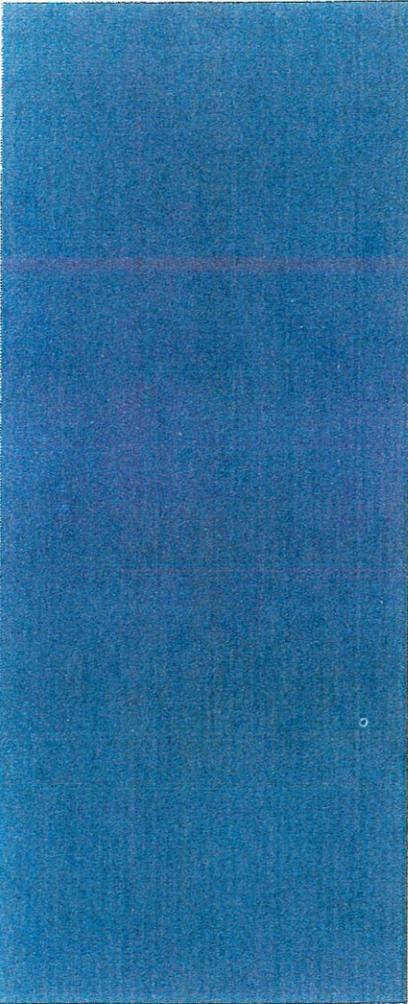


**ENVIRONMENTAL IMPACT STUDY**  
**M1 KENNEDY FARM DEVELOPMENT**



**TOWN OF MEAFORD**

**Prepared for:**

**M1 Development Inc.**

**June 2020**



**Michalski Nielsen**  
**ASSOCIATES LIMITED**

ENVIRONMENTAL PLANNING    BIOPHYSICAL ANALYSIS  
LAKE CAPACITY ASSESSMENT    RESOURCE MANAGEMENT



June 29, 2020

Mr. Suresh Singh  
LC Development Group  
M1 Development Inc.  
909 Davenport Road, 2<sup>nd</sup> Floor  
Toronto, Ontario  
M6G 2B7

**Re: Kennedy Farm Development - Meaford; Our File 5219**

Mr. Singh:

Enclosed please find our report entitled **ENVIRONMENTAL IMPACT STUDY, M1 KENNEDY FARM DEVELOPMENT – TOWN OF MEAFORD** (June 2020).

Should you have any questions, or if further clarification is required, do not hesitate to call.

Yours truly,

MICHALSKI NIELSEN ASSOCIATES LIMITED

Per:

Gord Nielsen, M.Sc.  
Ecologist  
President

GN/be

Enc.

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## **1 INTRODUCTION**

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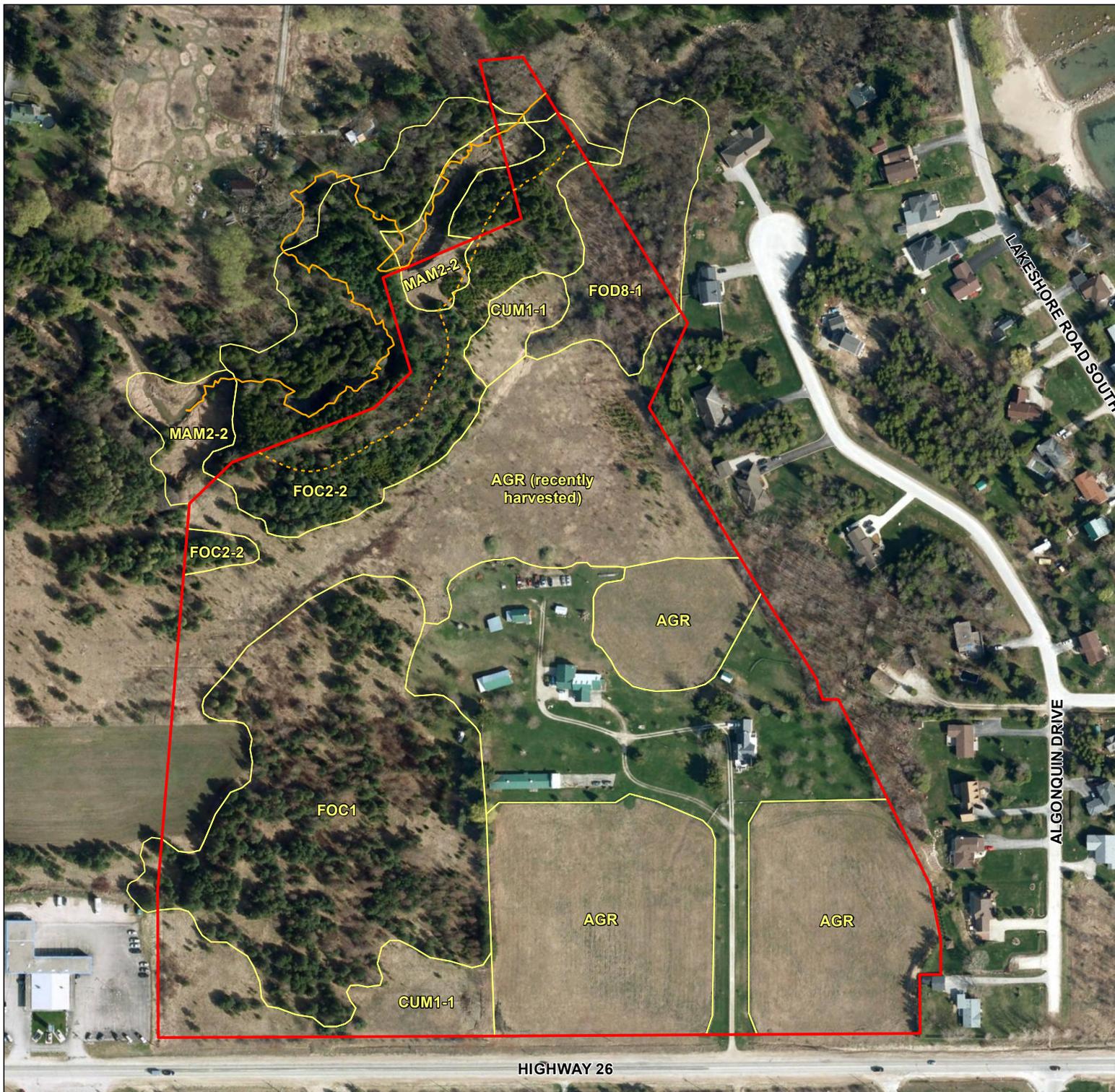
## 1.1 Purpose and Scope of our Work

In the fall of 2019, LC Development Group (LCDG) acquired a property within the urban boundary of the Municipality of Meaford, located at 206105 Highway 26. These lands are intended to be developed for attainable housing, consisting of small-lot single family homes and row townhouses. Michalski Nielsen Associates Limited (MNAL) has completed this Environmental Impact Study in support of this proposed development. That work involved reviewing pertinent background information, collecting all of the necessary field information through the fall, spring and early summer of 2019/2020 to be able to fully understand natural environment conditions and constraints in association with the subject property and adjacent lands, consulting with local planning authorities, determining whether there were any natural environment constraints which would preclude or substantially influence the footprint of development on those lands, and providing guidance on how such development should proceed. In this particular instance, such guidance needed to include that relating to:

- the identification of areas which are suitable for residential development;
- the location and design of site services, with a particular emphasis on stormwater management;
- the long-term protection of lands on which there are substantial environmental constraints; and
- additional mitigation measures which need to be implemented in order to protect the natural features on or adjacent to these lands.

## 1.2 Site Overview

The subject property is shown on **Figure 1**, with its location illustrated on the key map that is included with that drawing. It is located at the northern end of the Municipality of Meaford and is known as the Kennedy farm. It is approximately 14.0 ha in size and is legally described as Part Lots 4 and 14, Plan 541, Part Lot 1 Plan 16R10913 and Part Lot 1 Plan 16R5037 in the Municipality of Meaford. The property currently contains a dwelling, several accessory structures, agricultural fields, some old field meadow and young forest community. Centreville Creek, also known as Orchard Creek, and its valleyland extend across the northern portion of the property; although the creek is largely outside of the property limits, the wooded valleyland corridor, which also includes some wetland features, generally incorporates the most northerly portion of the subject property.

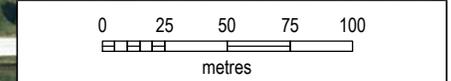


- LEGEND:**
- Top of Bank
  - - - 30 m Offset from Top of Bank
  - Subject Site
  - Ecological Land Classification

**ELC Community Description:**

AGR: Agricultural  
 CUM1-1: Dry-Moist Old Field Meadow Type  
 FOC2-2: Dry-Fresh White Cedar Coniferous Forest Type  
 FOD8-1: Fresh-Moist Poplar Deciduous Forest Type  
 FOC1: Dry-Fresh Pine Coniferous Forest Ecosite  
 MAM2-2: Reed-canary Grass Mineral Meadow Marsh

Imagery provided by Esri basemap service (DigitalGlobe)



	PROJECT NO.	1603340	REVISION:	1-2
	DATE:	Feb 18, 2020	SCALE:	1:3000
	DRAWN:	CV	DATUM:	NAD 1983
	CHECKED:	ED	PROJECTION:	UTM zone 17

CLIENT: Michalski Nielsen ASSOCIATES LIMITED

PREPARED BY: Palmer™

PROJECT: 206105 Hwy 26 (Meaford)  
 -Environmental Review

## Existing Environmental Conditions

**Figure 1**

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The property is additionally bordered by Provincial Highway 26 to the south, residential development to the east and north, and both agricultural and highway commercial uses to the west.

### **1.3 Proposed Development**

**Appendix A** shows two alternative site development concept plans, to which MNAL has had input and supports. The southern and central portions of the subject property are proposed to be developed as a residential subdivision that is to include a mix of single detached units on small lots and row townhouses. These two alternative concept plans are simple variations of the same lotting layout, with flex-zoning being requested to be able to vary the ratio of single detached lots and freehold townhouse units. The development is proposed to be constructed in phases, with the phases to be determined by market demand. A stormwater management area is located at the north end of the development, outside of the valleyland of Centreville Creek. The north portion of the property, which includes the stormwater management area, adjacent tableland and areas of constraint in association with the valleyland of Centreville Creek, is to be retained

as a block. Parkland uses may be proposed within tableland areas. The constraint areas will be left in a natural condition, save for possible conservation uses.

### **1.4 Acknowledgements**

MNAL has been assisted on this project by Palmer Consulting group Inc. (PECG), who were involved in the terrestrial components of the field assessment completed in the fall of 2019 and spring and early summer of 2020, the Species at Risk review and the assessment of potential Significant Wildlife Habitat.

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## **2 METHODOLOGY**

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## 2.1 Background Review

Relevant background material was reviewed to provide context for field investigations and to identify any environmental designations and policy requirements. This review included the following sources of information.

- The Ministry of Natural Resources and Forestry's (MNRF's) Natural Heritage Information Centre (NHIC) Make-a-Map application, which includes the NHIC's species records database and Land Information Ontario (LIO) features;
- Correspondence with Grey Sauble Conservation, and a review of their data related to the fishery of Centreville Creek, fill-regulated areas and natural hazard areas;
- The Municipality of Meaford Official Plan (Office Consolidation – November 2014); and
- The Grey County Official Plan (Approved by the Province June 6, 2019).

## 2.2 Field Surveys

Terrestrial and aquatic ecologists completed on-site investigations of the subject property on October 29 and 30, 2019, under snow-free conditions at the end of the growing season (with conditions remaining appropriate for the identification of most vegetation). Work completed at that time included:

- documentation of general site conditions, including site drainage and topographic constraints;
- mapping of vegetation community boundaries;
- preliminary inventories of vegetation communities;
- delineation of the approximate top-of-bank of Centreville Creek;
- general characterization of fish habitat conditions within Centreville Creek;
- an evaluation of Species at Risk habitat potential; and
- an assessment of the potential for Significant Wildlife Habitat.

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An additional site inspection was carried out on November 12, 2019, after the first snowfall, to walk the property with staff of Grey Sauble Conservation and discuss site opportunities and constraints.

A further site inspection was undertaken on April 7, 2020, during the peak of the spring runoff (freshet) period. This visit included:

- an evaluation of the condition of agricultural fields during the early spring period, including to determine whether they were being used by waterfowl for stopover and staging purposes;
- examination of early spring flow conditions within Centreville Creek, as well as within field drains and ditching on the property; and
- determination of whether there were vernal pools within either the tableland or valleyland portions of the property which could support early spring breeding by amphibians.

Finally, late spring/early summer field visits were undertaken on May 25, and June 15, 2020 to complete a breeding bird survey, and to add to the earlier vegetation communities assessment.

Incidental wildlife observational information was collected during each of these surveys.

### **2.2.1 Aquatic Habitats**

The edge of the creek was walked during both the fall and early spring, with the approximate limits of the top-of-bank within/adjacent to the property recorded using GPS. A general assessment of fish habitat opportunities was undertaken, considering such matters as stream width and depth, morphology (i.e., the presence of such features as riffles, runs, pools and flats), instream cover characteristics, bank cover, the presence/absence of barriers, adjacent land uses, and other factors which might positively or negatively influence such habitat. A small, ditched drainage, which serves as the outlet for both field and tile drainage, was also examined as part of this assessment.

### **2.2.2 Vegetation**

Vegetation communities were mapped and described in accordance with their best fit with the community classifications under the Ecological Land Classification for Southern Ontario (ELC) protocols (Lee *et al* 1998). Botanical surveys were completed by traversing the site and recording species observed in the representative vegetation communities.

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Provincial plant status was based on the *Provincially Rare Flora of Ontario* (Oldham and Brinker, 2009) and the Natural Heritage Information Centre (NHIC, 2010).

### **2.2.3 Wildlife**

#### **Species at Risk (SAR) Screening**

Prior to undertaking the field work, existing SAR records were queried through MNRF's NHIC database. In addition to known records in vicinity of the site which have been documented in that database, habitat opportunities for a broader group of 28 SAR known to Grey County, as identified in the Grey County Natural Heritage System Study (Natural Resources Solutions Inc. 2017) were considered. Habitat opportunities for SAR on the site were then assessed against current site conditions.

#### **Breeding Bird Surveys**

Breeding bird surveys were conducted at the property on May 25 and June 15, 2020 to document the bird communities in the following habitats: (i) Dry-Fresh Pine Forest, (ii) Dry-Fresh White Cedar Forest, (iii) Dry-Moist Old Field Meadow, (iv) Fresh-Moist Poplar Forest, and (v) flyovers and adjacent areas. Surveys were carried out between 05:50 and 10:00 h to coincide with the dawn chorus. Surveys were conducted in general accordance with Breeding Bird Atlas protocols (Bird Studies Canada, 2001).

#### **Significant Wildlife Habitat (SWH) Screening**

The Significant Wildlife Habitat Criteria for Ecoregion 6E (MNRF 2015), were compared with the habitat attributes of the subject property to determine the potential for candidate SWH.

#### **Incidental Wildlife Observations**

Incidental observations of wildlife were recorded through direct and indirect evidence, recognizing that the timing of the site visits that have been undertaken to date were not conducive to extensive observations of such use. Direct evidence included visual or auditory observations of species. Indirect evidence included observations of tracks, scat and browse.

### **2.3 Consultation with Grey Sauble Conservation**

Meetings, including a site inspection, were held with Grey Sauble Conservation. That Conservation Authority completed a review of the property and its potential to be developed for a residential subdivision

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in accordance with its mandate and its policies relative to both natural hazards and the implementation of **Ontario Regulation 151/06: Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses**. The Authority's review additionally speaks to the protection of natural heritage values in accordance with the PPS and the Conservation Authority's stormwater management requirements. The Authority prepared constraint mapping based on a combination of its desk-top and field review, which is included in **Appendix B**, and which has been instrumental in guiding development plans for the subject property.

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### **3 ENVIRONMENTAL POLICY CONTEXT**

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### 3.1 Overview

Decisions on land use planning within this property, as it relates to the protection of the natural environment, are governed by Ontario's Provincial Policy Statement (PPS), Ontario Regulation 151/06 and related policies of Grey Sauble Conservation, the Grey County Official Plan (2019) and the Municipality of Meaford Official Plan (2014). A planning analysis of the proposed development has been prepared under separate cover by List Planning Ltd., and it is not the intent of the present document to duplicate that information. Accordingly, our discussion of municipal planning direction is very brief. However it is important that this report addresses the natural heritage policy guidance of the PPS. Further, it is important that the requirements of the *Endangered Species Act* be spoken to. Our policy discussion is therefore primarily focused on these two items, followed by brief discussion of Conservation Authority and municipal environmental planning direction.

### 3.2 Provincial Policy Statement

The 2014 PPS remains in effect in Ontario until May 1, 2020, at which time it is to be replaced with a 2020 version of that plan. However, **the natural heritage policies (Section 2.1) of the 2020 PPS remain unchanged from the 2014 PPS.** This section reads as follows:

#### 2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term *ecological function* and biodiversity of *natural heritage systems*, should be maintained, restored or, where possible, improved, recognizing linkages between and among *natural heritage features and areas, surface water features* and *ground water features*.

2.1.3 *Natural heritage systems* shall be identified in Ecoregions 6E & 7E, recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas, and prime agricultural areas*.

2.1.4 *Development and site alteration* shall not be permitted in:

- a) *significant wetlands* in Ecoregions 5E, 6E and 7E; and
- b) *significant coastal wetlands*.

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2.1.5 *Development and site alteration* shall not be permitted in:

- a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- d) *significant wildlife habitat*;
- e) *significant areas of natural and scientific interest*; and
- f) *coastal wetlands* in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.

2.1.6 *Development and site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.

2.1.7 *Development and site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.

2.1.8 *Development and site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or on their *ecological functions*.

2.1.9 Nothing in policy 2.1 is intended to limit the ability of *agricultural uses* to continue.

There are no identified Provincially Significant wetlands or Coastal Wetlands within the property or on adjacent lands. An unevaluated wetland identified along Centreville Creek just outside of the boundaries of the subject property, with an additional unevaluated wetland identified along the watercourse further upgradient of these lands; the boundary of wetlands in relation to this property is not very accurately depicted in that mapping and has been better defined in **Figure 1**. Further discussion of wetlands within and adjacent to the subject lands is provided in Section 4.3 of this report.

Significant Woodlands and Significant Valleylands are difficult to identify at a site-specific level. However the Grey County Official Plan (see Section 3.4 of this report) does identify Significant Woodlands at a broad scale. This includes wooded areas along the valleyland of Centreville Creek, as well as within rear yard areas of residential lots just east of the subject property. While that Official Plan also identifies Significant Valleylands, no such features are identified in relation to the subject property.

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Significant Wildlife Habitat is one aspect of the PPS which is less straightforward to define. In this regard, the Province has provided technical guidance on what might constitute Significant Wildlife Habitat, but has left decisions on the designation of such habitat to the discretion of individual municipalities. In accordance with guidance documents produced by the Province, for Ecoregion 6E, and with specific reference to the subject lands, this can include:

Seasonal Concentration Areas of Animals

- Waterfowl Stopover and Staging Areas (Terrestrial)
- Shorebird Migratory Stopover Area
- Raptor Wintering Area
- Bat Maternity Colonies

Specialized Habitat for Wildlife

- Woodland Raptor Nesting Habitat
- Seeps and Springs
- Woodland Area or Sensitive Bird Breeding Habitat

Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)

- Special Concern and Rare Wildlife Species

Animal Movement Corridors

The Province's documents on Significant Wildlife Habitat are provided for guidance only. The Provincial Policy Statement explicitly provides latitude to municipalities on how they define such habitat. In this regard, the definition of significance, as it relates to Significant Wildlife Habitat, includes "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system." Further, it states that in the determination of significance, criteria are recommended by the Province, "but municipal approaches that achieve or exceed the same objectives may also be used." This is important, because what may be a fairly scarce habitat attribute within one portion of the Province, and which may be at risk of further loss because of ongoing development pressures, may be very commonplace, and not at any risk of decline, elsewhere.

What is clear from the definition of Significant Wildlife Habitat in the PPS is that it is something that is best defined over an entire municipality, not on individual blocks of land. Unfortunately, it is not the common practice of municipalities, particularly those outside of large urban areas, to define such areas.

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That said, within some jurisdictions, it is becoming more common to identify and protect a Natural Heritage System, which at least indirectly captures much of the land that might contribute to Significant Wildlife Habitat. The County of Grey Official Plan does identify a broad natural heritage system, consisting of Core Areas and Linkages, however no such features have been identified in proximity of the subject lands. In the absence of a municipal-wide approach to the identification of such habitat, it is our belief that EIS reports such as this can simply identify candidate Significant Wildlife Habitat, and provide context around what the loss of any such habitat might mean at a broader municipal level, to help guide good planning decisions; this report has been structured to do just that.

As a further comment on municipal decisions regarding Significant Wildlife Habitat, even in a case where a municipality deems that a property contains Significant Wildlife Habitat, the policy direction of the PPS is permissive. In this regard, in accordance with Policy 2.1.5, it allows development both within and adjacent to areas of Significant Wildlife Habitat providing that “there will be no negative impacts on the natural features or ecological functions”. For Significant Wildlife Habitat, this must be considered in the context of the PPS definition of “ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural system”.

### **3.3            Endangered Species Act**

The *Endangered Species Act (ESA)* came into effect in Ontario in 2007, and provided for immediate protection of all species on the Species at Risk in Ontario (SARO) list. This protection is afforded under Section 9(1) of the *Act*, which reads:

**Prohibition on killing, etc.**

- 9.(1) No person shall,
- a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
  - b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,
    - (i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
    - (ii) any part of a living or dead member of a species as referred to in subclause (i),
    - (iii) anything derived from a living or dead member of a species referred to in subclause (i); or

- 
- c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b)(i), (ii) or (iii). 2007, c.6, s.9(1).

The *ESA* additionally affords habitat protection to species on the SARO list. The relevant portions of the *Act* are found under Sections 10(1) through 10(3) and are repeated as follows:

**Prohibition on damage to habitat, etc.**

- 10(1) No person shall damage or destroy the habitat of,
- (a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species; or
  - (b) a species that is listed on the Species at Risk in Ontario List as an extirpated species, if the species is prescribed by the regulations for the purpose of this clause. 2007, c.6, s. 10(1).

**Specified geographic area**

- 10(2) If the Species at Risk in Ontario List specifies a geographic area that a classification of a species applies to, subsection (1) only applies to that species in that area. 2007, c. 6, s. 10 (2).

**Exception, suspension of protections**

- 10(3) If a species is listed on the Species at Risk in Ontario List as an endangered or threatened species for the first time, the application of the prohibition in clause (1) (a) with respect to the habitat of the species is subject to any order made under section 8.1. 2019, c. 9, Sched. 5, s. 9.

Also important to this discussion is the definition of habitat under the *Endangered Species Act*, which is described under Section 2(1) as follows:

- “Habitat” means,
  - (a) With respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or
  - (b) With respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, and includes places in the

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area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nets, hibernacula or other residence; (habitat)

- Definition of “habitat”, cl. (b)

(2) For greater certainty, clause (b) of the definition of “habitat” in subsection (1) does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry on their life processes. 2007, c. 6, s. 2 (2).

The MNRF has prepared a document entitled *Categorizing and Protecting Habitat* under the *ESA* that outlines the overall approach and considerations that the MNRF used in determining whether a proposed activity is likely to damage or destroy habitat protected under subsection 10(1) of the *ESA*. Although the responsibility for administering the *ESA* has since been transferred by the Province from MNRF to the Ministry of Environment, Conservation and Parks (MECP), the guidance provided in that document remains useful. For clarity, the following is provided directly from that document:

*Not every activity that occurs within or near habitat will damage or destroy that habitat. Determining whether a proposed activity is likely to damage or destroy the habitat of an endangered or threatened species requires the consideration of the activity details, which parts of habitat are likely to be altered by the activity, and how the alteration may affect the species' ability to carry out its life processes.*

*3.1.1 Damaging Habitat*

*An activity that damages the habitat of a species is one that alters the habitat in ways that impair the function (usefulness) of the habitat for supporting one or more of the species' life processes.*

*3.1.2 Destroying Habitat*

*An activity that destroys the habitat of a species is one that alters the habitat in ways that eliminate the function (usefulness) of the habitat for supporting one or more of the species' life processes.*

*In some cases, the anticipated alteration that a proposed activity will have on habitat may be so minor that the function of the habitat for supporting the species' life processes will not become impaired or eliminated. In such cases the activity would not contravene subsection 10(1) of the *ESA* and would not require authorization under the Act with respect to this provision. In other cases, the alteration may be more significant such that the function of the habitat for supporting one or more of the species' life processes may become impaired or eliminated. Such activities would contravene subsection 10(1) of the *ESA* and would require authorization under the Act prior to proceeding.*

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Ensuring compliance with the *Endangered Species Act* is a proponent's responsibility. On a development of this scale, it requires an understanding of what species are known to the broader area, then an assessment of their potential to use the lands to be developed, based on habitat attributes. For some species, this analysis may benefit from targeted field surveys to determine whether a species is using habitat that may be suitable for it; however, as endangered and threatened species are generally difficult to find, and as the mobility of wildlife means that their absence on any given occasion does not discount their potential use, the assessment of habitat potential is always key.

The Province has a permitting process which allows activities which would otherwise be prohibited under Section 9 or 10 of the *Endangered Species Act*, which is described under Section 17 of the *Act*.

As described later in this report, an assessment of Species at Risk potential has been completed for the lands to be developed, and adjacent lands.

### **3.4 Grey Sauble Conservation Policies**

In accordance with information provided by Grey Sauble Conservation, Centreville Creek and adjacent lands are regulated under **Ontario Regulation 151/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses**. The regulated area limits are shown in **Appendix B**. Under that regulation, a permit is required from that Conservation Authority for any site grading, fill placement, fill removal or construction within the regulated area. It is important to note that it is possible to get a permit for development within a regulated area, subject to the approval of the Conservation Authority and providing that all intended works address such matters as the protection of the watercourse, the protection of any natural hazards associated with the valleyland, including those relating to flooding and erosion concerns, and proper attention to such matters as stream buffering, water quality protection, protection of natural corridor functions and the protection of other ecological functions. It is the intent of this report to demonstrate how all such functions can be maintained at the interface between proposed development and the regulated area limits.

**Appendix B** additionally identifies approximate natural hazard limits in relation to Centreville Creek, as well as within an adjacent tableland area, based on both desk-top slope analysis and Grey Sauble Conservation's site inspection. These are areas which Grey Sauble Conservation have deemed to be unsuitable for residential development. With respect to the natural hazard limits adjacent to Centreville Creek, they incorporate a theoretical 3:1 stable slope angle, as measured from the toe-of-slope, plus an

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additional minimum 6 m setback; this provides for long-term protection against both erosion and flooding. The area of natural hazard on the tableland incorporates a ditched outlet for field and tile drainage from the west plus an area of adjacent steeper slope grading to the east. It is noted that the ditched drainage generally dissipates across the bottom of the slope before being picked up in a ditch located just off property to the east, draining to Centreville Creek.

Grey Sauble Conservation has additionally noted that stormwater management plans for this project must incorporate both quantity and quality controls. With respect to stormwater quantity, they have requested that plans ensure that post-development peak flows match pre-development peak flows for the 2 to 100 year storm events, that the minor system be designed to control all flows up to a minimum of the 5 year storm event, and that the major system be designed to accommodate the Regulatory Flood. Regarding stormwater quality, they have requested an Enhanced Level of treatment in accordance with MECP's Stormwater Management Planning and Design Manual.

### **3.5 County of Grey Official Plan**

As conformity of the proposed development with the policies of the County Official Plan (2019) are addressed under separate cover by List Planning, the present discussion is focused on the Plan's most relevant natural heritage policies only.

Schedule A, Land Use Types, to the County of Grey Official Plan identifies a majority of the subject property as being within the Primary Settlement Area, with the valleyland of Centreville Creek identified as hazard lands. The hazard lands limits in association with the subject property have been identified at a finer scale by Grey Sauble Conservation, as included in **Appendix B** to this report.

Schedule C, Natural Heritage System, to the County of Grey Official Plan does not identify either Core Areas or Linkages within a kilometer or more of the subject property.

Appendix B to the County of Grey Official Plan maps Significant Woodlands, with such features having been identified, at a coarse scale, within a portion of the valleyland area of Centreville Creek, as well as in the rear yard of larger residential lots bordering this property to the east. The description of Significant Woodlands in Section 7.4.1 of the Official Plan notes that the identification of such features was done primarily as a desk-top based GIS exercise, with acknowledgement that there may be inaccuracies or omissions. It goes on to state that "as a result, site visits by qualified individuals may be required at the application stage to scope any potential studies." Pre-consultation has occurred on this project with

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representatives of the County of Grey. One of the purposes of the present report is to provide additional information on woodlands within the property, and to justify the relationship of development to such features.

Appendix B to the County of Grey Official Plan additionally maps Significant Valleylands and Significant ANSIs, with no such features having been identified within a kilometer or more of the subject property.

### **3.6 Municipality of Meaford Official Plan**

As conformity with the policies of the Municipality of Meaford Official Plan (2014) are addressed under separate cover by List Planning, the present discussion is focused on the Plan's most relevant natural heritage policies only.

Schedule A-1, Land Use, to the Municipality of Meaford Official Plan identifies the majority of the subject property as Urban Living Area. A portion of the property's frontage on Highway 26 is identified as Urban Highway Commercial whereas the valleyland of Centreville Creek is identified as Environmental Protection (EP). As described in Section B.3.1, Environmental Protection and Natural Function, to the Official Plan, the EP designation includes all wetlands, all watercourses, floodplains and hazardous slopes (amongst other matters not relevant to the subject property). It notes that the location of these identified constraints is considered to be generally accurate, however should be confirmed on site with the Conservation Authority or MNRF; such limits have generally been confirmed/refined in mapping provided by Grey Sauble Conservation (**Appendix B**). The plan additionally notes that "minor changes to the extent of the Environmental Protection description shall not require an Amendment to this Plan." It further states that "permitted uses on lands designated Environmental Protection are limited to forestry, conservation and passive recreational uses." One of the purposes of the present report is to demonstrate the compatibility of the proposed development with the adjacent identified Environmental Protection lands.

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## **4 EXISTING ENVIRONMENTAL CONDITIONS AND CONSTRAINT ASSESSMENT**

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## 4.1 Physical Characteristics

A majority of the subject property is characterized by very gentle slopes towards the northeast (**Photographs 1 to 4**). Locally steep grades are found along the valleyland of Centreville Creek in the north, and along the easterly limits of the property. With respect to the latter, a steep slope of 4 m to 5 m in height occurs immediately along the eastern property limits through the central portion of the property. Continuing north, that grade change occurs within the eastern portion of the property, with more variable slopes.

Drainage from the property generally sheet flows to the northeast, with some localized ditching and tile drainage having been installed at the northern end of agricultural fields to more efficiently drain those lands, as well as those portions of the agricultural fields on the property to the west which also grade towards the subject property. It is noted that there have been quite recent works on the property to the west to replace very old clay tile drains with new plastic drainage pipe but, for whatever reason, that work appears to have stopped before being completed, with new drainage pipe terminating along a short section of cut ditch by the boundary between the two properties. Flows from this tile drainage and ditch then discharge broadly overland, flowing along the most northerly portion of the agricultural field within the subject property before being picked up in poorly defined ditching along the edge of that field.

Within the subject property, the agricultural ditching is generally very minor in nature, and in some cases is poorly defined. An exception to this is where such drainage reaches the slopes at the northeastern end of the property, with a deeper and better defined ditch having been installed to convey flows down this grade (**Photograph 5**). Some tile drains from the subject property appear to discharge at this location, although the outlets are very overgrown making it impossible to confirm the presence of such tiles. That ditching generally dissipates towards the toe of that slope (**Photograph 6**), but is picked up in a ditch located just east of the subject property and which drains to Centreville Creek. Flows within this ditch were fairly similar between the fall and early spring site visits, visually estimated to be no more than 2 L/s.

The subject property grades to Centreville Creek, generally located just north of these lands, but crossing through the very northeastern tip. **Photographs 8 – 10** provide views of this creek, a moderately high gradient watercourse flowing through a well-defined valleyland. That valleyland is very steep and erosive in some areas, as evidenced in **Photographs 11 and 12**.



**Photographs 1 and 2.**

**South portion of subject property, with very gentle grades to the northeast (October 29, 2019).**



**Photographs 3 and 4.**

**Central portion of subject property, also grading very gently to the northeast (October 29, 2019).**



**Photograph 5.** Well-defined and incised ditching at northeastern end of property (October 29, 2019).



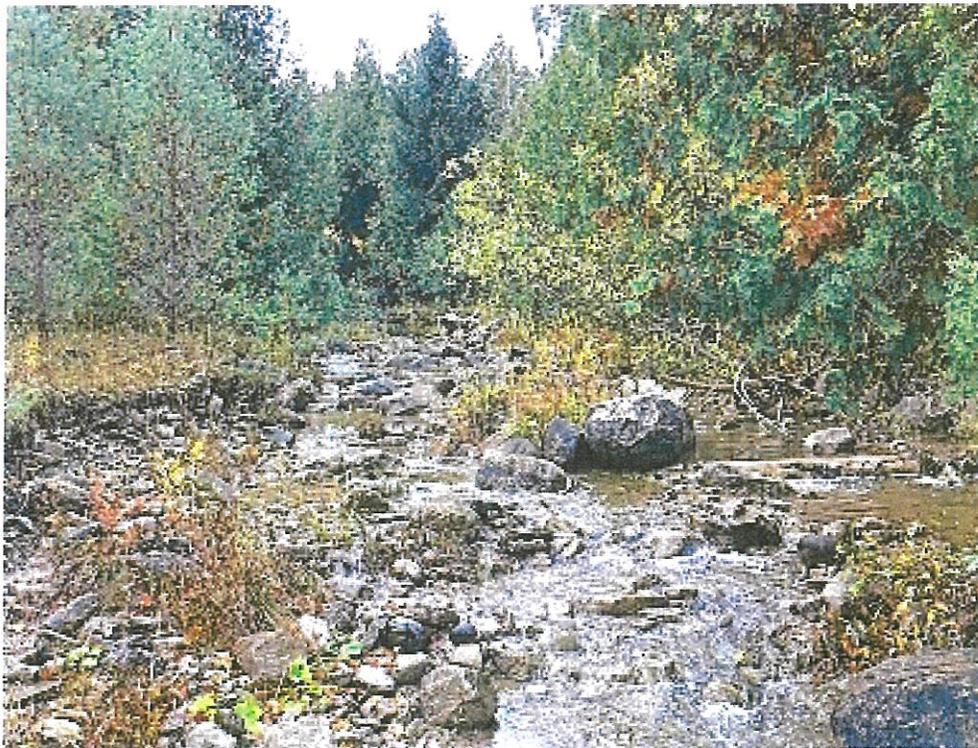
**Photograph 6.** Ditching at the northeastern end of the property generally dissipates at the toe-of-slope (October 29, 2019).



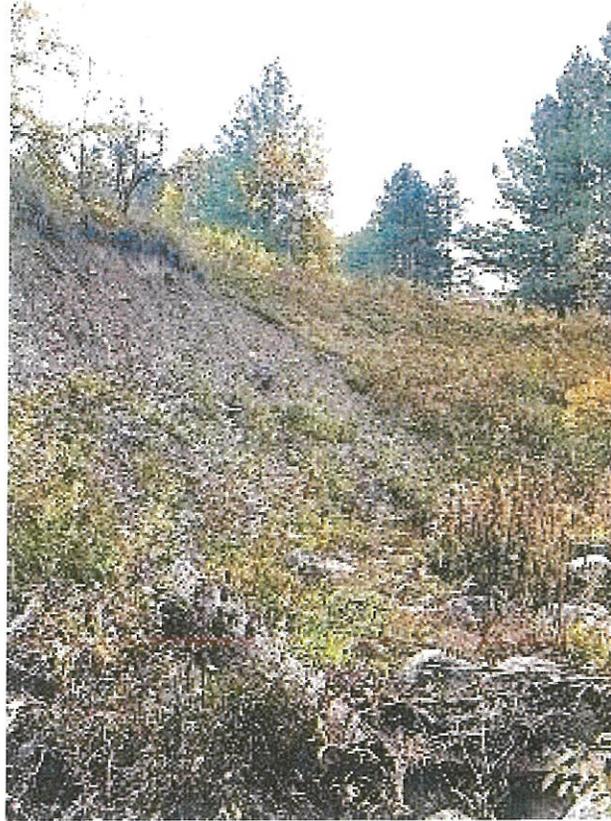
**Photograph 7.** Ditch to the east of subject property, which picks up runoff from these lands and drains into Centreville Creek (November 12, 2019).



**Photograph 8.** Typical view of Centreville Creek (October 29, 2019).



**Photographs 9 and 10. Typical views of Centreville Creek (October 29, 2019).**



**Photographs 11 and 12. Steep and erosive valleyland found along portions of Centreville Creek (October 29, 2019).**

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## 4.2 Aquatic Habitats

**Figure 1** shows the approximate top-of-bank of Centreville Creek in relation to the subject property, as delineated with GPS.

Centreville Creek, shown in **Photographs 8 – 10** and **12**, had a typical width of 5 m to 7 m and a depth of 0.05 m to 0.7 m at the time of the October 29, 2019 site inspection. Under early spring conditions on April 7, 2020, it was only slightly swollen with flows, with a similar range of widths and depths. It is a moderately high gradient watercourse and this, together with the nature of the upstream watershed, the incised nature of the valley, and the predominance of very coarse substrates, suggests flows are highly variable. The stream reach that was examined consisted of 65% riffles, 15% runs and 20% pools, with a maximum observed pool depth of 0.7 m (see **Photograph 9**). Substrates are well sorted, and consist of approximately 25% boulder, 20% cobble and 15% gravel, over silty sand. The water was moderately turbid at the time of both the fall and early spring site inspections.

Good instream cover is found within Centreville Creek in the form of undercut bank, boulders and large woody material. Overhanging canopy cover is quite good, at approximately 75%. Although variable flow conditions may create temporary barriers to fish movement at certain times of the year (under both high and low flow regimes), no considerable barriers to fish passage were otherwise observed.

Grey Sauble Conservation has fisheries records for three locations along Centreville Creek, with the community including the coldwater species Rainbow Trout (*Oncorhynchus mykiss*). Mottled Sculpin (*Cottus bairdii*), a bottom-dwelling fish species also typically found in coldwater streams, was also identified. The other fish that were identified are all species typical of coolwater stream environments, including Pearl Dace (*Semotilus margarita*), Creek Chub (*Semotilus atromaculatus*), Longnose Dace (*Rhinichthys cataractae*), Blacknose Dace (*Rhinichthys atratulus*), Northern Redbelly Dace (*Chrosomus eos*), White Sucker (*Catostomus commersonii*) and Brook Stickleback (*Culaea inconstans*). On the basis of this fish composition, stream buffering should be consistent with that required to protect coldwater streams, which is most typically 30 m. It is noted that no seepage areas were identified back from the watercourse, which could introduce a requirement for more substantial buffers.

The small reach of well-defined drainage ditch which arises in the northeastern portion of the subject property (**Photograph 5**), but then dissipates before entering an area of ditched drainage just east of the property (**Photograph 7**), does not provide any potential fish habitat. In this regard, there are no opportunities

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for fish from Centreville Creek to access this reach of channel. Nor are there areas of seasonal refugia within this short length of channel which could support a resident fish population over the summer or winter periods.

### **4.3 Vegetation Communities**

Vegetation communities were mapped and described on their best fit to community classifications in accordance with standard Ecological Land Classification for Southern Ontario (ELC) protocols (Lee et al, 1998). Botanical surveys were completed by traversing the site and recording species observed in the representative vegetation communities. The vegetation communities identified on the subject property are illustrated on **Figure 1** and described in the paragraphs following.

#### **Cultural System**

The majority of the subject property currently supports cultural communities. Developed and landscaped residential lands comprise the east central portion of these lands. Structures include a dwelling and several accessory buildings. Agricultural fields comprise the majority of lands surrounding the residence and associated amenity area (**Photographs 1 – 4**).

#### **Dry-Moist Old Field Meadow Type (CUM1-1)**

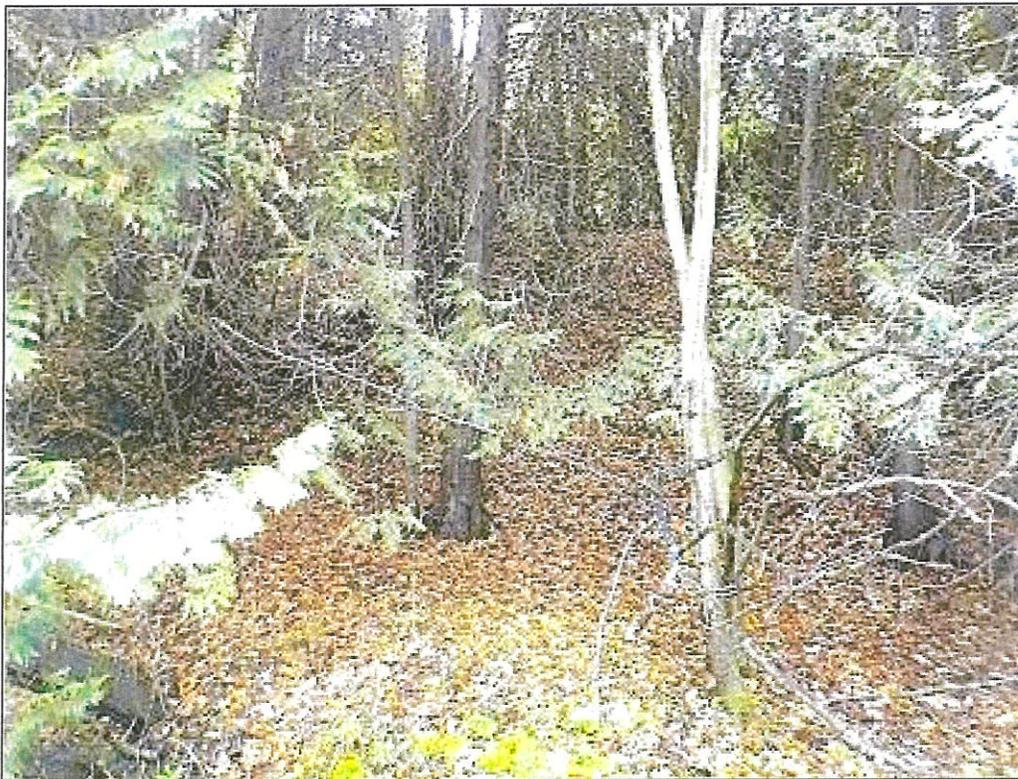
This open-canopied community occurs within two small areas on the subject property (**Photograph 13**). It supports common herbaceous species such as goldenrod, asters, fleabanes, Wild Carrot (*Daucus carota*) and the pasture grass species Orchardgrass (*Dactylis glomerata*).

#### **Terrestrial System**

##### **Forest**

#### **Dry-Fresh White Cedar Coniferous Forest Type (FOC2-2)**

This generally mature community comprises the majority of the valley corridor (**Photograph 14**). The southern portion of this vegetation community, located on the tableland, tends to be less mature. The canopy/subcanopy supports a shared dense (approximately 90% cover) dominance by Eastern White Cedar (*Thuja occidentalis*) and Scots Pine (*Pinus sylvestris*). Balsam Fir (*Abies balsamea*) was also noted in lesser abundance throughout the subcanopy of this community. Occasional deciduous associates Black Walnut (*Juglans nigra*) and White and Yellow Birch (*Betula papyrifera* and *allegheniensis*) were also recorded throughout the canopy/subcanopy layers. The understory layer throughout the interior of this community



**Photographs 13 and 14.**

**Typical views of CUM1-1 and FOC2-2 communities  
(October 30, 2019).**

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was not dense (approximately 40% cover), but abundant woody shrub establishment along the edges comprised species such as Red-osier Dogwood (*Cornus sericea*), Riverbank Grape (*Vitis riparia*) and the invasive non-native Common Buckthorn (*Rhamnus cathartica*). Groundcover was abundant (providing approximately 60% cover), and mainly supported regenerating canopy/subcanopy species, Herb-robert (*Geranium robertianum*), and the invasive Garlic Mustard (*Alliaria petiolata*).

### **Fresh-Moist Poplar Deciduous Forest Type (FOD8-1)**

This young forested community occurs within the northeastern portion of the subject property (**Photograph 15**), and extends east of these lands. The canopy is dominated by Balsam Poplar (*Populus balsamifera*). Green Ash (*Fraxinus pensylvanica*) was also noted as abundant throughout the canopy and subcanopy. Canopy/subcanopy cover was noted as approximately 75%. Understorey establishment is dense throughout this community (comprising approximately 60% coverage), and supports shrub species such as Gray Dogwood (*Cornus racemosa*), Multiflora Rose (*Rosa multiflora*), Riverbank Grape and viburnum. Due to the more open canopied conditions, partially in comparison to FOC2-2, the ground supports a mixture of more meadow-like species such as asters and goldenrod and common forest species such as Herb-robert and Garlic Mustard.

### **Dry-Fresh Pine Coniferous Forest Ecosite (FOC1)**

This tableland community comprises the southwest portion of the subject property (**Photograph 16**). It supports a canopy/subcanopy dominated by conifers White Pine (*Pinus strobus*) and Scots Pine, with abundant Balsam Fir. Eastern White Cedar is present, but in less abundance than within the valleyland forest community FOC2-2. Canopy cover throughout this community is also less than in the valleyland community. Due to the more open canopied conditions, the groundcover throughout this community supports abundant common meadow species.

### **Wetland System**

#### **Reed-canary Grass Mineral Meadow Marsh (MAM2-2)**

This wetland community is found within two locations associated with the watercourse's riparian zone, which are primarily located off-site. Reed-canary Grass (*Phalaris arundinacea*) dominates these areas. Other plant associates included Spotted Joe Pye Weed (*Eutrochium maculatum*) and aster.



**Photographs 15 and 16.**

**Typical views of FOD8-1 and FOC1 communities  
(October 30, 2019).**

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## **Flora**

A list of vascular plants recorded on the subject property is provided in **Appendix C**. A total of 81 species of vascular plants were observed during field surveys on the subject property. Approximately 43 (53%) are confirmed as native to Ontario, with the remainder being non-native/exotic. This is a typical representation of non-native species in an area with considerable anthropogenic influences (agricultural and cultural uses of property; adjacent urban development; adjacent road).

All of the native species have S-Ranks of S5 or S4, indicating they are common and secure, or apparently secure, in the province. No provincially or nationally rare species were recorded. A review of the NHIC database indicated no additional significant records of flora within or directly adjacent to the subject property.

### **4.4 Breeding Birds**

The survey documented the birds based on the following habitats and locations: (i) Dry-Fresh Pine Forest; (ii) Dry-Fresh White Cedar Forest; (iii) Dry-Moist Old Field Meadow; (iv) Fresh-Moist Poplar Forest; and (v) flyovers and adjacent areas. A total of 27 bird species were documented on the property, as summarized in **Appendix D**. Most of the birds recorded on the property are considered common. The most frequently observed species included birds characteristic of woodland areas, such as Common Yellowthroat (*Geothlypis trichas*), American Robin (*Turdus migratorius*), Black-capped Chickadee (*Poecile atricapillus*), and American Redstart (*Setophaga ruticilla*).

One species considered Threatened was recorded on lands adjacent to the Subject Property; an individual Eastern Meadowlark (*Sturnella magna*) was heard singing in the old field meadow south of Highway 26, adjacent to the western portion of the subject property during the second breeding bird survey. However, no evidence of this species was recorded within the immediate subject property boundaries during the two breeding bird surveys conducted in 2020, nor are habitat conditions within the property suitable for this species (see Section 4.6).

Area-sensitive bird species were recorded from the property. Such species are associated with higher quality forests and generally require large areas of continuous habitat for breeding and foraging. The specific habitat requirements vary by species. In addition to Eastern Meadowlark, the following three area-sensitive species were found on or adjacent to the property:

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- American Redstart
  - White-breasted Nuthatch (*Sitta carolinensis*)
  - Pine Warbler (*Setophaga pinus*)

Although those three species were all recorded in the tableland woodland, the valleyland corridor provides the most significant local habitat opportunities for them.

#### **4.5 Incidental Wildlife Observations**

Included wildlife observations were quite limited on and adjacent to the subject lands, and included the following species:

- Beaver (*Castor*) evidence of activity seen in valleyland
- Eastern Grey Squirrel (*Sciurus carolinensis*) - observed in Poplar forest on property
- White-tailed Deer (*Odocoileus virginianus*) – prints were observed in forested areas on the property
- Red Squirrel (*Sciurus vulgaris*) – observed in forested areas on property
- Eastern Cottontail (*Sylvilagus floridanus*) – observed in Poplar forest on property

The valleyland corridor provides the most significant wildlife habitat opportunities in association with the subject property and also serves as a movement corridor for wildlife.

#### **4.6 Species at Risk Screening**

Existing SAR records in the immediate vicinity of the Site were queried through a review of the NHIC database, and included the following species:

- Bobolink
- Eastern Meadowlark
- Eastern Ribbonsnake
- Eastern Wood-Pewee

In addition, we have reviewed a more comprehensive list of SAR known to Grey County, as provided within the document entitled *Grey County Natural Heritage System Study “Green in Grey”*, prepared by Natural Resource Solutions Inc. (2017). This list identifies a total of 28 at risk bird, mammal, herptile, fish/aquatic and plant species, in addition to the four identified by NHIC.

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Habitat opportunities for the above referenced SAR on and adjacent to the subject property were assessed by comparing habitat preferences of these species against site conditions. Species having no potential relevance to these lands were screened out. Those having some potential to occur on or adjacent to the property were assessed in greater detail. A summary of this assessment is included in **Table 1**. Note that although Bobolink and Eastern Meadowlark were both identified within the NHIC database as having records of occurrence within the immediate vicinity of the subject property, the recently harvested conditions of the agricultural lands at the time of the 2019 investigation results in there not being suitable nesting conditions for either of these species (both of these species are known to prefer pastures and hayfields for their nesting habitats). This was confirmed during the 2020 breeding bird surveys. It is also expected that more expansive off-site agricultural lands (greater than 10 hectares contiguous habitat) provides more suitable habitat than would ever have been potentially present within the subject property.

In accordance with the site-specific review that has been completed, those species receiving protection under the *ESA* that could be encountered within or adjacent to this property are Barn Swallow, Chimney Swift, Butternut and various protected bat species.

The potential for both Barn Swallow and Chimney Swift nesting sites is limited to anthropogenic structures only, with our examination of the buildings on the property suggesting this potential is quite low. Neither of these species were documented during the breeding bird survey.

Butternut was not found in targeted surveys for this species that were completed in both 2019 and 2020.

The potential for bat species is considered quite low, as woodland communities are dominated by conifer (which do not provide very good bat roosting/maternity habitat) and/or generally do not support mature trees providing suitable snag opportunities. The buildings on site all appear to be too well maintained to afford any potential for bat access. The most mature trees within the property are associated with the valleyland of Centreville Creek.

The protection of the valleyland and an adjacent buffer is important to the protection of the habitat potential for species which are protected under the *ESA*. The timing of tree removals elsewhere within the property is another mitigation measure that is important to protect birds and bats.

**Table 1. SAR with Potential On-Site Habitat Opportunities.**

Name	SARA Status	SARO Status	Provincial ESA General or Regulated Habitat	Habitat Requirements	On-Site Habitat Opportunities
<b>Birds</b>					
Barn Swallow ( <i>Hirundo rustica</i> )	Threatened	Threatened	General Habitat protection applies.	These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. Since the barn swallow is an aerial insectivore, this species relies on the presence of flying insects at specific times during the year. (Ministry of Natural Resources and Forestry, 2014a).	Several building structures (dwelling and various outbuildings) occur on the subject property which could provide suitable nesting structures for this species, although none of these buildings appeared to offer good points of entry. It is also expected that the watercourse and occasional associated meadow marsh riparian communities provide suitable conditions for insect development, a required food source for Barn Swallows. This species was not observed during breeding bird surveys.
Chimney Swift ( <i>Chaetura pelagica</i> )	Threatened	Threatened	General Habitat protection applies.	This species is found mostly near urban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. (MNRF, 2014b).	No obvious open chimney nesting structures were evident during the field investigations. Nor was this species observed during breeding bird surveys.
Eastern Wood-Pewee ( <i>Contopus virens</i> )	Special Concern	Special Concern	Habitat protection does not apply to Special Concern species.	The eastern wood-pewee is a “flycatcher”, a bird that eats flying insects, that lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation (MNRF, 2014c).	Although not ideal, nesting habitat may be provided throughout the forested valleylands (due to the minimal understory cover), or northeast adjacent deciduous forest community (although understory cover may be too high in this case). It is noted that this species was not observed during breeding bird surveys.
<b>Herptiles</b>					
Eastern Ribbonsnake ( <i>Thamnophis sauritus</i> )	Special Concern	Special Concern	Habitat protection does not apply to Special Concern species.	The ribbonsnake prefers wetland habitats where its prey species, frogs and small fish, are abundant. It may also utilize forested habitats for overwintering and birthing sites (MNRF, 2014d).	Suitable habitat for this species may be available throughout the adjacent valley corridor.
<b>Mammals</b>					

**Table 1. (Cont'd.)**

Name	SARA Status	SARO Status	Provincial ESA General or Regulated Habitat	Habitat Requirements	On-Site Habitat Opportunities
Bats: - Eastern Small-Footed Myotis ( <i>Myotis leibii</i> ) -Little Brown Myotis ( <i>Myotis lucifugus</i> ) -Northern Myotis ( <i>Myotis septentrionalis</i> )	Endangered	Endangered	General Habitat Protection as of January 24, 2013.	Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. (MNRF, 2014e).	Although an abundance of forested lands have been identified on the subject property, suitable roosting habitat is expected to be minimal. The forests within the property are dominated by coniferous trees and/or generally do not support mature trees large enough to provide suitable snag habitat.
<b>Plants</b>					
Butternut ( <i>Juglans cinerea</i> )	END	END	General Habitat Protection as of June 30, 2013.	The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. It is found in many mixed/deciduous forests through much of southern and eastern Ontario (MNRF, 2014f).	Although suitable habitat for this species may be provided throughout the forested communities within the subject property, vegetation surveys completed in 2019 and 2020 included a search for them and none were found.

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#### 4.7 Significant Wildlife Habitat Screening

SWH is defined by the MNRF in the Significant Wildlife Habitat Technical Guide (OMNR 2000) and includes the following broad categories:

- Seasonal Concentration Areas of Animals
- Rare Vegetation Communities or Specialized Habitats for Wildlife
- Habitats of Species of Conservation Concern, excluding the habitats of endangered and threatened species
- Animal Movement Corridors.

Criteria for the identification of these features are also provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF 2015). These criteria were used to provide a screening for wildlife habitat within the study area for potential SWH within and adjacent to the proposed development, as detailed in the screening table provided in **Appendix E**.

Most categories of SWH have been ruled out entirely on the basis of the field investigations. The majority of potential SWH habitat opportunities are associated with valleyland areas that are to be protected. This includes:

- Seasonal Concentration Areas of Animals
  - Shorebird Migratory Stopover Area
  - Raptor Wintering Area
  - Bat Maternity Colonies
- Specialized Habitat for Wildlife
  - Woodland Raptor Nesting Habitat
  - Seeps and Springs
  - Woodland Area – Sensitive Bird Breeding Habitat
  - Animal Movement Corridors – Amphibians

There are no concerns that any such potential habitat will be impacted by the proposed development. In this regard, although the tableland woodland area were being used by three area-sensitive birds, the presence of these birds appears to be a consequence of the more extensive and contiguous valleyland woodlands, and

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habitat opportunities for these species will not be impacted by the loss of tableland woodland. Further, the breeding bird surveys have confirmed that the tableland woodland does not support Special Concern birds. Nor does it support any other Special Concern or rare fauna or flora.

Note that the field survey completed in the early spring of 2020 confirmed that there were no areas of vernal pooling that could support any amphibian breeding within the valleyland portions of the subject property itself, although such habitat may be present elsewhere along this valleyland.

The field survey completed in the early spring of 2020 confirmed that there were no areas of vernal pooling that could support any amphibian breeding within the tableland portion of the property. Nor was there any standing water on the agricultural field, or other evidence that these fields serve as/have the potential to serve as waterfowl stopover and staging areas (terrestrial).

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**5 COMMENTS AND RECOMMENDATIONS  
ON DEVELOPMENT**

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## 5.1 Site Suitability

Residential development is proposed within the tableland portion of the subject property. These tablelands are generally well-suited to residential development, having gentle terrain conditions and being able to be easily serviced. Much of this portion of the property is culturally modified, containing a residence and associated amenity area, plus agricultural lands. There is a woodland on this tableland, which is generally not that mature and which has a fairly open canopy. This woodland also shows some evidence of disturbance. It has not been identified as Significant Woodland in any policy document, nor does it have attributes which would suggest such a designation is warranted.

A development of the proposed nature and scale of that which is being proposed is supportable from a natural heritage perspective. The proposed interface between this development and the valleyland of Centreville Creek is further discussed in Section 5.2.

## 5.2 Valleyland Protection

The northern portion of the property contains the valleyland of Centreville Creek, a coldwater watercourse which has a well-defined, treed valleyland. Centreville Creek supports a coldwater fishery and the valleyland has attributes which could support some *ESA*-protected species and SWH. This valleyland also has value as a contiguous and generally undisturbed natural corridor. It is important that this valleyland be protected, and that the interface between proposed residential development and this natural area be carefully considered. To this end, the two alternative Site Development Concept Plans in **Appendix A** show three overlapping constraints, each of which are discussed in the paragraphs below.

The **30 m setback from top-of-bank** represents what we believe, in the absence of additional technical constraints, should comprise a buffer for the watercourse. This buffer should be protected in a natural state over the long-term. The designation of a 30 m buffer adjacent to coldwater streams has become commonplace. In addition to providing for robust shading and water quality protection, a buffer of this width ensures the maintenance of a broad natural corridor for such functions as wildlife habitat and movement.

The **natural hazard limit** has been taken from the constraints analysis completed by Grey Sauble Conservation (**Appendix B**). That portion of the natural hazard area pertaining to the valleyland is important in providing long-term protection against flooding and erosion. It is the Conservation Authority's policy to protect such areas of natural hazard, including by keeping individual residential lot fabric areas outside of

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these limits. The natural hazard area on the tableland incorporates a ditched outlet for field drainage from the south and west, plus an area of adjacent steeper slopes grading to the east; these areas must also be considered in the development plans.

The **Ontario Regulation 151/06 limit** represents a broader zone along the valleyland in which Grey Sauble Conservation requires permitting for any intended works (also see **Appendix B**). That permitting process allows the Conservation Authority to evaluate projects with proximity to features such as watercourses and valleylands and to ensure all appropriate protection/mitigation measures are being considered. Unlike the two above-noted constraints, a more flexible approach can be considered in looking at the interface of adjacent development with the outer portion of this regulatory limit.

The two alternative Site Development Concept Plan included in **Appendix A** do take each of the three above-noted constraints into proper consideration. In this regard, residential lots are entirely outside of the proposed 30 m buffer adjacent to Centreville Creek, as well as the natural hazard limit associated with the valleyland of that watercourse.

The stormwater facility is proposed on the tableland area which includes a portion of the incised ditch used to convey local agricultural drainage down the slopes on the northeastern end of the property. Given that all such drainage will be captured in the stormwater management facility and the drainage functions of that ditch will therefore be discontinued, there is a reasonableness to this strategy. However, the specific design of the stormwater management facilities and how they are to interface with this tableland natural hazard area will require further discussion with Grey Sauble Conservation.

While portions of a small number of lots within the northwest portion of the tableland encroach into the regulated area, grading works within those portions of these lots will be relatively minor. Additional details on all proposed works within these areas will need to be provided to Grey Sauble Conservation but, subject to that Authority's input, should be acceptable.

While there will be some encroachment of rear lots in the area of those lots within the northwest portion of the development into the current woodland edge on the tableland, this occurs within an area of generally younger, regenerating cedar. The extent of required encroachment into the woodland community is quite minor, and retains robust protection for Centreville Creek and its valleyland.

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It is noted that the stormwater management facility has been located fully outside of the regulated area. The outlet of this facility will, by necessity, encroach into this area, as well as into the 30 m setback from top-of-bank and the natural hazard area associated with Centreville Creek. This outlet has been located to take advantage of gentle grades. Additional discussion on the design of stormwater facilities, including the outlet, is provided in Section 5.3.

Finally, the remnant portion of the subject property, which includes areas of constraint in association with the valleyland of Centreville Creek, is to be retained as open space. These lands will be left in a natural condition, save for possible conservation uses that may include a pedestrian trail. Any conservation uses to be considered in the area will be discussed with Grey Sauble Conservation; such uses will be fully consistent with the intent to protect these lands for their natural area functions and will respect natural hazard constraints.

### **5.3 Stormwater Management**

A Functional Servicing Report has been prepared by Pinestone Engineering Ltd. and is being submitted under separate cover. Some of the design criteria which have guided their stormwater management plans include:

- peak flow attenuation to pre-development levels for all storms up to the 100 year event;
- conveyance of post-development peak flows in excess of the 100 year event safely from the site;
- water quality enhancement to an Enhanced Level of protection, using a treatment train approach;
- outletting treated flows through a level spreader into the buffer zone; and
- preparation of a detailed erosion and sediment control and construction mitigation plan, to be implemented as part of the construction program.

The erosion and sediment control plan is to include the following measures:

- installation of silt fencing along the downgradient edge of all areas to be disturbed;
- filter cloth and stone placement over catch basins until such time as roads and parking areas are paved and vegetation is established;
- installation of temporary straw bale check dams in swales and ditches;
- installation of mulch mats at site entrances;
- ensuring any temporary stockpiling of materials occurs upgradient of silt controls; and

- 
- regular monitoring of the controls by the contractor, with periodic inspection of controls, and advice to the owner on any required improvements, by the project engineer.

This plan appears consistent with the requirements of Grey Sauble Conservation. Further to the above, and consistent with our discussions with Pinestone Engineering Ltd., MNAL recommends that:

- **the outlet for the stormwater management facility terminate at a level spreader, to be located 30 m back from the stream (i.e., along the outer edge of the red-dashed line shown on the drawing in Appendix A), which is to disperse such flows along the outside edge of the buffer, promoting additional filtration and attenuation (i.e., water quality polishing of this treated stormwater) prior to its entry into Centreville Creek. This outlet structure is to be equipped with a weir that is to allow flows in excess of the 10 year storm event to continue down an overflow spillway to the creek.**

It is expected the Grey Sauble Conservation will be reviewing the Functional Servicing Report and providing its recommendations on final stormwater management and construction mitigation details prior to project implementation.

#### **5.4 Additional Aspects of Site Servicing**

As described in the Functional Servicing Report prepared by Pinestone Engineering Ltd., road access to the proposed subdivision is to be provided directly from Highway 26 near the west limit of the property. A secondary emergency egress, which will normally be gated, is proposed to Highway 26 at the eastern end of the site. Internal municipal roads will be constructed to the current Municipality of Meaford urban standards.

Municipal water and sewer servicing will be extended along Highway 26 and into the site at the location of the emergency access block, near the eastern limit of the property.

There are no concerns with any of those aspects of servicing from a natural environment perspective.

#### **5.5 Construction Management**

It is important that construction activities be timed and managed in a manner which avoids potential harm to local wildlife and which minimizes the potential for adverse physical or water quality impacts on surrounding areas. To this end, and in conjunction with the recommendations of the Functional Servicing Report prepared by Pinestone Engineering Ltd., Michalski Nielsen Associates Limited recommends that:

- **all tree cutting be undertaken between September 1 and April 30, so as to avoid impacts on breeding birds;**

- 
- **at the onset of grubbing, and prior to any other earthworks, a heavy-duty silt fence is to be properly installed around the downgradient perimeter of all such works. The sediment fence is to be properly trenched into the ground (a minimum 0.2 m). A qualified individual is to provide certification that the silt fencing has been properly installed;**
  - **additional sediment and erosion controls are to be installed, where deemed necessary by the project engineer, including such measures as temporary or permanent check dams at appropriate locations on any ditching;**
  - **sediment and erosion controls are to be inspected daily by the contractor, and at least monthly by qualified members of the project team. Any deficiencies in these controls are to be remedied immediately;**
  - **once an area has been grubbed, works are to progress as quickly as possible, with all disturbed areas to be stabilized by grading, then by seeding or sodding, as soon as can be practically achieved; and**
  - **sediment and erosion controls are to be left in place, and regularly monitored and repaired, until such time as the lands which have been disturbed are certified by a qualified individual as being stable.**

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## **6 REFERENCES**

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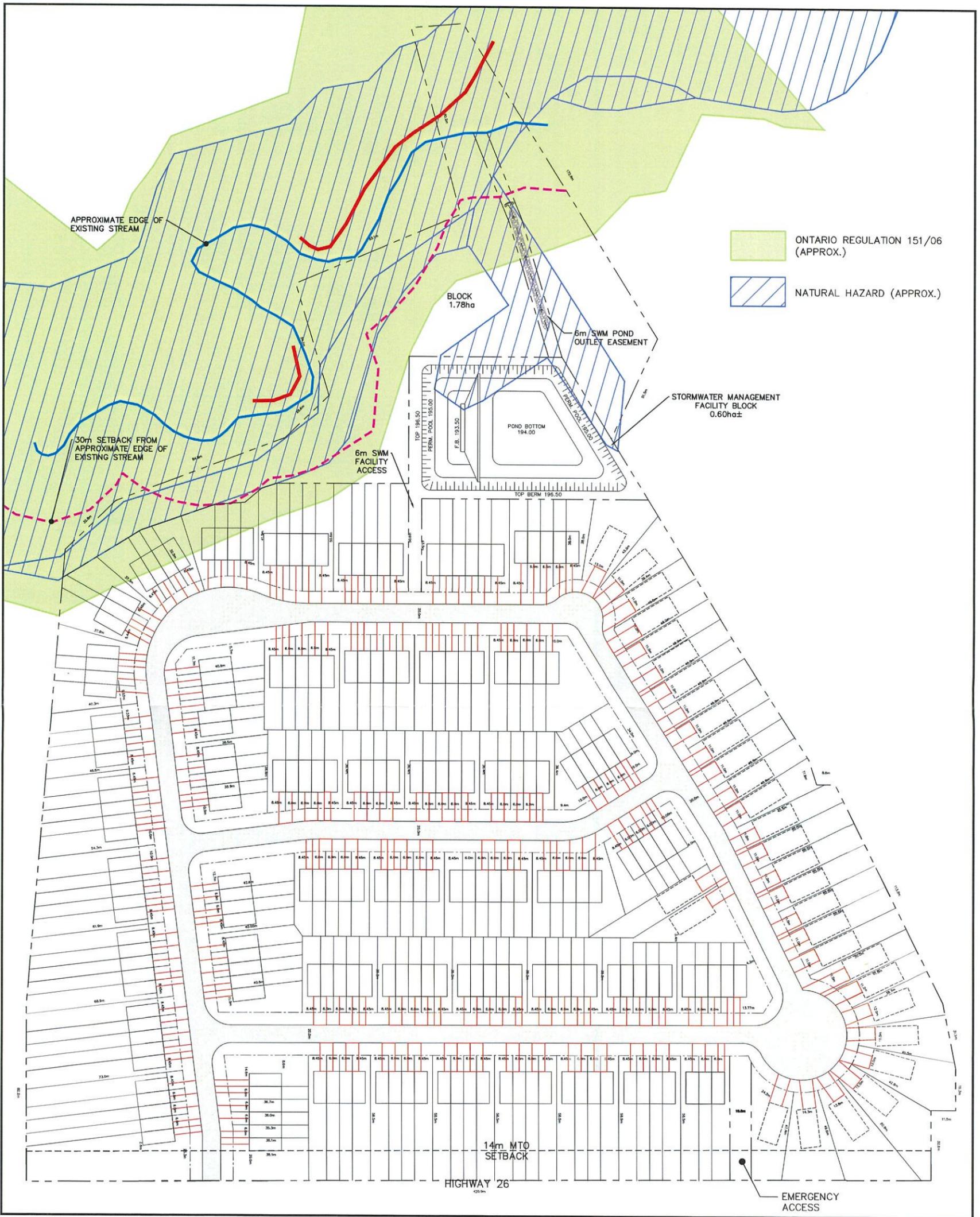
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**APPENDIX A – SITE DEVELOPMENT CONCEPT PLANS**

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CLIENT/PROJECT

**LOON CALL  
MEAFORD PROPERTY - M-1**

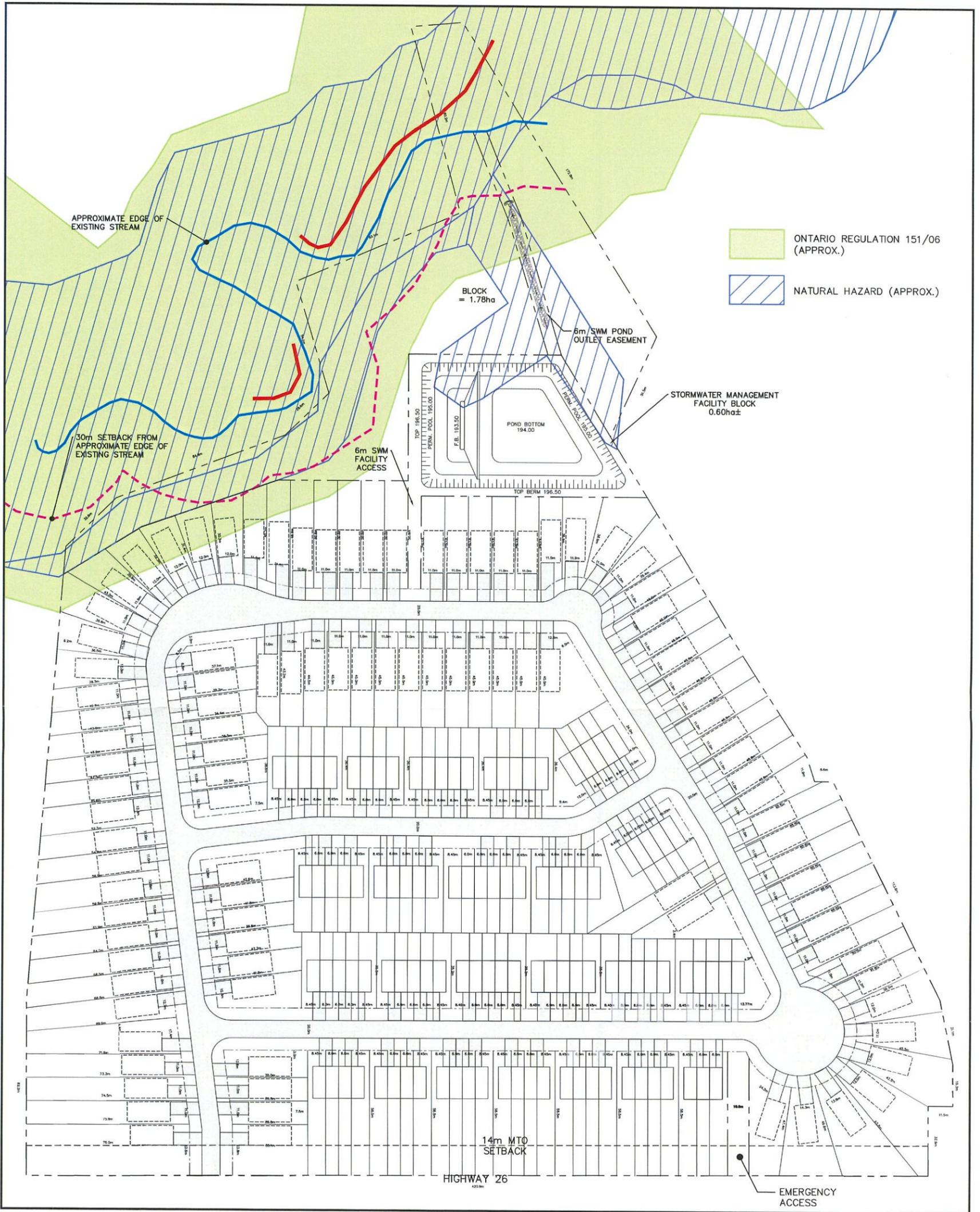
DRAWING TITLE

**LOT CONCEPT SKETCH**

SEAL	NORTH ARROW
PROJECT NO. <b>19-11471-M</b>	DESIGN BY: T.H.
DRAWING NO. <b>SP-1</b>	DRAWN BY: G.N.
	CHECKED: T.H.
	DATE: APRIL 2020
	SCALE: 1:1000

**NOTES**

- LEGAL INFORMATION FROM REGISTERED PLANS 16R-5037 AND 16R-10913
- AERIAL PHOTO INFORMATION FROM COUNTY OF GREY-BRUCE Q5. LOCATION AND SCALE OF PHOTO IS APPROXIMATE. YEAR OF IMAGE IS 2015.



CLIENT/PROJECT

**LOON CALL  
MEAFORD PROPERTY - M-1**

DRAWING TITLE

**LOT CONCEPT SKETCH**

SEAL

NORTH ARROW

PROJECT NO.  
**19-11471-M**

DRAWING NO.  
**SP-1**

DESIGN BY: T.H.  
DRAWN BY: G.N.  
CHECKED: T.H.  
DATE: APRIL 2020  
SCALE: 1:800

KEY MAP

NOTES

- LEGAL INFORMATION FROM REGISTERED PLANS 16R-5037 AND 16R-10913
- AERIAL PHOTO INFORMATION FROM COUNTY OF GREY-BRUCE GIS. LOCATION AND SCALE OF PHOTO IS APPROXIMATE. YEAR OF IMAGE IS 2015.

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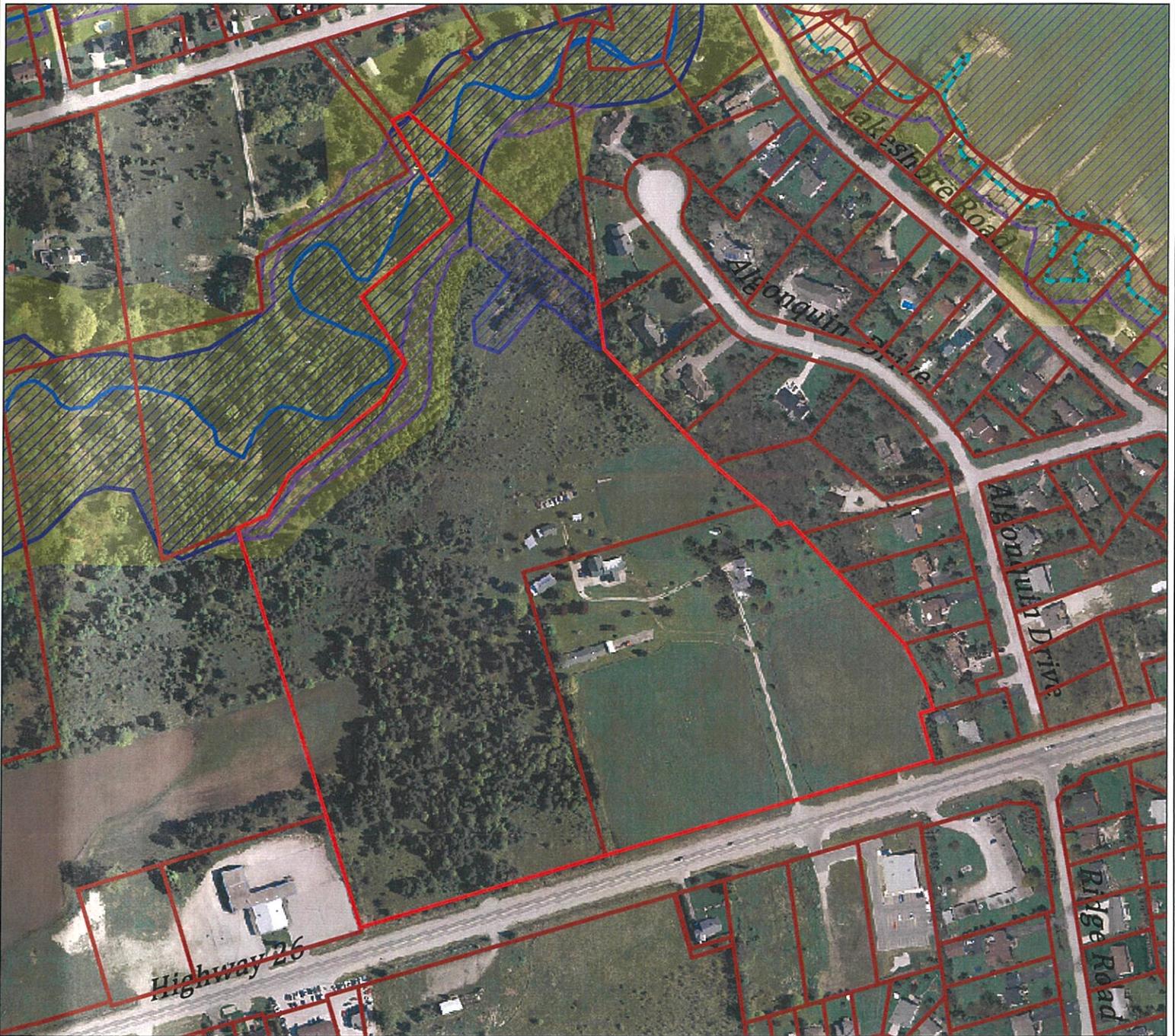
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**APPENDIX B – GREY SAUBLE CONSERVATION  
VALLEYLAND CONSTRAINT MAPPING**

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# GSCA: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario Regulation 151/06)



-  Subject Property (approx.)
-  Other Parcels (approx.)
-  Ontario Regulation 151/06 (approx.)
-  Natural Hazard (approx.)
-  Watercourse (approx.)



Scale = 1:4000



Site Inspection  
 206105 Highway 26  
 Part Lot 19, Concession 6  
 Roll No.: 42-10-480-006-015-00-0000  
 Municipality of Meaford (St. Vincent Township)  
 GSCA File No.: P19507

Monday, December 23, 2019

The included mapping has been compiled from various sources and is for information purposes only. Grey Sauble Conservation is not responsible for, and cannot guarantee, the accuracy of all the information contained within the map. Regulation lines were created by Grey Sauble Conservation (GSC) using 1 metre contours interpolated from the Provincial (10 metre) Digital Elevation Model Versions 1 & 2 & 1:10000 scale mapping.

By accepting this map you agree not to edit the map or disclaimer without the exclusive written permission of Grey Sauble Conservation. You also acknowledge that the information on this map is relevant only to the subject property and may be subject to change.

Produced by GSC with Data supplied under License by Members of Ontario Geospatial Data Exchange.  
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This mapping contains products of the South Western Ontario Orthophotography Project (SWOOP). These images were taken in 2015 at 20cm resolution. They are the property of Grey Sauble Conservation © 2019



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**APPENDIX C – MASTER LIST OF PLANTS**

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Scientific Name	Common Name	Provincially Tracked	Native/ Exotic/ Unranked	S Rank	COSEWIC Status	SAR Schedule 1 Status	SARO Status	6 E 7
<i>Abies balsamea</i>	Balsam Fir	N	N	S5				
<i>Acer negundo</i>	Manitoba Maple	N	N	S5				
<i>Acer platanoides</i>	Norway Maple	N	E	SNA				
<i>Acer saccharum</i>	Sugar Maple	N	N	S5				
<i>Achillea millefolium</i>	Common Yarrow	N	E	SNA				
<i>Alliaria petiolata</i>	Garlic Mustard	N	E	SNA				
<i>Anemonastrum canadense</i>	Canada Anemone	N	N	S5				
<i>Arctium minus</i>	Common Burdock	N	E	SNA				
<i>Asclepias syriaca</i>	Common Milkweed	N	N	S5				
<i>Athyrium filix-femina</i>	Common Lady Fern	N	N	S5				
<i>Betula alleghaniensis</i>	Yellow Birch	N	N	S5				
<i>Betula papyrifera</i>	Paper Birch	N	N	S5				
<i>Bromus inermis</i>	Smooth Brome	N	E	SNA				
<i>Carex sp.</i>	Sedge Species							
<i>Carya cordiformis</i>	Bitternut Hickory	N	N	S5				
<i>Circaea alpina</i>	Small Enchanter's Nightshade	N	N	S5				
<i>Cirsium arvense</i>	Canada Thistle	N	E	SNA				
<i>Cornus racemosa</i>	Grey Dogwood	N	N	S5				U
<i>Cornus sericea</i>	Red-osier Dogwood	N	N	S5				
<i>Crataegus sp.</i>	Hawthorn Species							
<i>Dactylis glomerata</i>	Orchard Grass	N	E	SNA				
<i>Daucus carota</i>	Wild Carrot	N	E	SNA				
<i>Epilobium hirsutum</i>	Hairy Willowherb	N	E	SNA				
<i>Equisetum arvense</i>	Field Horsetail	N	N	S5				
<i>Equisetum hyemale</i>	Common Scouring-rush	N	N	S5				
<i>Erigeron annuus</i>	Annual Fleabane	N	N	S5				
<i>Eurybia macrophylla</i>	Large-leaved Aster	N	N	S5				
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed	N	N	S5				
<i>Fagus grandifolia</i>	American Beech	N	N	S4				
<i>Fragaria virginiana</i>	Wild Strawberry	N	N	S5				
<i>Fraxinus americana</i>	White Ash	N	N	S4				

Scientific Name	Common Name	Provincially Tracked	Native/ Exotic/ Unranked	S Rank	COSEWIC Status	SAR Schedule 1 Status	SARO Status	6 E 7
<i>Fraxinus pennsylvanica</i>	Red Ash	N	N	S4				
<i>Galium aparine</i>	Common Bedstraw	N	N	S5				U
<i>Galium palustre</i>	Common Marsh Bedstraw	N	N	S5				
<i>Geranium robertianum</i>	Herb-Robert	N	N	S5				
<i>Geranium sp.</i>	Crane's-bill Species							
<i>Geum sp.</i>	Avens Species							
<i>Hieracium sp.</i>	Hawkweed Species							
<i>Hypericum perforatum</i>	Common St. John's-wort	N	E	SNA				
<i>Juglans nigra</i>	Black Walnut	N	N	S4?				
<i>Larix laricina</i>	Tamarack	N	N	S5				
<i>Leucanthemum vulgare</i>	Oxeye Daisy	N	E	SNA				
<i>Lonicera canadensis</i>	Canada Fly Honeysuckle	N	N	S5				
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	N	E	SNA				
<i>Malus pumila</i>	Common Apple	N	E	SNA				
<i>Myosotis arvensis</i>	Field Forget-me-not	N	E	SNA				
<i>Onoclea sensibilis</i>	Sensitive Fern	N	N	S5				
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	N	N	S4?				
<i>Phalaris arundinacea</i>	Reed Canarygrass	N	N	S5				
<i>Phleum pratense</i>	Common Timothy	N	E	SNA				
<i>Pinus strobus</i>	Eastern White Pine	N	N	S5				
<i>Pinus sylvestris</i>	Scots Pine	N	E	SNA				
<i>Plantago major</i>	Common Plantain	N	E	SNA				
<i>Poa pratensis</i>	Kentucky Bluegrass	P	N	S5				
<i>Populus balsamifera</i>	Balsam Poplar	N	N	S5				
<i>Prunus pensylvanica</i>	Pin Cherry	N	N	S5				
<i>Prunus serotina</i>	Black Cherry	N	N	S5				
<i>Ranunculus acris</i>	Common Buttercup	N	E	SNA				
<i>Rhamnus cathartica</i>	European Buckthorn	N	E	SNA				
<i>Robinia pseudoacacia</i>	Black Locust	N	E	SNA				
<i>Rosa multiflora</i>	Multiflora Rose	N	E	SNA				
<i>Rubus occidentalis</i>	Black Raspberry	N	N	S5				

Scientific Name	Common Name	Provincially Tracked	Native/ Exotic/ Unranked	S Rank	COSEWIC Status	SAR Schedule 1 Status	SARO Status	6 E 7
<i>Salix sp.</i>	Willow Species							
<i>Scirpus sp.</i>	Bulrush Species							
<i>Solanum dulcamara</i>	Bittersweet Nightshade	N	E	SNA				
<i>Solidago altissima</i>	Tall Goldenrod	P	N	S5				
<i>Solidago canadensis</i>	Canada Goldenrod	N	N	S5				
<i>Solidago sp.</i>	Goldenrod Species							
<i>Sorbus sp.</i>	Mountain-ash Species							
<i>Symphotrichum novae-angliae</i>	New England Aster	N	N	S5				
<i>Taraxacum officinale</i>	Common Dandelion	N	E	SNA				
<i>Thuja occidentalis</i>	Eastern White Cedar	N	N	S5				
<i>Tilia cordata</i>	Little-leaved Linden	N	E	SNA				
<i>Ulmus americana</i>	White Elm	N	N	S5				
<i>Veronica chamaedrys</i>	Germander Speedwell	N	E	SNA				
<i>Viburnum opulus</i>	Cranberry Viburnum	N	N	S5				
<i>Viburnum sp.</i>	Viburnum Species							
<i>Vicia cracca</i>	Tufted Vetch	N	E	SNA				
<i>Vinca minor</i>	Lesser Periwinkle	N	E	SNA				
<i>Viola sp.</i>	Violet Species							
<i>Vitis riparia</i>	Riverbank Grape	N	N	S5				

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**APPENDIX D – BREEDING BIRD SURVEY RESULTS**

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Number of Species:		27							
Number of (provincial and national) Species at Risk:		1							
Number of S1 to S3 (provincially rare) Species:		0							
Number of Regionally Rare Species:		0							
Number of Area-sensitive Species:		4							
<b>Location 1 - Dry-Fresh Pine Forest</b>									
Number of Species:		21							
Number of (provincial and national) Species at Risk:		0							
Number of S1 to S3 (provincially rare) Species:		0							
Number of Regionally Rare Species:		0							
Number of Area-sensitive Species:		3							
<b>Location 2 - Dry-Fresh White Cedar Forest</b>									
Number of Species:		13							
Number of (provincial and national) Species at Risk:		0							
Number of S1 to S3 (provincially rare) Species:		0							
Number of Regionally Rare Species:		0							
Number of Area-sensitive Species:		0							
		2							
<b>Location 3 - Dry-Moist Old Field Meadow</b>									
Number of Species:		3							
Number of (provincial and national) Species at Risk:		0							
Number of S1 to S3 (provincially rare) Species:		0							
Number of Regionally Rare Species:		0							
Number of Area-sensitive Species:		0							
<b>Location 4 - Fresh-Moist Poplar Forest</b>									
Number of Species:		11							
Number of (provincial and national) Species at Risk:		0							
Number of S1 to S3 (provincially rare) Species:		0							
Number of Regionally Rare Species:		0							
Number of Area-sensitive Species:		2							
<b>Location 5 - Flyovers and adjacent areas</b>									
Number of Species:		5							
Number of (provincial and national) Species at Risk:		1							
Number of S1 to S3 (provincially rare) Species:		0							
Number of Regionally Rare Species:		0							
Number of Area-sensitive Species:		1							

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**APPENDIX E – SIGNIFICANT WILDLIFE HABITAT  
SCREENING – ECOREGION 6E**

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SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
<b>Seasonal Concentration Areas of Animals</b>					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	N	Field survey in early spring confirmed that no suitable habitat is present.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds <b>not</b> SWH. Reservoir managed as a large wetland or pond/lake qualifies.	N	No suitable habitat present.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds <b>not</b> SWH.	Limited	Although limited, suitable meadow marsh habitat is present along the watercourse, within the associated valley corridor.
Raptor Wintering Area	Eagles, Hawks, Owls	<b>Hawks/Owls:</b> Combination of both Forest and Cultural Ecosites <b>Bald Eagle:</b> Forest or swamp near open water (hunting ground)	<b>Raptors:</b> >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. <b>Eagles:</b> open water, large trees & snags for roosting.	Potential	Potential habitat for hawks/owls may be provided throughout the contiguous forested habitat of the valley corridor. No such species were identified during breeding bird surveys.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites <b>not</b> SWH.	N	No suitable habitat present.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Deciduous or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	Limited Potential	Potential habitat likely present within valley corridor, although extent of such habitat is limited by large representation of conifers and small number of mature trees with proper habitat characteristics.
Turtle Wintering Area	<b>Turtles</b> (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	<b>Free water beneath ice.</b> Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	N	No suitable habitat present.
Reptile Hibernaculum	Snakes	<b>Snakes:</b> Any ecosite (esp. w/ rocky areas), other than very wet ones. <b>Five-lined Skink:</b> FOD and FOM, FOC1, FOC3 - with rock outcrops	<b>Access below frost line:</b> burrows; rock crevices, piles or slopes, stone fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	N	No suitable habitat present.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, <b>not</b> a licensed/permitted aggregate area or new man-made features (2 yrs).	N	No suitable habitat present.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned NightHeron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	N	No suitable habitat present.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	<b>Gulls/Terns:</b> Rocky island or peninsula in lake or river. <b>Brewer's Blackbird:</b> close to watercourses in open fields or pastures with scattered trees or shrubs.	<b>Gulls/Terns:</b> islands or peninsulas with open water or marshy areas. <b>Brewers Blackbird colonies:</b> on the ground in low bushes close to streams and irrigation ditches.	N	No suitable habitat present.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, <b>Special Concern:</b> Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	N	No suitable habitat present.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	N	No suitable habitat present.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	No suitable habitat present, as per <i>Grey County Natural Heritage System Study "Green in Grey" (NRSI, 2017)</i> .
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	No suitable habitat present, as per <i>Grey County Natural Heritage System Study "Green in Grey" (NRSI, 2017)</i> .
<b>Rare Vegetation Communities</b>					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	<b>Cliff:</b> near vertical bedrock >3m <b>Talus Slope:</b> coarse rock rubble at the base of a cliff	N	No suitable habitat present.
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	N	No suitable habitat present.
Alvar	<i>Carex crawei</i> , <i>Panicum philadelphicum</i> , <i>Eleocharis compressa</i> , <i>Scutellaria parvula</i> , <i>Trichostema brachiatum</i> , Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. <b>Need 4 of the 5 Alvar Indicator Spp.</b> <50% vegetation cover are exotic species.	N	No suitable habitat present.
Old Growth Forest	Trees >140 yrs; heavy mortality = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a ≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	N	No suitable habitat present.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a <u>tallgrass prairie</u> habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	N	No suitable habitat present.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An <u>open Tallgrass Prairie</u> habitat has < 25% tree cover. Less than 50% cover of exotic species.	N	No suitable habitat present.
Other Rare Vegetation Communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	No suitable habitat present.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
<b>Specialized Habitat for Wildlife</b>					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	N	No suitable habitat present.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	N	Although contiguous forested habitat exists through the valley corridor, the associated watercourse likely not large enough to support this habitat.
Woodland Raptor Nesting Habitat	Barred Owl. <b>Hawks:</b> N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	Potential	Habitat may be available throughout the contiguous forested valley corridor. No such species were identified during breeding bird surveys.
Turtle Nesting Areas	Midland Painted Turtle <b>Special Concern:</b> Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	N	No suitable habitat present.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. <b>(2 or more confirms SWH type).</b>	Potential	Habitat may be available throughout the contiguous forested valley corridor.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m <sup>2</sup> within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	N	No suitable habitat present.
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m <sup>2</sup> isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	N	No suitable habitat present.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	Potential	Habitat may be available throughout the contiguous forested valley corridor. Some area-sensitive bird species have been identified in woodland areas during breeding bird surveys.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
<b>Habitat of Species of Conservation Concern</b>					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 <b>Green Heron:</b> SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	N	No suitable habitat present.
Open Country Bird	Upland Sandpiper, Grasshopper	CUM1, CUM2	Grassland/meadow >30 ha. Not being	N	No suitable habitat present. On-site meadow communities do
Shrub/Early Successional Bird Breeding Habitat	<b>Brown Thrasher + Clay-coloured Sparrow (indicators)</b> , Field Sparrow, Black-billed Cuckoo, E.	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	N	No suitable habitat present.
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	N	No suitable habitat present.
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	N	No such species were identified during 2019 and 2020 field surveys, including during the breeding bird surveys.
<b>Animal Movement Corridors</b>					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	Potential	Habitat may be available throughout the valley corridor
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	N	No suitable habitat present.
<b>Exceptions for Ecoregion 6E</b>					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	N	No suitable habitat present.
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands.	N	No suitable habitat present.