Professional Associations

Registered Professional Planner (RPP)

Member, Canadian Institute of Planners (CIP)

Full member, Ontario Professional Planners Institute (OPPI)

Member of Parks & Recreation Ontario

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MHBC | PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

Pierre Chauvin

BSc(Agr), MA, MCIP, RPP

Pierre Chauvin joined the firm as a Planner in 1998. Mr. Chauvin provides urban and rural planning analysis and research services for public and private sector projects across Ontario.

His professional activities include project management, community planning, and land development. Pierre's experience ranges from residential and commercial development, environmental and recreational planning and resource management.

Pierre also has specific expertise in rural and agricultural planning. He has prepared agricultural impact assessments as part of settlement area expansions and development proposals. He also has experience with MDS and the Nutrient Management Act, and has provided expert agricultural and planning evidence at the Ontario Land Tribunal and other similar boards/tribunals.

Pierre holds a Masters degree in Regional Planning and Resource Development and a Bachelor of Science in Agriculture degree with a major in Natural Resources Management. Pierre is also a full member of the Canadian Institute of Planners and Ontario Professional Planners Institute.

Professional History

Partner, MacNaughton Hermsen Britton Clarkson Planning Limited (2013 – Present)

Associate, MacNaughton Hermsen Britton Clarkson Planning Limited (2004– 2013)

Planner/Senior Planner, MacNaughton Hermsen Britton Clarkson Planning Limited (1998 – 2004)

Assistant Planning Officer, Upper Grand District School Board (1997 – 1998)

Research Assistant (Nutrient Management), Land Resource Science Department, University of Guelph (1993 – 1995)

Professional Associations

Member of the Waterloo Region Homebuilder's Association and City of Kitchener Liaison Group

Member of the Waterloo Region Homebuilder's Association and Waterloo Region Liaison Group

Member of the Waterloo Region Homebuilder's Association Laison Group with the Townships of Woolwich and Wilmot

Past Chair of the Homebuilders' Association Liaison Committee with the Grand River Conservation Authority

Past Chair and member of the Industry Luncheon Committee, Guelph & District Homebuilders' Association

Past Member of Board of Directors, Guelph & District Homebuilders' Association

Past Member, Committee of Adjustment for the Township of Centre Wellington

Past Member, Heritage Centre Wellington Committee (LACAC)

Past Vice-Chair, Village of Elora Planning Advisory Committee

Selected Project Experience

Agricultural/Rural Planning

- Project lead to undertake a LEAR Study for the Township of Amaranth, County of Dufferin
- Project planner to undertake a review of the Minimum Distance Separation formulae for the Region of Peel and Town of Caledon as part of their LEAR Study.
- Review and provided opinion to the Township of Guelph-Eramosa regarding the revised Minimum Distance Separation Formulae.
- Project planner for the preparation of an agricultural assessment of potential growth areas as part of the City of Brantford Growth Strategy/Official Plan Review.
- Preparation of agricultural impact statements/assessments including MDS I & II assessments on behalf of various private sector clients in support of development and aggregate applications.
- Preparation of an agricultural assessment on behalf of the Township of Guelph/Eramosa to explore the feasibility and potential of a dual Agricultural/Rural designation approach in the Official Plan.

Parks & Recreation

- Project lead and consultant to the City of Port Colborne to complete a Parks and Recreation Master Plan.
- Project lead and consultant to the Town of Collingwood to complete a Parks and Recreation Master Plan.
- Project lead and consultant to the Town of Grimsby to complete a Parks and Recreation Master Plan.
- Project lead and consultant to the City of Kitchener to undertake a Business Case for the Doon Pioneer Park Community Centre Expansion.
- Project lead and consultant to the Town of Cobourg for the Cobourg Community Centre and YMCA Northumberland Joint Facility Needs Assessment.
- Project lead and consultant to the Town of Cobourg for the preparation a Recreation Strategy and Implementation Plan.
- Project Lead and Consultant to the Town of Caledon in the preparation of a Parks and Recreation Visioning Plan.
- Consultant to the Township of West Lincoln in the preparation of a Parks and Recreation Master Plan.

MHBC

- Project planner, Township of Guelph-Eramosa Parks, Recreation and Culture Master Plan.

Source Water Protection

- Prepared Official Plan Amendment and policies as well as implementing Zoning By-law to implement the Source Water Protection Plan policies for the Counties of Norfolk, Elgin and Middlesex.
- Prepared Official Plan Amendment and policies to implement the Source Water Protection Plan policies for the County of Wellington.
- Consultant to Grand River Conservation Authority, County of Wellington and County of Perth in the development of Source Water Protection water quality policies for the Lake Erie Region Source Protection Plan.
- Prepared Official Plan Amendment and policies to implement the Groundwater Protection Strategy for the County of Wellington.

Official Plan/Zoning By-laws

- Project lead and consultant for the preparation of an Official Plan Update for the Township of Amaranth (on-going)
- Project lead and consultant for the preparation of an Official Plan Update for the Municipality of Kincardine.
- Project lead and consultant to the Municipality of Kincardine for the preparation of a Comprehensive Zoning By-law Review (on-going).
- Project lead and consultant to the Township of Huron-Kinloss for the preparation of a Comprehensive Zoning By-law Review.
- Project lead and consultant for the preparation of an Official Plan Update for the Township of Huron-Kinloss.
- Project lead and consultant to the County of Norfolk to prepare an Issues and Report for the Hastings Drive Zoning By-law Study.
- Project planner for preparation of a Consolidated Zoning By-law for the City of Kawartha Lakes (involved consolidating 17 By-laws).

Special Studies & Other

- Consulting planner for the City of Stratford to review and process select development applications.
- Consulting planner for the County of Perth to review and process planning applications.
- Consulting planner for the County of Bruce to review Consent and Minor Variance applications for the Lakeshore and Peninsula Hubs.
- Project planner for the Municipality of North Perth to complete a Secondary Plan and Master Servicing Plan for North-East Listowel (on-going).
- Project Lead and planner for the Upper Grand District School Board for the approval of new secondary school in the City of Guelph.
- Consultant to the Upper Grand District School Board regarding the justification and approval of a new secondary school in the Township of Centre Wellington, including a settlement area expansion.
- Consultant to the Huron-Perth Catholic District School Board regarding the justification and approval of a new elementary school in the Town of North Perth, including an agricultural impact assessment for a proposed expansion of the settlement boundary to accommodate the school.
- Justification of an urban expansion in the former Town of Listowel (Municipality of North Perth) and preparation of a Plan of Subdivision for a 50 acre property. The justification included an assessment of agricultural impacts and servicing considerations.

- Consultant to the City of Woodstock regarding the justification and approval of the East Woodstock Secondary Plan & Design Study. Prepared Official Plan Amendment and policies to implement the Secondary Plan.
- Consultant to the Town of North Perth on the Southeast Listowel Community Plan.
- Project planner providing planning services to the Township of Guelph-Eramosa. Review of applications, and preparation and presentation of planning reports to Council.
- Review and/or preparation of numerous planning approvals relating to draft plan of subdivisions, draft plan of condominiums, site plans, Official Plan amendments, Zoning By-law amendments, consents and minor variances throughout the Region of Waterloo, the Counties of Wellington, Perth, Bruce, Oxford, Huron and surrounding areas.
- Advisor to various aggregate producers regarding the review of new Official Plan policies in the Region of Durham and County of Oxford.
- Project Planner to the Aggregate Producers' Association of Ontario on the review of the Oak Ridges Moraine Conservation Plan.
- Coordinating the design and preparation of site plans under the Aggregate Resources Act. Research and preparation of Planning Reports and Aggregate Resources Act Reports for license and permit applications, including work for companies such as Lafarge Canada, Dufferin Aggregates, Federal White Cement and Beachville Lime Limited.

Awards / Publications / Presentations

2025	OPPI PlanON Award – Education Category – Empowering the Future: Activa Partners with Groh Public School for a Unique Community Project, September 18, 2025
2017	Designing Public Spaces to Support Vibrant Communities – Presentation on Park Land Dedication and Implications of Bill 73, September 15, 2017
2012	OPPI – Southwest District – Presentation on Source Water Protection Planning and Implementation, October 25, 2012
2012	Ontario Sand and Gravel Association – Presentation on Implications of Source Water Protection on Aggregate Operations, November 8, 2012.
2004	B. Hermsen and P. Chauvin, 2004. Elementary Schools and Residential Absorption Rates in New Neighbourhoods. Spring 2004 Ontario Expropriation Association Newsletter.
2003	Nutrient Management Act - Presentation to the Municipal Law Seminar Series, in co-operation with Kearns McKinnon LLP, February 26, 2003.
1997	Planning and Development of Recreational Trails on Private Lands: A Case Study of the Grand Valley Trails Association. Unpublished M.A. Thesis, School of Urban and Resource Development Planning, Faculty of Environmental Studies, University of Waterloo, Ontario

Danial Salari

MSc(Agr), MSc(Pl), A.Ag.

Danial Salari joined MHBC in January 2025. He provides a range of planning support and consulting services to both public and private sector clients mainly in related to rurl planning initiatives. This support includes conducting policy reviews and analyses and preparing due diligence reports and assessments.

Danial regularly assists with obtaining various development approvals including Plan of Subdivisions, Site Plans, Official Plan Amendments, Zoning By-law Amendments, Consents and Minor Variances. He also regularly provides support to senior staff in a range of projects including supporting the development of Consent applications, Aggregate Resource extraction, and Battery Energy Strategy System (BESS) applications.

Danial received his Master of Science in Rural Planning from the University of Guelph in 2024. He also received a Master of Science in Ecologic Agriculture in 2018 and a Bachelor of Science in Agricultural Engineering in 2010.

Professional History

Planner, MacNaughton Hermsen Britton Clarkson Planning Limited (2025 – present)

Student Planner, Region of Peel (2024)

Farm Inspector, Ecocert Canada (2023)

Project Planner & Data Analyst, Rural Ontario Institute (2023)

Production Committee Chair & Board Member, Khorasan Organic Association (2014-2019)

Sustainability Consultant, Sadaf rah Abrisham (2011-2014)

Education

University of Guelph
Master of Science in Rural Planning and Development
2024

University of Shahid Beheshti
Master of Science in Ecologic Agriculture
2018

Ferdowsi University of Mashhad
Bachelor of Science in Agronomy
2010

Professional Associations

Articling Agrologist (A.Ag.)

Member, Ontario Professional Planners Institute (OPPI)

Member, Ontario Institute of Agrologists (OIA)

Member, Agriculture and natural Resources Engineering Organization of Iran

Trained in the UNEP for Sustainable Development

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MHBC | PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

Professional Experience

Agriculture / Rural

- Agricultural Impact Assessments for aggregate licence applications, settlement area boundary expansions, and non-agricultural uses in prime agricultural areas
- Minimum Distance Separation (MDS) review and analysis
- Research, preparation and co-ordination of reports and approvals for agricultural uses, agriculture-related uses, and On-Farm Diversified Uses (OFDUs)

Aggregate / Industrial

- Property investigations and planning assessments for due diligence reviews for mineral aggregate and concrete and asphalt plant projects
- Preparation of Planning and Land Use Considerations reports for aggregate projects

Policy Research and Analysis

- Provincial and local Municipal Policy Review and Analysis
    - Provincial Planning Statement, 2024
    - Agricultural Impact Assessment (AIA) Guidance Document
- Undertake extensive research of land use policy and housing market data to support Regional Housing Affordability analysis.
- Review planning applications in support of Regional Housing comments
- Preparation of due diligence reports to identify applicable policies and regulations for proposed developments in municipalities across Ontario.

Residential / Mixed-use / Retail

- Preparation of planning assessments and due diligence reviews to identify development potential of properties for a range of clients
- Research, preparation and co-ordination of reports / applications under the *Planning Act* (Zoning By-law Amendment, Official Plan Amendment)

Project Coordination

- Consent and land severance applications
- Coordination of technical requirements with various internal and external subcontractors.

Public Engagement

- Facilitation of the Indigenous Seed Selection Knowledge sharing workshop with Biinjitiwaabik Zaaging Anishinaabek (Rockey Bay First nation) and Netmizaaggamig Nishnaabeg (Pic Mobert First Nation)

Special Initiatives and Accomplishments

- Received the Highly Qualified Personnel (HQP) Scholarship from OMAFA

C

Appendix C: References

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D

Appendix D: DBH Soil Survey

SOIL SURVEY AND CANADA LAND INVENTORY (CLI) EVALUATION
SAND ROAD PIT EXTENSION
PART LOT 15, CONCESSION 6
TOWN OF ASPHODEL
PETERBOROUGH COUNTY
DRAFT

Prepared for:

Ms. Chelsea Brooks
MHBC – Urban Design & Landscape Architecture
540 Bingemans Centre Drive
Suite 200
Kitchener, ON
N2B 3X9

DBH Soil Services Inc.

July 9, 2026

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APPENDIX A OMAFRA Guidelines for Detailed Soil Surveys for Ontario
APPENDIX B Soil Inspection Data
APPENDIX C Curriculum Vitae

1.0 BACKGROUND

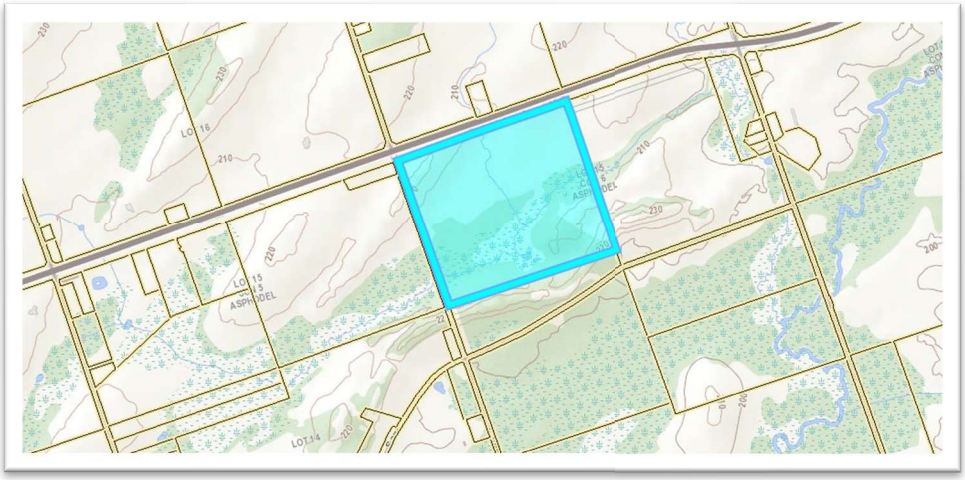
DBH Soil Services Inc. was retained to complete a Soil Survey and Canada Land Inventory (CLI) classification assessment for an area identified as the Sand Road Pit Extension located at:

3749 Highway 7
Part Lot 15, Concession 6
Town of Asphodel
Peterborough County

This area is comprised of one parcel identified by the Municipal Property Assessment Corporation (MPAC) Roll Number 150101000210600000000. The Roll Number was identified in the Ontario Ministry of Agriculture, Food, and Agribusiness (OMAFA) Agmaps online mapping (https://www.lioapplications.lrc.gov.on.ca/AgMaps/Index.html?viewer=AgMaps.AgMaps&locale=en-CA)

A visual representation of the property size, shape and relative location is presented as an image reproduced from Ontario Ministry of Agriculture, Food, and Agribusiness (OMAFA) AgMaps Interactive Mapping. Image 1 (below) illustrates the relative location and shape of the parcel as provided in the AgMaps Interactive Mapping as a teal outline and fill.

Image 1 OMAFA Agmaps Interactive Mapping



Source: https://www.lioapplications.lrc.gov.on.ca/AgMaps/Index.html?viewer=AgMaps.AgMaps&locale=en-CA

For the purposes of this Soil Survey and CLI evaluation, this parcel is henceforth referred to as the Study Area.

The Study Area lands comprise approximately 38.8 ha (95.9 acres) of which approximately half of the lands are used for agricultural crop production (common field crop, corn in the 2024 growing season based on crop stubble). The remainder of the parcel includes low, wet areas, areas of steep slopes, and disturbed areas associated with laneways and a wayside aggregate pit

area (southeast corner). Areas of brush and/or trees were noted along portions of the field edges, in the low wet areas in the central portion of the parcel, and in the southern portions of the parcel during the onsite survey.

No livestock, livestock facilities/buildings or buildings of any kind were observed on the property during the onsite soil survey.

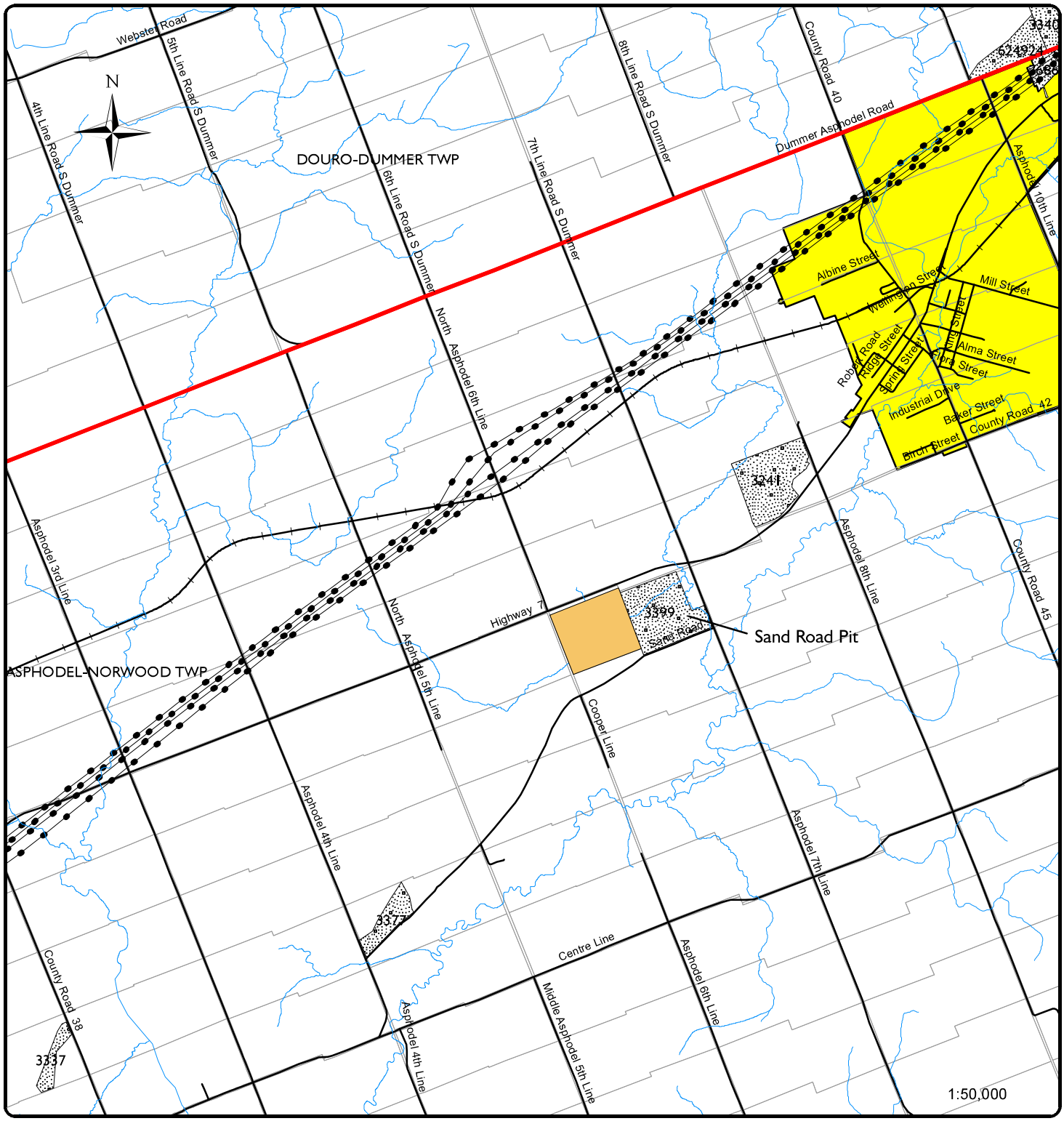
The Study Area is roughly bounded: on the east by an agricultural field and the existing Sand Road Pit (to the southeast); on the south by steep slopes and woodland areas; on the west by woodlands and agricultural fields; and on the north by Highway 7 and agricultural fields.

The Study Area is located approximately 23.5 km northeast of the urban areas of Peterborough, and approximately 3.0 km southwest of the urban areas of the Village of Norwood.

This Soil Survey and CLI report was completed to document the existing soil conditions and to provide a more detailed assessment of the CLI classification of the soil resources onsite. This report documents the methodology, findings, conclusions, and mapping completed for this study.

Figure 1 illustrates the relative location of the Study Area with respect to the above-mentioned geographical and cultural features.

It is noted that the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) has recently been renamed to the Ontario Ministry of Agriculture, Food, and Agribusiness (OMAFA) which has led to some confusion as to referencing documents and/or data. The references in this report relate to the particular reference identified in the respective document/data set.



Legend

- Hydro Line (MNR)
- Railway (MNR)
- Roads (MNR)
- Watercourse (MNR)
- Aggregate Site Authorized (MNR) with ALPS Number
- Lot Lines (MNR)
- Municipal Boundary (CoP)
- Subject Lands
- Village of Norwood (CoP)

ALPS - Aggregate Licensing and Permitting System
CoP - County of Peterborough
MNR - Ministry of Natural Resources

Figure 1

Location

DBH Soil Services Inc.

October 2025

2.0 METHODOLOGY

2.1 FIELD DATA COLLECTION

2.1.1 SOIL INVESTIGATION

Basic soils (and CLI) information was provided in the OMAFA soils and mapping report *Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981),* Digital mapping was provided by OMAFA through the Ontario Geohub warehouse website. The digital mapping was provided at a scale of 1:50000. Mapping at this scale is of a general nature when referring to site-specific planning; therefore, detailed soils or soil verification assessments are often required for farm scale or lot size planning initiatives and applications for amendments to Official Plans and/or Zoning By-Laws.

In an effort to 'standardize' the approach or methodology used in detailed soil surveys, OMAFA created guidelines for detailed soil surveys in a document titled *Guidelines for Detailed Soil Surveys in Ontario. The* OMAFA guidelines (Appendix A) were created in response to concerns with the accuracy of published mapping and classification of soil materials and that the existing information is of too general a nature to adequately describe and interpret the soil properties for site-specific planning purposes.

The standards for completing a detailed soil evaluation included the following tasks:

- Completion of a review of published soil information – County/Region Soil Report of the Ontario Soil Survey (OMAFRA),
- Conduct a review of published Canada Land Inventory (CLI) ratings for the soils of this area,
- Conduct an aerial photographic review and interpretation of the soil polygons, disturbed soil areas and miscellaneous landscape units (ie: streams, wayside pits),
- Conduct an onsite soil survey at an appropriate scale and survey density,
- Completion of mapping to illustrate the location of the property, the occurrence of the OMAFRA soil polygons and appropriate CLI capability ratings,
- Completion of a report outlining the methodologies employed, findings (including a discussion of relevant features identified) and a conclusion as to the relevance of the CLI classifications for the soil polygons on the property and how they relate to the Provincial Policy Statement.

Further, OMAFRA has provided a document titled "Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario." http://www.omafra.gov.on.ca/english/landuse/classify.htm (July 2023, online version).

A detailed onsite soil survey and surrounding land reconnaissance survey were conducted on November 9, 2024.

2.1.2 PHYSIOGRAPHY

Physiographic information and Quaternary Geology information was provided in *The Physiography of Southern Ontario 3rd Edition, Ontario Geological Survey Special Volume 2, Ministry of Natural Resources, 1984*. A further review of the digital Physiographic from the Land Information Ontario website was completed.

Physiographic information provides details on the parent materials from which the soil developed in a specific area.

2.1.3 TOPOGRAPHY AND CLIMATE

Topographic information was reviewed and correlated to the Provincial contour mapping available online (Ontario Geohub) and through digital contour data provided by MHBC.

Additional contour data, mapping and assessments were reviewed and included the 1:10000 scale Ontario Base Mapping, detailed soil survey assessment (using a handheld clinometer), and aerial photo interpretation.

Climate data was taken from the OMAFRA document titled *Agronomy Guide for Field Crops – Publication 811 (2017)* and the *Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) Factsheet – Crop Heat Units for Corn and Other Warm Season Crops in Ontario, 1993*.

3.0 FINDINGS

3.1 PHYSIOGRAPHY AND CLIMATE

The *Physiography of Southern Ontario* Physiographic Unit Map indicates that the Study Area is located in the Peterborough Drumlin Field. The Peterborough Drumlin Field Physiographic Region is an area described as extending from Hastings County in the east to Simcoe County in the west, and between the Oak Ridges Moraine and the Dummer Moraine. The City of Peterborough is centrally located in the physiographic unit.

The area comprises approximately 3000 good drumlins in addition to other drumlinized hills and fluted plains. The drumlins axis is generally lined up in a southwest to northeast direction. The rock underlying the area is limestone. The drumlins are comprised of calcareous till materials. The Peterborough Drumlin Field is also noted for eskers (gravel ridges), which are generally poor-quality agricultural soils but are valuable sources of aggregate materials.

The Norwood Esker is a large and tall gravel ridge extending for approximately 19 km (12 miles) where, in some parts, reaches heights of 23 m (75 feet). In some areas the Norwood Esker is compound, with more than one ridge lying side by side.

The surface material in this physiographic region is generally from loam to sandy loam.

3.2 TOPOGRAPHY

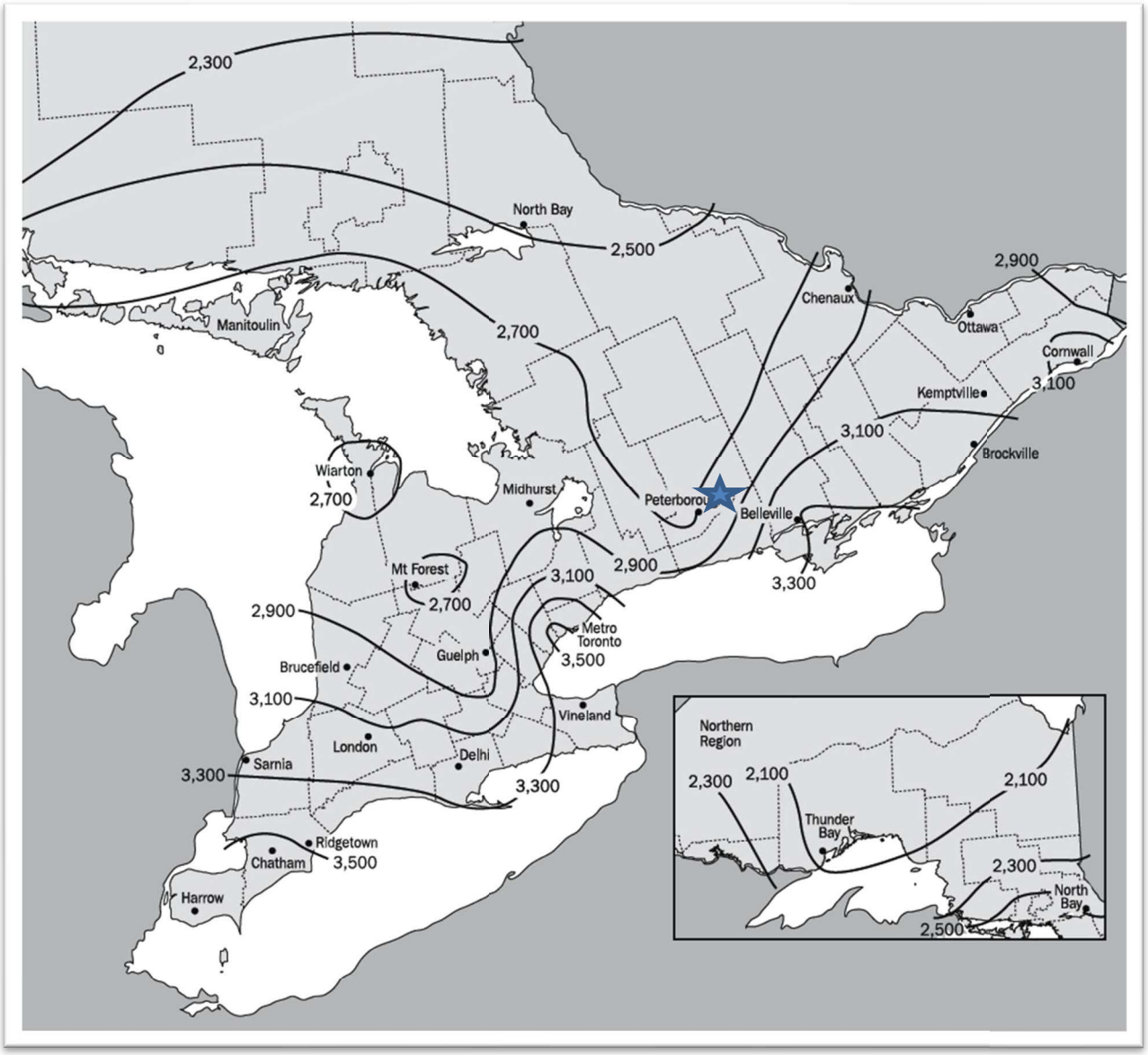
A review of various data sources including an onsite survey determined that the topography of the Study Area comprised steeply sloped lands in the northwest portion (which may be related to a drumlin feature), more level and undulating areas in the northcentral portion of the parcel, low, floodplain areas in the central portion, and steeply sloping lands (associated with the Norwood Esker) in the southern portions of the parcel.

3.3 CLIMATE

The Study Area is located between the 2700 to 2900 average accumulated Crop Heat Units isobars in Ontario. The Crop Heat Units (CHU) index was originally developed for field corn and has been in use in Ontario for 30 years. The CHU ratings are based on the total accumulated crop heat units for the frost-free growing season in each area of the province. CHU averages range between 2500 near North Bay to over 3500 near Windsor. The higher the CHU value, the longer the growing season and greater are the opportunities for growing value crops.

Crop Heat Units for corn (based on 1971-2000 observed daily minimum and maximum temperature (OMAFRA, 2009)) map image is illustrated below in Image 3. The approximate location of the Study Area is marked with a blue star.

Image 2 Crop Heat Units Mapping



Source: Agronomy Guide for Field Crops OMAFRA – Publication 811

3.4 DETAILED SOIL SURVEY

A detailed on-site soil survey was conducted to map and classify the soil resources of the soil materials on the Study Area lands. The soil survey included the following tasks:

- Completion of a review of published soil information (*Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981)*
- Conduct a review of published Canada Land Inventory (CLI) ratings for the soils of this area,
- Conduct an aerial photographic review and interpretation of the soil polygons,

disturbed soil areas and miscellaneous landscape units (ie: streams, boulder pavement, wayside pits),
- Conduct an on-site soil survey,
- Completion of mapping to illustrate the location of the property, the occurrence of soil polygons and appropriate CLI capability ratings,
- Completion of a report outlining the methodologies employed, findings (including a discussion of relevant features identified) and a conclusion as to the relevance of the CLI classifications for the soil polygons on the property.

The detailed soil survey of the Study Area lands, and reconnaissance of the surrounding area was conducted on November 9, 2024. Aerial photographic interpretation was used to delineate soil polygon boundaries by comparing areas, on stereoscopic photographs (and imagery), for similar tone and texture. Delineated soil polygons were evaluated for the purpose of verifying soil series and polygon boundaries. The evaluation was completed through an examination of the existing soil conditions to a minimum depth of 100 cm or to refusal. A handheld Dutch soil auger and/or Dutch stone auger was used to extract the soil material to a minimum depth of one metre (or to refusal).

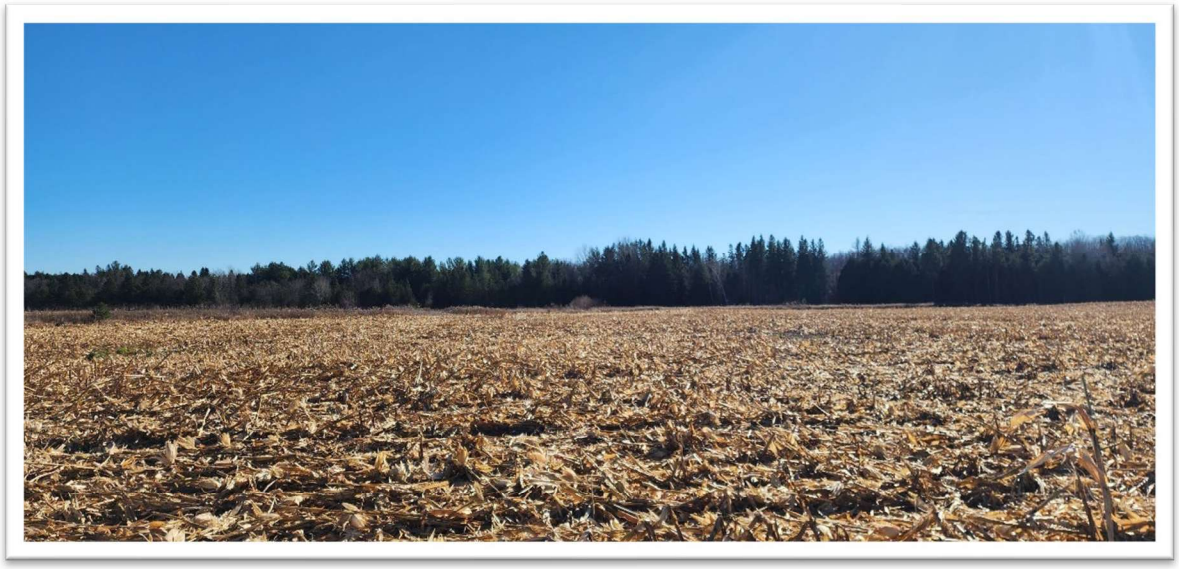
Each soil profile was examined to assess inherent soil characteristics. Soil attributes were correlated with the *Canadian System of Soil Classification (CSSC) (Agriculture Canada, 1998)* and the *Field Manual for Describing Soils in Ontario (Ontario Centre for Soil Resource Evaluation, 1993)*. A handheld clinometer was used to assess percent slope characteristics. Soils were assigned to a soil map unit (series) based on soil texture (hand texturing assessment), soil drainage class and topography (position and slope).

Depth to free water within one metre of the soil surface was also recorded at inspection sites located on lower slope positions (where applicable). Names for the soil series and the CLI ratings were assigned to each soil polygon by correlating the soil series with soils information presented in the *Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981),* and with the CLI information presented on the 1:50000 scale manuscript mapping, and the OMAFRA digital soils data.

Observations noted at the time of the onsite soil survey included:
- The northern portions of the Study Area lands were used for the production of common field crops (corn in the 2024 growing season).
- Steeper slopes were noted along the northwestern boundary of the parcel, and the southern boundary.
- A stream course and flood plain lands were noted in the central portion of the parcel (extending roughly east-west).
- There were no buildings located on this parcel.
- There was no livestock on this parcel.
- Two hunt blinds were noted on the parcel limiting access to those locations.

Photographs 1 through 4 provide a depiction of the general Study Area physical conditions.

Photograph 1 illustrates the undulating topography of the central portions of the Study Area



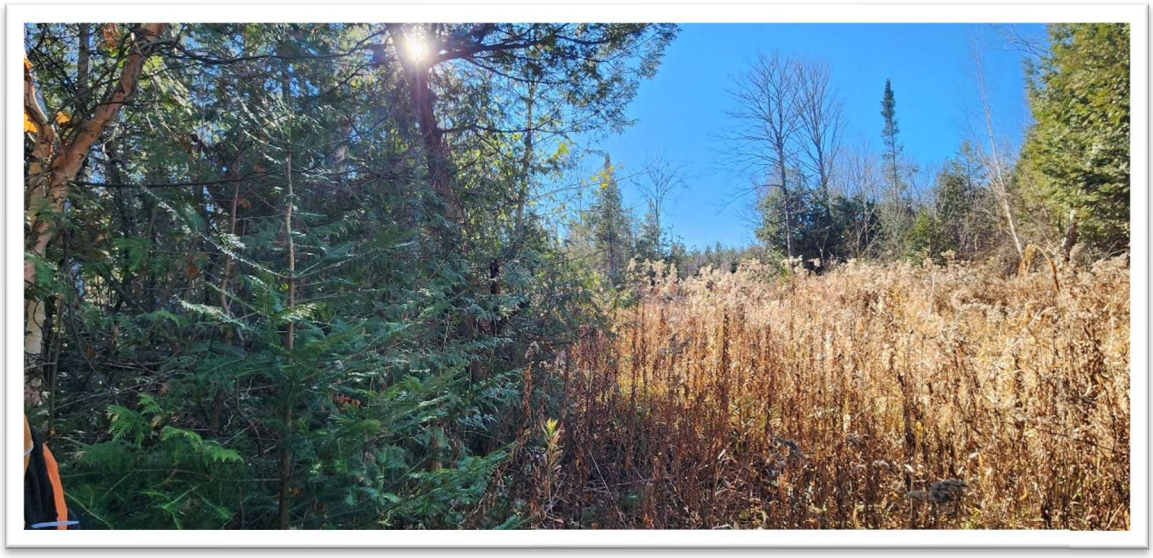
Photograph 1

Photograph 2 illustrates the steeper sloped area in the northwest portion of the Study Area.



Photograph 2

Photograph 3 illustrates the stream course and flood plain area.



Photograph 3

Photograph 4 illustrates the wayside pit (disturbed area) and steep slopes associated with the Norwood Esker.



Photograph 4

A total of 21 soil inspection sites were examined in the Study Area. The majority of these soil inspection sites were extracted to a minimum depth of 30 cm due to restrictions in the soil horizons, typically related to excess stoniness.

The soil inspection information was correlated with soil descriptions in the *Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981) and* the OMAFRA digital soils data (Geohub), prior to the production of the soils map in Figure 2. Soil names used in the identification of the soil series on Figure 2 were taken from the *Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981)*

The onsite soil survey identified five soil series. The soil series were identified as Bottom Land, Cramahe Gravelly Sandy Loam, Emily Loam, Lyons Loam, and Otonabee Sandy Loam. A single miscellaneous soil unit was also identified as Disturbed Soils.

A small stream, with areas of ponding was observed in the central portion of the parcel, with the stream crossing the parcel in roughly an east/west direction.

Bottom Land is described as poorly drained soil that developed on recent alluvial deposits and includes areas such as river/stream flood plains. This soil may be comprised of variable soil textures.

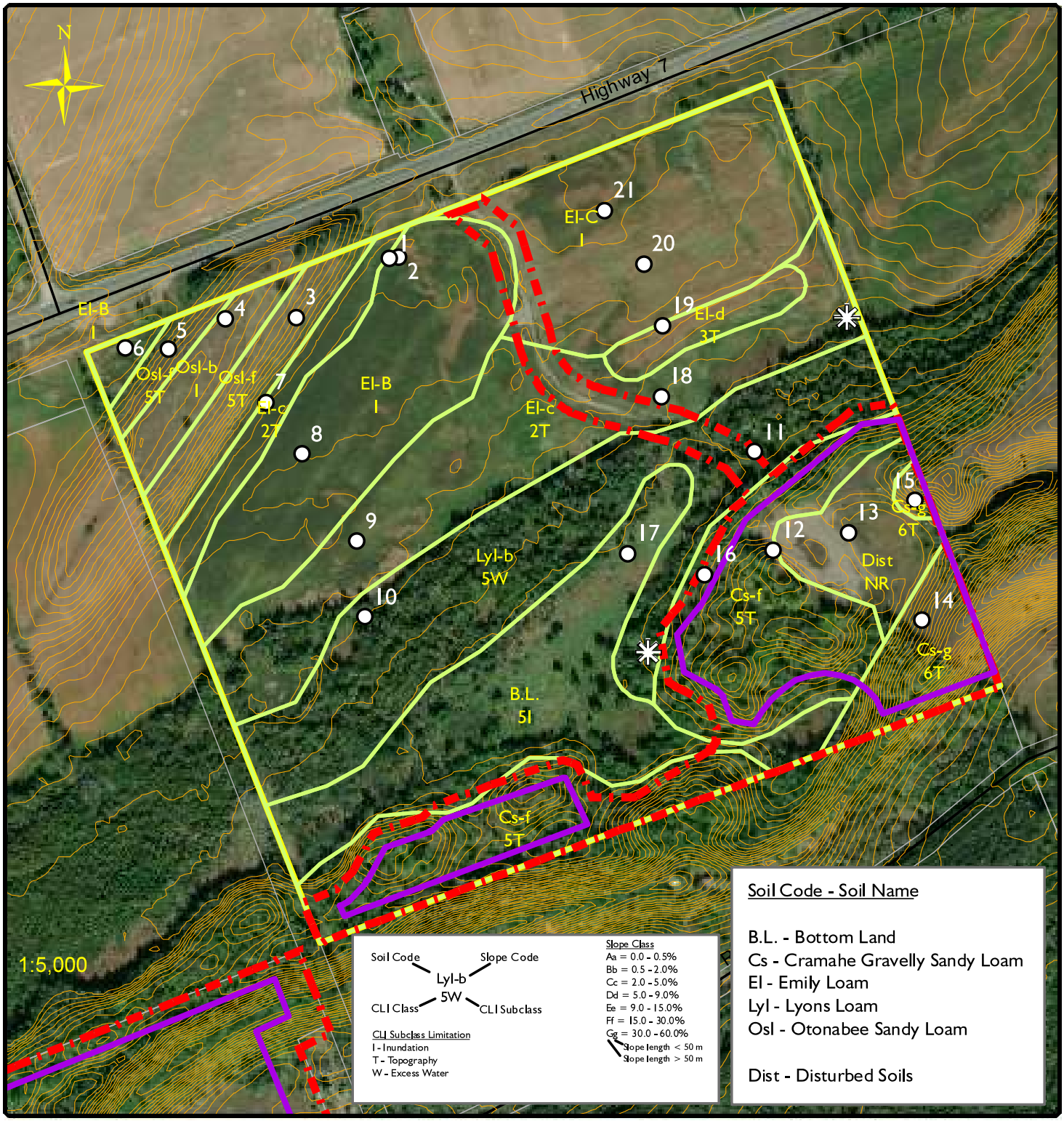
Cramahe Gravelly Sandy Loam is described as well-drained calcareous gravelly outwash. This soil developed in poorly sorted gravelly materials deposited in kames and eskers. Eskers are described as *sinuous ridges of gravel deposited by streams flowing within glacial ice and deposited on the landscape by the melting and retreating ice front* (Soils of Peterborough). Slopes can exceed 25 percent. The B horizons are gravelly and cobbly sandy loam. The parent materials is coarse, cobbly gravel.

Emily Loam is described as the imperfectly drained member of the Otonabee soil catena. This soil developed from calcareous loam and sandy loam parent materials. This soil occurs on gently sloping/undulating areas along the flanks of drumlins. The parent material is a moderately stony loam till.

Lyons Loam is described as the poorly drained member of the Otonabee soil catena. This soil developed from calcareous loam and sandy loam parent materials. This soil occurs in depressional areas near Otonabee soils, on the low areas between drumlins or morainic ridges.

Otonabee Sandy Loam is described as the well-drained member of the Otonabee soil catena. This soil developed from calcareous loam and sandy loam parent materials. The Otonabee landform *is strongly drumlinized* (Soils of Peterborough) and may be stony in some areas.

Disturbed Soils are described as soils that have been modified through human activities that effectively remove or mix the soil horizons. For the purpose of this soil survey, Disturbed Soils are associated with the wayside pit area in the southeast portion of the parcel. It appears that



Legend

- Hunt Blind
- Soil Inspection Location
- Contour Lines (MHBC)
- Roads (MNRF)
- Parcel Data (County of Peterborough (CoP))
- Proposed Limit of Extraction
- Soil Polygon Boundary
- Subject Lands
- Total Site Area

MHBC - MacNaughton Hermen Britton Clarkson Planning Limited, MNR - Ontario Ministry of Natural Resources

Figure 2

Soils and
Canada Land Inventory (CLI)

DBH Soil Services Inc.

July 2026

soil in this area have been removed for the purposes of accessing the underlying gravel and sand materials.

A description of the soil at each inspection site is included in Appendix B.

3.5 ARTIFICIAL DRAINAGE

An evaluation of artificial drainage on the Study Area was completed through a correlation of observations noted during the windshield surveys, aerial photographic interpretation, and a review of the OMAFRA Artificial Drainage System Mapping.

Visual evidence supporting the use of subsurface tile drains would include observations of drain outlets to roadside ditches or surface waterways, and surface inlet structures (hickenbottom or french drain inlets).

Evidence in support of subsurface tile drainage on aerial photographs would be based on the visual pattern of tile drainage lines as identified by linear features in the agricultural lands and by the respective light and dark tones on the aerial photographs. The light and dark tones relate to the moisture content in the surface soils at the time the aerial photograph was taken.

OMAFRA Artificial Drainage System Maps were reviewed to determine if an agricultural tile drainage system had been registered to the Study Area. The OMAFRA maps revealed that there are no agricultural drainage systems registered on the Study Area.

3.6 IRRIGATION

Observations noted during the surficial soil survey indicated that the Study Area is not irrigated, and that the property is not set up for the use of irrigation equipment. Visual evidence supporting the use of irrigation equipment would include the presence of the irrigation equipment (piping, water guns, sprayers, tubing, etc), the presence of a body of water capable of sustaining the irrigation operation and lands that are appropriate for the use of such equipment.

No irrigation equipment was observed onsite during the course of the on-site survey.

3.7 LANDFORMING

There is no evidence of any landforming for the purposes of leveling or reducing slope for the enhancement of agricultural activities or operations.

3.8 SOIL CAPABILITY FOR AGRICULTURE

Basic information about the soils of Ontario is made more useful by providing an interpretation of the agricultural capability of the soil for various crops. The CLI system combines attributes of the soil to place the soils into a seven-class system of land use capabilities. The CLI soil capability

classification system groups mineral soils according to their potentialities and limitations for agricultural use. The first three classes are considered capable of sustained production of common field crops, the fourth is marginal for sustained agriculture, the fifth is capable for use of permanent pasture and hay, the sixth for wild pasture and the seventh class is for soils or landforms incapable for use for arable culture or permanent pasture. Organic or Muck soils are not classified under this system. Disturbed Soil Areas are not rated under this system.

The OMAFRA document *Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario* defines CLI classification as follows:

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.

The OMAFRA document *Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario* defines the CLI subclassification identified on the Study Area as follows:

Subclass I – Inundation by Streams or Lakes
Subclass I denotes soils subject to periodic flooding by streams and lakes which causes crop damage or restricts agricultural use.

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.

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. This limitation only applies to soils classified as poorly or very poorly drained.

Each polygon identified on-site was classified according to the CLI rating system then correlated to the CLI classifications as presented in the *Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981)*, the digital soil data provided by OMAFRA, and the OMAFRA document *Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for the Application of the Canada Land Inventory in Ontario*.

Bottom Land soils are classified as CLI class 5I.

Cramahe Gravelly Sandy Loam on complex 'f' (15.0 – 30.0 percent) are considered CLI class 5T and on complex 'g' (30.0 – 60.0 percent) are considered as CLI class 6T.

Emily Loam soil on simple (soil length greater than 50 m) 'B' (0.5 - 2.0 percent slopes) and simple 'C' (2.0 – 5.0 percent) are considered CLI class 1. Emily Loam soil on complex (slope length less than 50 m) 'c' are considered as CLI class 2T, and complex 'd' (5.0 – 9.0 percent) are considered as CLI class 3T.

Lyons Loam soil on complex 'b' slopes are considered CLI class 5W.

Otonabee Sandy Loam soil on complex 'b' (0.5 – 2.0 percent) slopes are considered as CLI class 1. Otonabee Sandy Loam soil on complex 'f' slopes are considered as CLI class 5T.

Disturbed Soils are not rated in the CLI classification system and are identified in Figure 2 as NR (not rated).

Table 1 summarizes the relative percent area occupied by each capability class for the Study Area, the Total Site Area, and the proposed Limit of Extraction Area.

Table 1 Canada Land Inventory

Canada Land Inventory Class (CLI)	Study Area (ha/percent occurrence)	Total Site Area (ha/percent occurrence)	Proposed Limit of Extraction Area (ha/percent occurrence)
Class 1	10.5/27.1	0.4/4.4	-
Class 2	6.5/16.8	0.5/4.6	-
Class 3	-	-	-
Class 4	-	-	-
Class 5	18.4/47.4	6.2/63.5	3.3/58.0
Class 6	1.7/4.4	1.3/13.6	1.0/18.2
Class 7	-	-	-
Not Rated (Disturbed and Organic soil)	1.7/4.4	1.4/13.8	1.4/23.8
Totals	38.8/100.0	9.8/100.0	5.7/100.0

The Study Area comprised approximately 43.8 percent CLI class 1 – 3 soils, with CLI class 1 of approximately 27.1 percent and CLI class 2 of approximately 16.8 percent. The remainder of the Study Area comprised approximately 47.4 percent CLI class 5, 4.4 percent CLI class 6, and 4.4 percent Not Rated lands.

The Total Site Area comprised a small area of CLI class 1 – 3 soils (0.9 ha/9.0 percent). The remainder of the Study Area comprised approximately 63.5 percent CLI class 5, 13.6 percent CLI class 6, and 13.8 percent Not Rated lands.

The proposed limit of extraction area comprised no CLI class 1 – 3 soils. The remainder of the Study Area comprised approximately 58.0 percent CLI class 5, 18.2 percent CLI class 6, and 23.8 percent Not Rated lands.

3.9 HOFFMAN PRODUCTIVITY INDEX (SOIL PRODUCTIVITY RATING)

The Hoffman Productivity Index (HPI) is a tool that was published in ARDA Report No. 4 *The Assessment of Soil Productivity for Agriculture* and is used to relate the productivity of lands to the CLI soil capability.

These indices are also referred to as the Soil Productivity Index and are used to calculate and assign a parcel or polygon a single value which represents the overall productivity of that parcel or polygon.

The single value is derived from the sum of the percent occurrence of each CLI Soil Capability Class on the parcel or within the polygon multiplied by the productivity index corresponding to the soil class.

Certain assumptions are made when using the productivity index. The HPI assumes that if the same level of management is applied to areas of differing CLI classes, then the productivity for each class will differ. Hoffman determined the average yields produced for common field crops on lands with CLI classes 1 to 4 within Ontario.

In developing the HPI, it was determined that a CLI class 2 land produced approximately 80% of the yield that would be associated with a CLI class 1 land. Further that a CLI class 3 land produced approximately 64% of the yield that would be associated with a CLI class1 land, while a CLI class 4 land produced approximately 49%. Values for class 5 through class 7 lands were extrapolated. As a result, it was determined that the productivity ranges were as follows as illustrated in Table 2.

Table 2 Soil Productivity Index Ranges

Soil Productivity Index Ratings	
CLI Class	**Soil Productivity Index**
1	1.0
2	0.8
3	0.64
4	0.49
5	0.33
6	0.17
7	0.02

A parcels or polygons HPI or Soil Productivity Index is calculated as follows:

Soil Productivity Index =
(percent occurrence of class 1 lands x 1.0) + (percent occurrence of class 2 lands x 0.8) + (percent occurrence of class 3 lands x 0.64) + (percent occurrence of class 4 lands x 0.49) + (percent occurrence of class 5 lands x 0.33) + (percent occurrence of class 6 lands x 0.17) + (percent occurrence of class 7 lands x 0.02)

Once a Soil Productivity Index value is calculated for the parcel or polygon, the value can be related back to a CLI Equivalent. The following table (Table 3) illustrates the range of values which can be directly correlated to the equivalent CLI class.

Table 3 Soil Productivity Index Range and Equivalent CLI

Soil Productivity Index Range	
Equivalent CLI Class	**Soil Productivity Range**
1	0.90 - 1.00
2	0.73 - 0.89
3	0.58 – 0.72
4	0.43 – 0.57
5	0.28 – 0.42
6	0.10 – 0.27
7	0.00 – 0.09

An HPI value was calculated for Study Area Lands, the Total Site Area and the proposed limit of extraction area. The HPI values and subsequent CLI classes are provided in Table 4.

Table 4 Soil (Hoffman) Productivity Rating and Equivalent CLI Class

	Soil (Hoffman) Productivity Rating	Corresponding CLI Class
Study Area	0.57	4
Total Site Area	0.31	5
Proposed Limit of Extraction	0.22	6

The calculated Soil Productivity Rating for the Study Area was 0.57 or a CLI class 4 equivalent, for the Total Site Area was 0.31 or a CLI class 5 equivalent, and for the proposed limit of extraction area was 0.22 or a CLI class 6 equivalent.

4.0 SUMMARY AND CONCLUSIONS

DBH Soil Services Inc. was retained to complete a Soil Survey and Canada Land Inventory (CLI) classification assessment for an area identified as the Sand Road Pit Extension located at:

3749 Highway 7
Part Lot 15, Concession 6
Town of Asphodel
Peterborough County

This area is comprised of one parcel identified by the Municipal Property Assessment Corporation (MPAC) Roll Number 150101000210600000000.

The Study Area lands comprise approximately 38.8 ha (95.9 acres) of which approximately half of the lands are used for agricultural crop production (common field crop, corn in the 2024 growing season based on crop stubble). The remainder of the parcel includes low, wet areas, areas of steep slopes, and disturbed areas associated with laneways and a wayside aggregate pit area (southeast corner). Areas of brush and/or trees were noted along portions of the field edges, in the low wet areas in the central portion of the parcel, and in the southern portions of the parcel during the onsite survey.

The results of the Soil Survey assessment include the following:

- No livestock, livestock facilities/buildings or buildings of any kind were observed on the property during the onsite soil survey.

- The Study Area is roughly bounded: on the east by an agricultural field and the existing Sand Road Pit (to the southeast); on the south by steep slopes and woodland areas; on the west by woodlands and agricultural fields; and on the north by Highway 7 and agricultural fields.

- The Study Area is located approximately 23.5 km northeast of the urban areas of Peterborough, and approximately 3.0 km southwest of the urban areas of the Village of Norwood.

- A few small, ponded areas, usually within the headlands were noted in the Study Area.

- No irrigation equipment or irrigation systems were observed in the Study Area.

- The Study Area is not artificially tile drained.

- The Study Area comprised approximately 43.8 percent CLI class 1 – 3 soils, with CLI class 1 of approximately 27.1 percent and CLI class 2 of approximately 16.8 percent.

The remainder of the Study Area comprised approximately 47.4 percent CLI class 5, 4.4 percent CLI class 6, and 4.4 percent Not Rated lands.

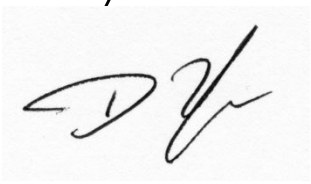
- The Total Site Area comprised a small area of CLI class 1 – 3 soils (0.9 ha/9.0 percent). The remainder of the Study Area comprised approximately 63.5 percent CLI class 5, 13.6 percent CLI class 6, and 13.8 percent Not Rated lands.

- The proposed limit of extraction area comprised no CLI class 1 – 3 soils. The remainder of the Study Area comprised approximately 58.0 percent CLI class 5, 18.2 percent CLI class 6, and 23.8 percent Not Rated lands.

- The calculated Soil Productivity Rating for the Study Area was 0.57 or a CLI class 4 equivalent, for the Total Site Area 0.31 or a CLI class 5 equivalent, and for the proposed limit of extraction area was 0.22 or a CLI class 6 equivalent.

The foregoing represents a soil survey and Canada Land Inventory (CLI) assessment for the Study Area, the Total Site Area, and the proposed extraction area. As noted in this assessment, the Total Site Area, and the proposed limit of extraction area do not comprise any CLI class 1 – 3 lands.

Sincerely



Dave Hodgson
President
DBH Soil Services Inc.

5.0 REFERENCES

The following data sources were used to carry out the detailed Soil Survey and CLI assessment for this study:

- 1:10000 scale Ministry of Natural Resources (MNR) Aerial Photography, 1978,
- 1:10000 scale Ontario Base Map (1983) Ministry of Natural Resources:
    - 10 17 5650 48100
    - 10 17 5700 48100

  1:50000 scale NTS Map No 40 J/2. 1984. Ministry of Energy Mines and Resources, Canada,
- 1:50000 scale NTS Map No 40 J/2. Canada Land Inventory (CLI) Capability Mapping,
- Agricultural Information Atlas (online resource, Ontario Ministry of Natural Resources),
- *Agronomy Guide for Field Crops (Publication 811). (2017).* Ontario Ministry of Agriculture, Food and Rural Affairs,
- ARDA Report No. 4, *The Assessment of Soil Productivity for Agriculture,*
- *Canadian System of Soil Classification (CSSC) (Agriculture Canada, 1998)* and the *Field Manual for Describing Soils in Ontario (Ontario Centre for Soil Resource Evaluation, 1993).*
- *Classifying Prime and Marginal Agricultural Soils and Landscapes:* Guidelines for Application of the Canada Land Inventory in Ontario. OMAFRA. Online, 2023,
- County of Peterborough online mapping, (https://www.ptbocounty.ca/en/living/maps.aspx)
- *Draft Agricultural Impact Assessment (AIA) Guidance Document (March 2018),*
- *Google Earth Pro Imagery,*
- *Guide to Agricultural Land Use*, Ontario Ministry of Agriculture, Food and Rural Affairs, March 1995,
- *Guidelines for Detailed Soil Surveys in Ontario (OMAFA, 2024 online),*
- Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas (Publication 851), Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), 2016,
- Online Soils data for the Province of Ontario (Geohub, 2024),
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) Factsheet – Crop Heat Units for Corn and Other Warm Season Crops in Ontario, 1993,
- Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA) AgMaps online mapping,
- Ontario Ministry of Agriculture and Food - Land Use Systems Mapping,
- Ontario Ministry of Agriculture and Food - Artificial Drainage System Mapping,
- *Provincial Planning Statement, 2024,*
- *Soils of Peterborough County (Report No. 45 of the Ontario Institute of Pedology, Gillespie, John E. and C.J. Acton, 1981)*
- *Soil Mapping System for Canada:* (https://sis.agr.gc.ca/cansis/publications/manuals/1981-smsc/index.html),
- *Soil Survey Handbook:* (https://sis.agr.gc.ca/cansis/publications/manuals/1987-9/index.html),
- *The Physiography of Southern Ontario 3rd Edition, Ontario Geological Survey Special Volume 2, Ministry of Natural Resources, 1984,*
- Windshield and field surveys by DBH Soil Services staff, November 9, 2024.

APPENDIX A

Guidelines for Detailed Soil Surveys in Ontario

Guidelines for detailed soil surveys in Ontario

Learn about the guidelines for conducting soil surveys for the assessment of agricultural crop capability and suitability. This technical information is for municipalities, landowners and consultants in Ontario.

On this page

Introduction
Guidelines
Soil survey components
Additional publications and guidelines
Qualifications
Contact us
Resources

Introduction

More detailed, property specific soil surveys are sometimes needed when a land use change (for example, an official plan amendment) is being considered. The *Planning Act, 1990* establishes that decision makers, such as municipalities and the Ontario Land Tribunal, must be consistent with the Provincial Planning Statement. This Statement provides direction on the protection of prime agricultural areas and establishes policy criteria to be considered when non-agricultural uses are being contemplated in Ontario's prime agricultural areas.

It is important to differentiate between prime agricultural areas and prime agricultural land.

Prime agricultural area are areas where prime agricultural lands predominate. This includes areas of prime agricultural lands and associated Canada Land Inventory Class 4 through 7 lands, and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. Prime agricultural areas may be identified by a planning authority based on provincial guidance or informed by mapping obtained from the Ministry of Agriculture, Food and Agribusiness and the Ministry of Rural Affairs.

Prime agricultural land means specialty crop areas and/or Canada Land Inventory Class 1, 2 and 3 lands, as amended from time to time, in this order of priority for protection.

Guidelines

The guidelines provide direction for land resource consultants and their clients undertaking detailed soil surveys for the assessment of agricultural crop capability and suitability. Detailed soil surveys can also be used in precision agriculture, land management decisions and developing an understanding of field and landscape characteristics. For these guidelines, a detailed soil survey is one compiled at a working map scale of 1:10,000 or greater. They are also a set of basic requirements to ensure that planners, landowners and consultants have the necessary detailed agricultural land resource information presented and reported in a standard form to make planning decisions or to advocate for changes to planning decisions.

The need for detailed soil information for some local decisions often arises from concerns with:

- the accuracy of the published soil information mapping, classification and agricultural interpretations
- situations where the published information is too general for decisions about a specific area

Published soil information refers foremost to the Soil Survey Complex database and secondly to the county and municipal soil reports and maps. Electronic copies of the soil survey reports (and maps) for Ontario are available free online from Agriculture and Agri-Food Canada and paper copies can be ordered through Publications Ontario.

Soil survey components

The components of a soil survey are as follows:

1. Complete the soil survey according to generally accepted soil survey procedures and base it on an adequate density and distribution of soil profile and landscape inspections. A general guideline is one ground inspection per 2 cm^2 on the final map (Mapping Systems Working Group, 1981). At a scale of 1:10,000, this is one inspection per 2 hectares. Include inspection locations and data with the soil map and report. The manual, Characterizing sites, soils and substrates in Ontario[1] provides guidelines for classifying soils and the landscapes in which they occur.
2. Correlate soils of the subject area with the soils classified in the published soil survey map and report for that county or municipality.
3. Interpret agricultural capability for common field crops (corn, soybeans, small grains, forages) using soil capability for agriculture in Ontario. Land and soils which are classified as prime agricultural land (CLI classes 1 to 3) have necessary capital improvements in place or it is physically feasible for the landowner/manager/farmer to make the necessary improvements. If it is not feasible to make improvements that would enable mechanized row cropping, the land may be considered as less than prime (CLI class 4 or 5).
4. The question of feasibility often arises about land with wetness limitations for which more drainage improvement is required for productivity to be optimized. Each case must be considered individually. Agricultural drainage system mapping information (constructed drains, tile drainage and/or controlled drainage) for the subject area is a necessary reference to help argue and answer the question of drainage improvement feasibility and is available in the Agricultural Information Atlas.
5. If the subject area lies within or adjacent to a larger area of specialty crop production, then evaluate its soil suitability for specialty crops. Specialty crops refer to fruit, vegetable and other crops grown commercially in Ontario, and which cannot be grouped with the general common field crop types listed above. Specialty crop areas are where specialty crops are predominantly grown such as tender fruits (peaches, cherries, plums), grapes, other fruit crops, vegetable crops, greenhouse crops and crops from agriculturally developed organic soil (Provincial Planning Statement).

Additional publications and guidelines

More recent soil survey reports (Brant, Elgin, Haldimand-Norfolk, Middlesex, and Niagara) include ratings of soil suitability for some specialty crops. The ratings published in these reports may also guide the interpretation of reasonably correlated soils in adjacent counties whose soil reports contain no such specialty crop interpretations.

The publication, A compilation of soil, water and climatic requirements for selected horticultural crops in

southern Ontario[2] outlines general landscape and moisture needs for more than 40 different tree fruit, small fruit and vegetable crops. It comprises many of the soil principles used to arrive at the soil suitability ratings given in soil survey publications cited in (a).

Irrigation and/or artificial drainage are often necessary, depending on the site and crop. Consider climatic regions as the longer the frost-free period and the greater the heat units available, the greater the range and productivity of crops the land tends to support.

Soils which are interpreted to be prime (Class 1-3) for the common field crop types of corn, soybeans, small grains and forages have viable suitability for a range of specialty crops. This is most true of sandy and loamy soils. Clayey soils are suitable for a lesser range of specialty crops but may be well suited for some crops.

Qualifications

Hire an experienced pedologist for any survey work being done to ensure that all of the components for the detailed soil survey are properly completed.

Contact us

For more information on the Ontario soil survey work:

- call toll-free: 1-877-424-1300
- email: ontariosoilsurvey@ontario.ca

Resources

Soil Classification Working Group. 1998. The Canadian System of Soil Classification; 3rd edition. Agriculture and Agri-Food Canada Publication 1646, 187pp.

Mapping Systems Working Group. 1981. A Soil Mapping System for Canada: Revised. Land Resource

Research Institute. Contribution Number 142. Research Branch, Agriculture Canada, Ottawa. 94pp.

Updated: October 16, 2024
Published: May 06, 2024

Footnotes

- [1] R.J. Heck, D.J. Kroestch, H.T. Lee, D.A Leadbeater, E.A. Wilson & B.C. Winstone. 2017. Characterizing Sites, Soils & Substrates in Ontario: Volume 1, Field Description Manual. School of Environmental Sciences, University of Guelph. Guelph, ON.
- [2] E. W. Present. 1990. A Compilation of Soil, Water and Climatic Requirements for Selected Horticultural Crops in Southern Ontario. Ontario Institute of Pedology. Land Resource Research Centre. Research Branch. Agriculture Canada. Guelph, Ontario.

Ministry of Agriculture, Food and Agribusiness and Ministry of Rural Affairs

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APPENDIX B

Soil Inspection Data

Waypoint	Soil Moisture	Drainage	Other	Horizon 1	Subclass (1)	Depth Up (1)	Depth Low (1)	Matrix Colours (1)	Course Fragments % (1)	Texture (1)	% Slope	Slope Length	Slope Class	Horizon 2	Subclass (2)	Depth Up (2) ${depth_low_1}	Depth Low (2)	Matrix Colours (2)	Other - Matrix Colours (2)	Mottle Colours (2)	Other - Mottle Colours (2)	Course Fragments % (2)	Texture (2)	Horizon 3	Subclass (3) 1	Depth Up (3) ${depth_low_2}	Depth Low (3)	Matrix Colours (3)	Other - Matrix Colours (3)	Mottle Colours (3)	Other - Mottle Colours (3)	Course Fragments % (3)	Texture (3)
1	Dry	I-Imperfect	Refusal at 25	A	p	0	25	10YR33	Less than 2	Sandy_Loam	1	<_than_50_m	B																				
2	Moist	I-Imperfect	Refusal at 44	A	p	0	16	10YR33	Less than 1	Sandy_Loam	2	>_than_50_m	b	AB		16	30		other	10YR53		Less than 1	Sandy_Loam	B	m	30	44	other	10YR54	10YR56		Less than 1	Sandy_Loam
3	Dry	W-Well	Refusal 25	A	h	0	25	10YR33	Less than 1	Sandy_Loam	20	>_than_50_m	f																				
4	Dry	W-Well	Refusal 23	A	h	0	23	10YR33	Less than 1	Sandy_Loam	2	>_than_50_m	b																				
5	Dry	W-Well	Refusal 24	A	h	0	24	10YR32	Less than 1	Sandy_Loam	20	less than	f																				
6	Moist	I-Imperfect	Refusal 33	A	h	0	33	10YR32	Less than 1	Sandy_Loam	2	more than	B																				
7	Moist	W-Well	Refusal 75	A	p	0	11	10YR33	Less than 1	Silt_Loam	4	>_than_50_m	c	AB		11	22	other	10YR54			Less than 1	Sandy_Loam	B	m	22	75	other	10YR53	10YR56		Less than1	Silt_Loam
8	Dry	W-Well	Refusal 44	A	p	0	17	10YR33	Less than 1	Sandy_Loam	2	<_than_50_m	B	B	m	17	44	other	10YR53			Less than 1	Sandy_Loam										
9	Dry	W-Well	Refusal 34	A	p	0	12	10YR33	Less than 1	Sandy_Loam	3	>_than_50_m	c	B	m	12	34	other	10YR54			Less than 1	Sandy_Loam										
10	Moist	I-Imperfect	Refusal 18	A	h	0	18	10YR32	Less than 1	Sandy_Loam	3	>_than_50_m	c																				
11	Moist	I-Imperfect	Refusal 30	A	h	0	30	10YR32	Less than 1	Sandy_Loam	1	less than	b																				
12	Dry	W-Well	Refusal 26	A	h	0	26	10YR32	Less than 1	Sandy_Loam	10	less than	e																				
13	Dry	W-Well	Refusal 20	A	h	0	20	10YR32	Less than 1	Sandy_Loam	1	more than	B																				
14	Dry	W-Well	Refusal 31	A	h	0	31	10YR32	Less than 1	Sandy_Loam	35	less than	g																				
15	Dry	W-Well	Refusal 28	A	h	0	28	10YR32	Less than 1	Sandy_Loam	30	less than	g																				
16	Dry	W-Well	Side Profile	A	h	0	23	10YR32	Less than 1	Sandy_Loam	23	less than	f	B	m	23	28	10YR54				Less than 1	Sandy_Loam										
17	Moist	I-Imperfect	Refusal 45	A	h	0	35	10YR32	Less than 1	Sandy_Loam	1	more than	B	B	m	35	45	10YR54	10YR56														
18	Moist	I-Imperfect	Refusal 41	A	p	0	19	10YR32	Less than 1	Sandy_Loam	4	less than	c	B	m	19	41	10YR54	10YR56			Less than 1	Sandy_Loam										
19	Dry	W-Well	Refusal 40	A	p	0	20	10YR32	Less than 1	Sandy_Loam	6	>_than_50_m	d	C	k	20	40	other	10YR62			Less than 1	Sand										
20	Dry	W-Well	Refusal 10	A	p	0	10	10YR32	Less than 1	Sandy_Loam	1	<_than_50_m	B																				
21	Dry	W-Well	Refusal 46	A	p	0	25	10YR32	Less than 1	Sandy_Loam	4	more than	C	B	m	25	46	10YR54				Less than 1	Sandy_Loam										

APPENDIX C

Curriculum Vitae

DBH Soil Services Inc
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DAVID B. HODGSON, B.Sc., P. Ag.
PRESIDENT – Senior Pedologist/Agrologist

EDUCATION

- B.Sc. (Agriculture), 1983-1987; University of Guelph, Major in Soil Science
- Agricultural Engineering, 1982-1983; University of Guelph.
- Materials Science Technology, 1981-1982; Northern Alberta Institute of Technology (NAIT), Edmonton, Alberta.

AREAS OF PROFESSIONAL EXPERIENCE

2000 to Present — **Senior Pedologist/President. DBH Soil Services Inc., Kitchener, Ontario.**
Mr. Hodgson provides expertise in the investigation, assessment and resource evaluation of agricultural operations/facilities and soil materials. Dave is directly responsible for the field and office operations of DBH Soil Services and for providing advanced problem-solving skills as required on an individual client/project basis. Dave is skilled at assessing soil and agricultural resources, determining potential impacts and is responsible for providing the analysis of and recommendations for the remediation of impacts to soil/agricultural/environmental systems in both rural and urban environments.

1992 to 2000 — **Pedologist/Project Scientist. Ecologistics Limited, Waterloo, Ontario.**
As pedologist (soil scientist), Mr. Hodgson provided expertise in the morphological, chemical and physical characterization of insitu soils. As such, Mr. Hodgson was involved in a variety of environmental assessments, waste management, agricultural research and site/route selection studies.
Dave was directly responsible for compiling, analysis and management of the environmental resource information. Dave is skilled at evaluating the resource information utilizing Geographic Information System (GIS) applications.

Dave was also involved in the firm's Environmental Audit and Remediation Division in the capacity of: asbestos identification; an inspector for the remediation of a pesticide contaminated site; and an investigator for Phase I and Phase II Audits.

SELECT PROJECT EXPERIENCE

Municipal Comprehensive Review and Mapping Studies (MCR)

- City of Markham Official Plan Review, 2025 – ongoing.
- Town of New Tecumseth Municipal AIA and MDS1 review, 2024 – 2025.
- Bruce County Official Plan Review, Agriculture, 2022 – 2023.
- Simcoe County Official Plan Review, Agriculture, 2020 - ongoing.
- City of Vaughan Official Plan Review, Agriculture, 2020 – 2021.
- Northumberland County, Agriculture, 2020 - ongoing.
- Halton Region, PSA Mapping, Agriculture, 2022.
- Halton Region Official Plan Review, Agriculture, 2019 - 2022.

Environmental Assessment Studies

- Agricultural Component of the Highway 401 Widening Milton to Wellington County Boundary, 2023 – ongoing.
- Agricultural Component of the Highway 6 Widening Hamilton 2022 – 2024.
- Agricultural Component of the Bradford Bypass (Highway 400 to 404 link) 2021 – 2024.

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- Agricultural Component of the Green for Life (GFL) Environmental, Moose Creek, Eastern Ontario Waste Handling Facility (EOWHF) Expansion, 2020 – 2023.
- Agricultural Component of the Greater Toronto Area West (GTAW) Highway 413 Corridor Assessment, 2019 – ongoing.
- Peer Review of the Walker Environmental Group (WEG) Inc. Southwestern Landfill Proposal, Ingersoll, 2013 – 2021.
- Agricultural Component for the High-Speed Rail Kitchener to London –Terms of Reference, 2018,
- Agricultural Component of the Mount Nemo Heritage District Conservation Study – City of Burlington, 2014 – 2015.
- Agricultural Component of the Greater Toronto Area West (GTAW) Highway Corridor Assessment – Phase 2, 2014 – 2016.
- Peer Review of the Agricultural Component of the Walker Group Landfill – Ingersoll, 2013 – 2015.
- Agricultural Component of the Highway 407 East Extension Design and Build Phase, 2012 – 2013.
- Agricultural Component of the Beechwood Road Environmental Centre (Landfill/Recycling) – Napanee, 2012 – 2013.
- Agricultural Component of the Clean Harbors Hazardous Waste Landfill Lambton County 2009 – 2015.
- Agricultural Component of the Highway 401 widening Cambridge to Halton Region 2009 – 2012.
- Agricultural Component of the Upper York Sanitary Sewer Study, York Region, 2009 – 2013.
- Agricultural Component of the Greater Toronto Area West Corridor Environmental Assessment Study 2007 – 2013 (Phase 1).
- Agricultural Component of the Niagara to GTA Planning and Environmental Assessment Study, 2007 – 2013.
- Agricultural Component of Highway 401 widening, Chatham, 2006 - 2007.
- Agricultural Component of the Trafalgar Road study, Halton Region, 2005.
- Agricultural Component of Highway 404 Extension North, 2004.
- Agricultural Component of the Highway 404 – 400 Bradford Bypass, 2004.
- Agricultural Component of the Highway 407 East Extension, 2002 – 2010.

Transportation Design/Build Projects

- Bradford Bypass (Highway 400 to Highway 404 link) Agricultural Component – West Section, 2025 – ongoing.
- Bradford Bypass (Highway 400 to Highway 404 link) Agricultural Component – Central Section, 2025 – ongoing.
- Bradford Bypass (Highway 400 to Highway 404 link) Agricultural Component – East Section, 2025 – ongoing.
- Highway 407 East Extension Agricultural Component, 2012.

Agricultural Impact Assessment (AIA)/Minimum Distance Separation Studies

- Treasure Hill – Markham AIA (including MDS1), 2025
- City of Niagara Falls Mewburn Road AIA (including MDS1), 2025.
- Land Use Change, Soccer Recreation Facility, Burlington, Scoped AIA (including MDS1), 2025.
- King's Christian Collegiate Oakville, Scoped AIA (including MDS1), 2025.
- Scotts Canada, Talbot Road AIA (including MDS1), 2025.
- Eden Mills Settlement Area Boundary Expansion AIA (including MDS1), 2025.
- Tremble Pit Grey County AIA, 2025.
- Capstone Wind Project (Chatham) AIA Component One, 2025.
- Cedar Flats Wind Project (Oxford County) AIA Component One, 2025.
- Bower Hill Wind Project (Oxford County) AIA Component One, 2025.
- Temiskaming Shores Wind Project AIA Component One, 2025.
- Atura Power Gas Generating Stations (four) AIA's, 2025.
- Agerton AIA Update, 2025.
- Dorchester Settlement Area Boundary Expansion AIA (including MDS1), 2025.
- Beatty Line Settlement Area Boundary Expansion AIA (including MDS1), 2025.
- Cambridge South AIA, (including MDS1), 2024.

- AECOM Peel Sewer AIA, 2024 - 2025.
- Port Hope North Settlement Area Boundary Expansion AIA, (including MDS1) 2024
- Fergus Oaks, Fergus Settlement Area Boundary Expansion AIA (including MDS1), 2024.
- Jordan Settlement Area Boundary Expansion AIA (including MDS1), 2024.
- Town of New Tecumseth AIA Assistance, 2024
- Whistle Bare Road, North Dumfries Minimum Distance Separation (MDS1 Assessment), 2024.
- Balsam Road, Pickering Minimum Distances Separation (MDS1) Assessment, 2024.
- Port Hope West Urban Boundary Expansion Scoped AIA (including MDS1), 2023.
- Port Hope East Urban Boundary Expansion Scoped AIA (including MDS1), 2023.
- Town of King Battery Energy Storage System (BESS) AIA, 2023.
- City of London Emergency Services AIA (including MDS1), 2023.
- Caledonia Secondary Plan Scoped AIA (including MDS), 2023.
- Inglewood Municipal Well AIA, 2023.
- Orangeville Battery Energy Storage System (BESS) AIA, 2023.
- County Road 109 Realignment AIA, 2023.
- Thornbury Acres AIA (including MDS1), 2022 – 2023.
- Highway 6 Widening Hamilton AIA, 2022 – 2024.
- Whistle Bare Aggregate Pit AIA, 2022.
- Middletown Road Vacuum Truck Services AIA (including MDS1), 2022.
- Claremont, Durham Region Minimum Distance Separation (MDS1), 2022.
- Grand Valley Settlement Area Boundary Expansion 2022 - 2024.
- Hagersville Minimum Distance Separation (MDS1), 2022.
- East River Road Minimum Distance Separation (MDS1), County of Brant, 2022.
- Brampton Brick Norval Quarry AIA, 2022 – 2024.
- Northfield Drive Minimum Distance Separation (MDS1), Waterloo Region, 2021
- Bradford Bypass Highway 400- 404 Link AIA, 2021 – 2024.
- Wilfrid Laurier Milton Campus AIA (including MDS1), 2021 – 2023.
- Town of Lincoln Road Realignment AIA, 2021 – 2023.
- Britannia Secondary Plan, AIA (including MDS1), Milton, 2021 – 2023.
- Reesor Road Minimum Distance Separation (MDS1), Markham, 2021.
- Maclean School Road Minimum Distance Separation (MDS1), County of Brant, 2021.
- Petersburgh Sand Pit AIA, 2021 – 2022.
- Milton CRH Quarry Expansion AIA, 2020 – 2022.
- Grimsby, Specialty Crop Area Redesignation AIA, 2020 - 2022.
- Halton Hills, Premier Gateway Phase 2 Employment Lands Secondary Plan, AIA (including MDS1), 2020 - 2021.
- Milton Education Village Secondary Plan AIA (including MDS1), 2020 - 2021.
- Woodstock, Pattullo Avenue Realignment AIA, 2020 - 2021.
- Smithville, West Lincoln Master Community Plan AIA (including MDS1), AECOM, 2019 – 2022.
- Kirby Road AIA, HDR, Vaughan, 2019 – 2021.
- Elfrida Lands, City of Hamilton, AIA Update, WSP, 2019 – 2021.
- Dorsay Development – Durham Region High Level Agricultural Assessment, 2019.
- Stoney Creek Landfill AIA Update – GHD, 2019.
- Town of Wilmot, Aggregate Pit Study (Hallman Pit) AIA, 2018 - 2019.
- Courtice Area Southeast Secondary Plan (Clarington) AIA (including MDS1), 2019,
- Town of Halton Hills, Minimum Distance Separation (MDS 1), August 2018,
- Cedar Creek Pit/Alps Pit (North Dumfries) AIA, 2018 – 2021,
- Belle Aire Road (Simcoe County) AIA (including MDS1), 2019,
- Vinemount Quarry Extension (Niagara) AIA, December 2017.
- Rivera Fine Homes, Caledon – Minimum Distance Separation (MDS 1), 2014.

- Town of Milton PanAm Velodrome – Minimum Distance Separation (MDS) 2012 – 2013.

Soil Surveys/Soil Evaluations

- Soil Survey and Canada Land Inventory Evaluation, Bye Construction Grey County, 2025.
- Soil Assessment and Sampling, Trussler Road Kitchener, 2024.
- Soil Survey and Canada Land Inventory Evaluation, Mount Hope, 2024.
- Soil Survey and Canada Land Inventory Evaluation, Peterborough, 2024.
- Soil Survey and Canada Land Inventory Evaluation, Essex, 2024.
- Mississippi Mills Soil Survey Peer Reviews (4 parcels), 2024.
- Ontario Stone, Sand & Gravel Association Case Study Rehabilitated Pits, 2023 – ongoing.
- Soil Survey and Canada Land Inventory Evaluation, Neubauer Pit, 2023.
- Soil Survey and Canada Land Inventory Evaluation, David Pit, 2023.
- Soil Survey and Canada Land Inventory Evaluation, Pinehurst Road, 2023.
- Soil Survey and Canada Land Inventory Evaluation, Paris Plains Church Road Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Mulmur Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Port Colborne Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Pike Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, New Dundee Road Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Gehl Farm, 2022
- Soil Sampling, City of Kitchener, 2021 – 2022.
- Soybean Cyst Nematode Soil Sampling, Enbridge, 2021.
- Soil Survey and Canada Land Inventory Evaluation, Max Becker Enterprises, City of Kitchener, 2021
- Soil Survey and Canada Land Inventory Evaluation, Max Beck Enterprises, City of Kitchener, 2021 – 2022.
- Soil Survey and Canada Land Inventory Evaluation, Burlington, Nelson Quarry, 2020-2021.
- City of Kitchener, City Wide Soil Studies, 2020-ongoing.
- Soil Survey, Fallowfield Drive, City of Kitchener Development Manual Study, 2020 - ongoing.
- Soil Survey, Williamsburg Estates, City of Kitchener Development Manual Study, 2020 - 2021.
- Soil Survey, South Estates, City of Kitchener Development Manual Study, 2020 - 2021.
- Soil Survey and Canada Land Inventory Evaluation, Burlington, Nelson Quarry, 2019.
- Soil Survey and Canada Land Inventory Evaluation, Maryhill Pit, 2019.
- Soil Survey and Canada Land Inventory Evaluation, Glen Morris Pit, Lafarge Canada, 2018,
- Soil Survey and Canada Land Inventory Evaluation, Brantford Pit Extension, Lafarge Canada, 2018,
- Soil Survey and Canada Land Inventory Evaluation, Pinkney Pit Extension, Lafarge Canada, May 2018,
- Soil evaluation and opinion, King-Vaughan Road, March 2018,

Land Evaluation and Area Review Studies (LEAR)

- Land Evaluation and Area Review (LEAR) presentation for Lanark County Council, 2024.
- Land Evaluation and Area Review (LEAR) Town of Amaranth, 2023 – ongoing.
- Mapping Audit Bruce County. Assessment of Prime and Non-Prime Agricultural Lands, 2022.
- Mapping Audit Northumberland County. Comparison of Regional and Provincial Prime Agricultural Area Mapping – 2021 - ongoing.
- Mapping Audit Simcoe County. Comparison of Regional and Provincial Prime Agricultural Area Mapping – 2021 - ongoing.
- Mapping Audit Halton Region. Comparison of Regional and Provincial Prime Agricultural Area Mapping – 2019 - 2022.
- Land Evaluation and Area Review (LEAR) – Soils Component, in Association with AgPlan Ltd, Kanata/Munster. December 2017 – July 2018.
- Land Evaluation and Area Review (LEAR) – Soils Component, Prince Edward County, 2016 – 2017.
- Land Evaluation and Area Review (LEAR) – Soils Component, Peel Region, 2013 - 2014.
- Land Evaluation and Area Review (LEAR), Minto Communities, Ottawa, 2012 – 2013.

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Expert Witness

- Ontario Land Tribunal (OLT) Hearing/mediation, Thornbury Estates, 2025.
- Ontario Land Tribunal (OLT) Hearing, Haldimand County, 2024.
- Ontario Land Tribunal (OLT) Hearing preparation, Burlington Quarry, 2024.
- Ontario Land Tribunal (OLT) Hearing preparation, Cemetery Lands Bradford, 2024.
- Local Planning Appeal Tribunal (LPAT) Hearing, Greenwood Aggregates Limited, Violet Hill Pit Application, 2020.
- Ontario Municipal Board (OMB) Hearing, Burl's Creek Event Grounds 2018-2019.
- Town of Mono Council Meeting, Greenwood Aggregates Violet Hill Pit, January 2018.
- Ontario Municipal Board (OMB) Hearing, Burl's Creek Event Grounds, Simcoe County, 2015 – 2016.
- Ontario Municipal Board (OMB) Hearing, Town of Woolwich, Gravel Pit, 2012 – 2013.
- Ontario Municipal Board (OMB) Hearing, Mattamy Homes – City of Ottawa, 2011 – 2012.
- Ontario Municipal Board (OMB) Hearing, Town of Colgan, Simcoe County, 2010.
- Presentation to Planning Staff on behalf of Mr. MacLaren, City of Ottawa, 2005.
- Ontario Municipal Board (OMB) Hearing, Flamborough Severance, 2002.
- Preparation for an Ontario Municipal Board Hearing, Flamborough Golf Course, 2001.
- Ontario Municipal Board (OMB) Hearing, Stratford RV Resort and Campground – Wetland Delineation Assessment, 2000.
- Ontario Municipal Board (OMB) Hearing, Watcha Farms, Grey County, Agricultural Impact Assessment – Land Use Zoning Change, 1999-2000.
- Ontario Municipal Board (OMB) Hearing, Town of St. Vincent Agricultural Impact Assessment – Land Use Zoning Change, 1999 – 2000.
- Halton Agricultural Advisory Committee (HAAC), Halton Joint Venture Golf Course Proposal - Agricultural Impact Assessment for Zoning Change, 1999-2000
- Halton Agricultural Advisory Committee (HAAC), Sixteen Mile Creek Golf Course Proposal – Agricultural Impact Assessment for Zoning Change, 1999.
- Ontario Municipal Board (OMB) Hearing, Town of Flamborough, Environs Agricultural Impact Assessment for Zoning Change – Golf Course Proposal, 1999.
- Ontario Municipal Board (OMB) Hearing, Stratford RV Resort and Campground – Agricultural Impact Assessment, 1998.

Monitoring Studies

- Ontario Stone, Sand, and Gravel Association (OSSGA) Rehabilitation Study, 2023 – 2025.
- Enbridge Soil Sampling for Soybean Cyst Nematode, various sites Lambton County, 2022
- Union Gas/Enbridge Gas 20" Gas Pipeline Construction Monitoring – Kingsville – 2019 - 2020.
- Union Gas/Enbridge Gas – Gas Pipeline Construction Monitoring for Tree Clearing. Kingsville Project. February/March 2019.
- CAEPLA – Union Gas 36" Gas Pipeline Construction Monitoring and Post Construction Clean Up – Agricultural Monitoring Panhandle Project. 2017 – 2018.
- CAEPLA – Union Gas 36" Gas Pipeline Construction Clearing Panhandle Project (Dawn Station to Dover Station) – Agricultural Monitoring, 2017 (Feb-March).
- City of Kitchener, Soil Sampling and data set analysis, 2017 – 2025.
- GAPLO – Union Gas 48" Gas Pipeline (Hamilton Station to Milton) Construction Soil and Agricultural Monitoring, 2016 – 2017.
- GAPLO – Union Gas 48" Gas Pipeline (Hamilton –Milton) Clearing – Agricultural Monitoring, 2016.

Publications

D.E. Stephenson and D.B. Hodgson, 1996. Root Zone Moisture Gradients Adjacent to a Cedar Swamp in Southern Ontario. In Mulamoottil, G., B.G. Warner and E.A. McBean., *Wetlands Environmental Gradients, Boundaries, and Buffers*, Wetlands Research Centre, University of Waterloo. Pp. 298.