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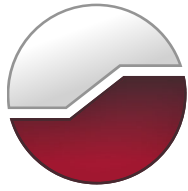
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**Environmental Impact Statement
Proposed Plan of Subdivision
Part of Lot 11, Concession 10
Township of Beckwith
Lanark County**

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Submitted to:

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**Environmental Impact Statement
Proposed Plan of Subdivision
Part of Lot 11, Concession 10
Township of Beckwith
Lanark County, Ontario**

Date: October 9, 2025
Project: 100165.007_V05

EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Cavanagh Developments to complete an Environmental Impact Statement (EIS) for the property located on part of lot 11, Concession 10 in the Geographic Township of Beckwith, Lanark County, Ontario. This EIS has been completed in support of a proposed plan of subdivision to permit the development of a 41.5-hectare property and was completed in accordance with all federal, provincial and municipal policies and guidelines, as applicable.

In support of this EIS a desktop review and numerous field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. Field investigations were completed throughout spring 2021, 2023 and 2025. The focus of the site investigations was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and site investigations the following natural heritage features were identified on-site or within the study area: local wetlands, significant wildlife habitat for raptor wintering area (*candidate*), woodland amphibian breeding habitat (*confirmed*), woodland area-sensitive breeding bird habitat (*confirmed*) and special concern and rare wildlife habitat (barn swallow, eastern wood-pewee wood thrush and eastern whip-poor-will). The following SAR and their habitat were identified as having a potential to occur on-site: bobolink, eastern meadowlark, , bat species, and butternut. However; no regulated SAR habitat for any species was identified on-site.

Potential impacts to the natural heritage features were primarily associated with the loss of woodland and meadow habitat and indirect impacts to local wetlands, significant wildlife habitat and fish habitat. Potential impacts to natural heritage features on-site are anticipated to be mitigated through the implementation of development setbacks from surface water features and implementation of 0.3 hectare development envelopes over wooded parcels.

Should any SAR be discovered throughout the course of any development on-site, operations should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction.

The proposed plan of subdivision complies with the natural heritage policies of the Provincial Planning Statement and the Township of Beckwith and Lanark County official plans. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed development as long as all mitigation measures in Section 7 are enacted and best management practices followed.

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Cavanagh Developments to carry out an Environmental Impact Statement (EIS) for the property located on Part of Lot 11, Concession 10, in the Township of Beckwith, Lanark County (hereafter referred to as “the subject property”). The general location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking to develop the existing 41.5 hectare (ha) land area into a residential subdivision. Based on requirements and natural heritage policies of the Township of Beckwith and Lanark County official plan documents, an EIS is required demonstrating that the proposed plan of subdivision will not negatively impact any potential natural heritage features which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2.

1.2 Objective

The 2024 Provincial Planning Statement (PPS) (MMAH, 2024) issued under Section 3 of the Planning Act states that “development and site alteration shall not be permitted in: significant wetlands in Ecoregions 5E, 6E and 7E.” Furthermore, the PPS dictates “development and site alteration shall not be permitted in: significant wetlands in the Canadian Shield north of Ecoregion 5E, 6E and 7E, significant woodlands in 6E and 7E, significant valleylands in 6E and 7E, significant wildlife habitat and significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.” Similarly, the PPS dictates that “development and site alteration shall not be permitted in” fish habitat or habitat of endangered or threatened species “except in accordance with provincial and federal requirements.”

The objective of the work presented herein is threefold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the PPS, on the subject property and within the broader study area; 2) to assess the potential impacts from the proposed plan of subdivision on any natural heritage features identified and; 3), to recommend appropriate and defensible avoidance and mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following provincial and municipal regulations, policies and guidelines:

- Provincial Planning Statement (MMAH, 2024);
- Endangered Species Act (Ontario, 2007), as amended;
- Conservation Authorities Act (Ontario, 1990);

- Natural Heritage Reference Manual (OMNR, 2010); and
- Lanark County Official Plan (Lanark County, 2012).

1.3 Physical Setting

The subject property is located on Part of Lot 11, Concession 10, in the Township of Beckwith, Lanark County, and is comprised of mixed forests, a mixed swamp and cultural meadows. The subject property is bound to the northwest by Lake Park Road and to the northeast the site is bound by the rear yard of properties fronting to Timberwood Drive. To the southwest the site is bound by the rear yards of properties fronting to Carlbeck Drive and Jordan Avenue, while to the southeast the site is bound by Beckwith 10th Line Road.

1.4 Land Use Context

The existing land use designation from the Lanark County OP is settlement area. The land-use from the Beckwith Township is residential. The zoning by-law from the township is residential-rural (RR).

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records, and review of SAR habitat requirements and range maps.

Following changes to the MNRF natural heritage information request process, as of 2019, the MNRF is no longer providing responses to these requests. As such, an information request was not submitted for this project. In lieu of a request response, the Natural Heritage Information Request Guide (OMNRF, 2018) was consulted and the data resources listed below were reviewed for relevant natural heritage feature and SAR data relating to the site.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make A Map: Natural Heritage Areas (OMNRF, 2014a);
- Land Information Ontario (OMNR, 2011c);
- Lanark County Official Plan (Lanark County, 2012);
- Ontario Geological Survey (OGS, 2019);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2013);
- eBird Website (eBird, 2021);

- iNaturalist Website (iNaturalist, 2024);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007)
- Atlas of Mammals of Ontario (Dobbyn, 1994);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019);
- Natural Heritage Information Request Guide (MNRF, 2018); and,
- Client's Guide to Preliminary Screening for Species at Risk (MECP, 2019).

2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on natural heritage features and to identify any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.1 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Purpose
May 4, 2021	08:00-13:00	14°C, ~100% cloud cover, Beaufort 0, no precipitation	Preliminary Constraints, ELC Survey
May 4, 2021	22:15-23:00	10°C, ~100% cloud cover, Beaufort 0, light precipitation	Amphibian Breeding Survey
May 18, 2021	22:15-22:45	19°C, ~10% cloud cover, Beaufort 1, no precipitation	Amphibian Breeding Survey
May 19, 2021	23:50-00:20	21°C, ~70% cloud cover, Beaufort 0, no precipitation	Whip-poor-will Breeding Survey
June 1, 2021	03:20-04:00	12°C, ~50% cloud cover, Beaufort 1, no precipitation	Whip-poor-will Breeding Survey
June 8, 2021	05:30-07:15	23°C, ~95% cloud cover, Beaufort 0, no precipitation	Breeding Bird Survey
June 23, 2021	06:30-09:10	13°C, ~0% cloud cover, Beaufort 1, no precipitation	Breeding Bird Survey
June 23, 2021	23:40-00:30	15°C, ~20% cloud cover, Beaufort 2, no precipitation	Whip-poor-will Breeding Survey
July 8, 2021	06:00-08:00	14°C, ~95% cloud cover, Beaufort 2, no precipitation	Breeding Bird Survey
May 18, 2023	13:15-15:00	14°C, no cloud cover, Beaufort 4, no precipitation	Existing Conditions Update (ELC, Wildlife)

Date	Time	Weather	Purpose
May 13, 2025	10:45-14:35	17°C, ~20% cloud cover, Beaufort 1, no precipitation	Snag Density Survey

2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on May 4, 2021 and May 18 2023, following the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms.

2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions at seven point count locations; breeding bird survey locations are provided on Figure A.2 in Appendix A. Breeding bird surveys followed protocols from the Canadian Breeding Bird Surveys (Downes and Collins, 2003) and the Ontario Breeding Bird Atlas (Cadman et al., 2007). Surveys were conducted no earlier than 30 minutes before sunrise and were completed within 5 hours of sunrise, to encompass peak song bird activity. Breeding bird surveys consisted of 5 minutes of passive listening in which all birds heard or seen within the survey period were recorded, including species, sex and breeding behaviour, if possible. A list of all avian species identified on-site is provided in Table C.1 in Appendix C.

2.2.3 Amphibian Breeding Surveys

Amphibian breeding surveys were conducted on three occasions at two point count locations; breeding amphibian survey locations are provide on Figure A.2. Breeding amphibian surveys followed protocols from the Marsh Monitoring Program (Bird Studies Canada, 2008). Surveys were conducted no earlier than 30 minutes after sunset and were completed by midnight, to encompass peak amphibian calling activity. Breeding amphibian surveys consisted of 3 minutes of passive listening in which all amphibians calling during the survey period were recorded, along with their call code. A list of all amphibian species identified on-site is provided in Table C.1 in Appendix C.

2.2.4 Nocturnal Whip-Poor-Will Surveys

Nocturnal whip-poor-will surveys were conducted on three occasions at two point count locations; whip-poor-will survey locations are provided on Figure A.2. Whip-poor-will surveys followed protocols from the MNRF (MNRF, 2014). Surveys were completed on May 19, June 1 and 23, 2021.

2.2.5 Bat Maternity Roost and Snag Density Survey

Potential bat maternity roosting sites were surveyed for in each forested ecosite on-site on November 26, 2019 and May 13, 2025, following the protocol for identifying candidate maternity roosts outlined in the OMNR (2011a) Bats and Bat Habitats: Guidelines for Wind Power Projects. Snag density survey locations, 22 in total, are illustrated on Figure A.2 in Appendix A.

2.3 Data Analysis

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated Ecoregion 6E-11 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range between 4.9°C to 7.8°C and an annual precipitation ranging between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sea along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes-St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

3.2 Study Area Land Use

A review of aerial photographs indicates that the subject property is comprised of forest and scrubland. The surrounding area is mainly residential with forest and agricultural land (Figure 1). Historical aerial imagery depicts the development of residential areas in all directions to the property since 1985.



Figure 1. Temporal Changes in Land Use

3.3 Landforms, Soils and Bedrock Geology

The topography of the site slopes downward from south to north, from a topographical high of 145 mASL in the southern portion of the site to a topographical low of 139 mASL in the northern portion of the site.

A topographical landform, as mapped by Chapman and Putnam (1984) is described on the subject property, the limestone plains of the Smiths Falls limestone plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies two surficial soil units on the subject property. The largest being Paleozoic bedrock spanning across the majority of the property. There is a small pocket of organic deposits on the west side of the property.

Bedrock at the site, is described by OGS (2019) as entirely the Beekmantown Group comprised of dolostone and sandstone.

3.4 Surface Water, Groundwater and Fish Habitat

Surface water on the subject property consists of a manmade pond located in the eastern central portion of the property and an unevaluated wetland in the center of the property along the southern border.

The manmade pond appears to have been excavated for the purpose of providing a winter ice skating surface based on the shallow depths, rectangular shape and hockey nets left adjacent to it.

The unevaluated wetland is approximately 1.2 ha in size and characteristic of a swamp based on the shallow, ephemeral and discontinuous water depths which range from 0 to approximately 20 cm. Vegetation within the swamp was predominately characterized by eastern white cedar and balsam poplar trees with abundant allochthonous material and a paucity of herbaceous vegetation, similar to that of a vernal pool.

A fisheries assessment was not conducted as part of this EIS; however, based on field observations the manmade pond and unevaluated wetland do not contain small bodied fish species. Given the shallow, ephemeral nature of each surface water feature and their lack of connectivity to off-site permanent surface water features, it is GEMTEC's opinion that no fish habitat exists on site. Accordingly, impacts to fish and fish habitat are not assessed or discussed further within this EIS.

Groundwater investigations were not completed in support of this EIS.

3.5 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC in 2021, 2023 and 2025, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site represents a mosaic of mixed forests, cultural woodlands, cultural meadows and unevaluated local wetlands. Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-site

ELC Type	Description	Size (ha)
Dry-Fresh White Cedar Mixed Forest (FOMM4)	Located throughout the entire southeastern half of the property is a white cedar mixed forest. This community was dominated by eastern white cedar (<i>Thuja occidentalis</i>) and to a lesser extent, American elm (<i>Ulmus americana</i>), trembling aspen (<i>Populus tremuloides</i>), white birch (<i>Betula papyrifera</i>), white ash (<i>Fraxinus americana</i>) and sugar maple (<i>Acer saccharum</i>). In areas with a wetter regime there were higher concentrations of eastern hemlock (<i>Tsuga canadensis</i>) and balsam fir (<i>Abies balsamea</i>). Within the drier inclusions red oak (<i>Quercus rubra</i>), ironwood (<i>Ostrya virginiana</i>) and sugar maple were more prevalent. The shrub layer was primarily populated by basswood (<i>Tilia americana</i>), American elm and white pine (<i>Pinus strobus</i>).	22.3

ELC Type	Description	Size (ha)
	saplings. Herbaceous vegetation included a variety of grasses and moss.	
Cultural Meadow (CUM)	Located in the northwestern corner and throughout the northwest central portions of the property is a cultural meadow. Vegetation in this community predominantly consisted of grasses and other herbaceous vegetation including: white clover (<i>Trifolium repens</i>), cow's vetch (<i>Vicia cracca</i>), timothy grass (<i>Phleum pretense</i>), brome (<i>Bromus</i> sp.), dandelion (<i>Taraxacum</i> sp.), oxeye daisy (<i>Leucanthemum vulgare</i>), common milkweed (<i>Asclepias syriaca</i>), thistle (<i>Cirsium</i> spp.), chicory (<i>Cichorium intybus</i>), red clover (<i>Trifolium pratense</i>) and orchard grass (<i>Dactylis glomerata</i>). Trees and shrubs occurred sporadically throughout this community and included white pine (<i>Pinus strobus</i>), eastern white cedar (<i>Thuja occidentalis</i>) and common juniper (<i>Juniperus communis</i>).	13.6
Cultural Woodland (CUW)	Located in the northwest portion of the property, within the cultural meadow is a cultural woodland. Tree and shrub species in this community included eastern white cedar, American elm, common buckthorn (<i>Rhamnus cathartica</i>), common juniper (<i>Juniperus communis</i>), red oak and prickly ash (<i>Zanthoxylum americanum</i>). Herbaceous vegetation in this community included common milkweed (<i>Asclepias syriaca</i>), cow's vetch, oxeye daisy, orchard grass, brome species and timothy grass.	5.4
White Cedar Mineral Mixed Swamp (SWMM1)	Located in the centre of the property, adjacent to the southern border is a white cedar mixed swamp. This community was dominated by eastern white cedar and large tooth aspen.	1.2
Shallow Water (SA)	Located in the centre of the property, adjacent to the mixed swamp is a shallow water manmade pond.	0.2

3.6 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2021 and 2020 are summarized in Table C.1 in Appendix C. Incidental wildlife observations were documented during the various surveys detailed in Section 2.2.

4.0 NATURAL HERITAGE FEATURES

Natural heritage features are defined in the PPS as “features and area, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands* south and east of the Canadian Shield, *significant valleylands* south and east of the Canadian shield, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant*

areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscape of an area”.

The County of Lanark’s natural heritage system identifies “significant” natural heritage features on Schedule A – Land Use Designations of the County of Lanark Official Plan, while the Township of Beckwith identifies significant wetlands on Schedule A – Land Use of the Beckwith Township Official Plan. Taken together, the PPS defined natural heritage features and the County of Lanark and Beckwith Township natural heritage systems form the basis for the identification of natural heritage features on-site and within the study area.

4.1 Local and Significant Wetlands

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands “mean lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface.” While *significant* in regards to wetlands means “an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.”

No significant wetlands were identified on-site or within the study area; however, one local unevaluated wetland occurs in the south central portion of the Site along the southern property boundary. Impacts to local wetlands from the proposed project are discussed in Section 6; however, as no provincially significant wetlands are located within the study area, they are not assessed or discussed further within this EIS.

4.2 Significant Woodlands

Significant woodlands are defined in the natural heritage reference manual (OMNR, 2010) as “an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history.”

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any woodland that contains any of the four criteria listed in Section 7.2 of the Natural Heritage Reference Manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics and economic and social functional values. Neither the County of Lanark or the Township of Beckwith natural heritage systems (Schedule A, respectively) identify significant woodland within the study area.

For the purpose of evaluating the presence of significant woodlands, Table C.2 in Appendix C, presents the screening rationale for significant woodlands as outlined in the Natural Heritage Reference Manual. For comparison of woodland criteria used in Table C.2 it is assumed that the

woodland coverage within the planning area is between 30% and 60% of the land area, therefore the minimum woodland size for determining significance is 50 ha or greater. As outlined in Table C.2, the contiguous woodland coverage on-site and within the study area is 44.3 ha.

As significant woodlands are not identified within either Official Plan documents and the contiguous woodlands on-site and within the study area do not meet the Natural Heritage Reference Manual criteria, significant woodlands are not identified or discussed further in this EIS.

4.3 Significant Valleylands

Valleylands are defined in the Natural Heritage Reference Manual (OMNR, 2010) as ‘a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time’. The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the ‘top-of-bank’ or ‘top-of-slope’ associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high water marks or the width of the stream meander belt (OMNR, 2010).

As discussed in Section 3.2, the site is relatively flat. Furthermore, no valleylands have been identified on-site, as such valleylands are not discussed or evaluated further in this EIS.

4.4 Significant Areas of Natural and Scientific Interest

The MNRF identifies two types of Areas of Natural and Scientific Interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario’s biodiversity and natural landscapes, while earth science ANSIs typically represent significant examples of bedrock, fossils or landforms in Ontario (OMNR, 2010).

No ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

4.5 Significant Wildlife Habitat

The Natural Heritage Reference Manual (OMNR, 2010), in combination with the Significant Wildlife Habitat Technical Guide (MNRF, 2000) and the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. Table C.3, C.4, C.5

and C.6 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.5.1 Habitats of Seasonal Concentrations of Animals

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The Significant Wildlife Habitat Technical Guide (MNRF, 2000) and Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015) identify 11 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 11 types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why they are or are not assessed further in this EIS.

Following review of Table C.3 in Appendix C, one *candidate* habitats of seasonal concentration of animals are present on-site, raptor wintering area. *Candidate* SWH are discussed in detail in the subsections below.

4.5.1.1 Raptor Wintering Area

The combination of forest and upland habitat on-site may provide *candidate* raptor wintering area. Raptor wintering area SWH provides critical overwintering habitat for the following raptor species: rough-legged hawk, red-tailed hawk, northern harrier, American kestrel, snowy owl, short-eared owl and bald eagle. Bald eagle habitat requires the forest community to be adjacent to shoreline areas of large rivers or lakes with open water. The defining criteria for confirmed raptor wintering area is the use of the habitat by one or more short-eared owl, one or more bald eagle or at least 10 individuals of the listed hawk/owl species (OMNRF, 2015). In order to be significant, sites must be used regularly (3 out of 5 years) for a minimum of 20 days by the number of birds detailed above (OMNRF, 2015).

A formal raptor wintering survey was outside of the scope of this EIS. The *candidate* significant wildlife habitat for raptor wintering area corresponds with the mixed forest, cultural meadow and cultural woodland on-site (ELC code FOMM4, CUM and CUW on Figure A.3 in Appendix A). However, given the lack of suitable shoreline habitat on-site the property does not support raptor wintering areas for bald eagle. Potential impacts to *candidate* raptor wintering area SWH are discussed in Section 6.

4.5.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation

communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

4.5.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized habitats that may constitute significant wildlife habitat, these eight types of specialized wild habitat are evaluated in Table C.4 in Appendix C.

Following review of Table C.4 in Appendix C, one *candidate* specialized habitats for wildlife are present on-site or within the broader study area: woodland amphibian breeding habitat. *Candidate* SWH are discussed in detail in the subsections below.

4.5.3.1 Woodland Amphibian Breeding SWH

Woodland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, blue-spotted salamander, spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog. Woodland amphibian breeding habitat can be located in all ecosites associated with coniferous, mixed and deciduous forests or swamps. The defining criteria for confirmed woodland amphibian breeding SWH is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals, or two or more of the listed frog/toad species with a call level code 3.

Candidate woodland amphibian breeding habitat was identified on-site within the on-site swamp community adjacent to woodlands on-site. To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted.

Table 4.1 below summarizes the results of the amphibian breeding surveys described in Section 2 of this report. Figure A.2 in Appendix A illustrates the survey locations. Based on review of Table 4.1 below, woodland habitat on-site does meet the defining use criteria for *confirmed* woodland amphibian breeding SWH, for station 1, which correspond to the white cedar mixed swamp on-site (ELC codes SWMM1). Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015a), woodland amphibian habitat is considered to be the wetland, plus a 230 m radius of surrounding woodland area.

Confirmed woodland amphibian breeding habitat is illustrated on Figure A.5 in Appendix A. Impacts to woodland amphibian breeding habitat from the proposed development is discussed in Section 6.

Table 4.1 Summary of Amphibian Breeding Call Surveys

Survey Location	Breeding Habitat	Species / Highest Call Code / Date	Confirmed SWH
1	Woodland	AMTO / 2-4 / May 4, 2021	Yes
		SPPE / 3* / May 4 and 18, 2021	
		CHFR / 1-1 / May 4, 2021	
		AMTO / 3* / May 4, 2021	
		CHFR / 3* / May 18, 2021	
2	Woodland	AMTO / 1-3 / May 4, 2021	Yes
		CHFR / 2-6 / May 4, 2021	
		SPPE / 3* / May 4 and 18, 2021	
		NLFR / 2-6 / May 18, 2021	
		CHFR / 3* / May 18, 2021	
		GRFR / 1-3 / July 5, 2021	

Notes: SPPE = Spring Peeper, NLFR = Northern Leopard Frog, AMTO = American Toad, CHFR = Western Chorus Frog, GRFR = Green Frog. Call Codes: the first number indicates the call code where: (1) number of individuals can be accurately counted, (2) individuals can be readily estimated, (3) calls are continuous and overlapping, such that estimates of individuals are not reliable. The second number identifies the number of individuals calling. Call codes of 3 do not have a second number, as individual estimates are not possible.

*Species abundance number was not recorded during the survey.

4.5.3.2 Candidate Woodland Area-Sensitive Bird Breeding Habitat

Candidate woodland area-sensitive bird breeding habitat was identified within the forested area that occurs on-site. To evaluate the potential for the woodland to provide confirmed woodland area-sensitive bird breeding habitat, a series of breeding bird surveys were conducted. A list of all breeding bird species observed during site investigations can be found in Appendix C, Table C.1: Summary of Wildlife Observed On-Site and Adjacent to Site.

Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest songbirds. Woodland area-sensitive bird breeding habitat provides critically important habitat for the following wildlife species: yellow-bellied sapsucker, red-breasted nuthatch, veery, blue-headed vireo, northern parula, black-throated green warbler, Blackburnian warbler, black-throated blue warbler, ovenbird, scarlet tanager, winter wren, and special concern for cerulean warbler and Canada warbler (OMNRF, 2015).

The defining criteria for confirmed woodland area-sensitive bird breeding significant wildlife habitat is the presence of nesting or breeding pairs of three or more of the listed wildlife species, with any site containing breeding cerulean warblers or Canada warblers is to be considered SWH (OMNRF, 2015).

Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (MNR, 2015), and following review of Table C.1 from Appendix C, the woodland on-site provides *confirmed* woodland area-sensitive bird breeding significant wildlife habitat, due to the presence of four indicator species (black-throated green warbler, veery, ovenbird and scarlet tanager).

SWH for woodland area-sensitive breeding birds is illustrated in Figure A.4 in Appendix A. Potential impacts to *confirmed* woodland area-sensitive bird breeding SWH are discussed in Section 6.

4.5.4 Habitats of Species of Conservation Concern

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNR, 2015), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNR, 2015), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6E-11 are provided in Table C.5 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS. Following review of Table C.5 in Appendix C, two habitats of species of conservation concern have been identified on-site, shrub/early successional breeding bird habitat and habitat for special concern and rare wildlife species for barn swallow, eastern wood-pewee and wood thrush. The *candidate* SWH are discussed in detail in the subsections below.

4.5.4.1 Shrub/Early Successional Breeding Bird Habitat

Candidate shrub/early breeding bird SWH was identified within the cultural meadow vegetation community (CUM on Figure A.3) located within the northcentral portion of the site. Shrub/early successional habitat is declining throughout Ontario as the habitats that they depend on for food, cover and nesting habitat are generally considered wasteland with limited ecological value. However; many of the species nesting in these habitats may not require extensive areas and each species generally has very specific habitat requirements (OMNR, 2014).

The defining use criteria for *confirmed* shrub/early successional breeding bird habitat is the presence of nesting or breeding of one indicator species and at least two of the common species.

The presence of yellow-breasted chat or golden-winged warbler are also considered indicators of *confirmed* shrub/early successional breeding bird habitat (OMNRF, 2014). Indicator species are limited to brown thrasher and clay-coloured sparrow while common species include field sparrow, black-billed cuckoo, eastern towhee and willow flycatcher.

Based on observations from breeding bird surveys and other site investigations, neither of the two indicator species were observed on-site. As such shrub/early successional breeding bird habitat is not present on-site and is not discussed or evaluated further in this EIS.

4.5.4.2 Special Concern and Rare Wildlife Species SWH

Based on observation data from the field investigations and occurrence data from the NHIC, four species of special concern have been identified on-site or within the broader study area, barn swallow, eastern whip-poor-will, eastern wood-pewee, wood thrush. No other species of special concern or rare wildlife species were identified on-site or within the broader study area. Potential impacts to barn swallow, eastern whip-poor-will, eastern wood-pewee and wood thrush are presented in Section 6.

Barn Swallow

Barn swallow is a medium-sized songbird with an S-rank of S4B (breeding is uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated a significant decline of 60% between the start of the first atlas and the end of the second atlas with a steady significant annual decline of 3.5% in Ontario (Cadman et al, 2007). Barn swallow is often found in close association with humans, using man-made structures, such as barns, to supplement suitable nesting sites and foraging over open areas, such as grasslands and agricultural fields. Barn swallow was not observed on-site during field investigations; however, there is suitable foraging and nesting habitat within the study area.

Eastern Whip-poor-will

The eastern whip-poor-will (*Caprimulgus vociferous*) is a medium-sized, insectivorous bird with a large round head, and stout chest that tapers to a long tail and wings. In Ontario, breeding bird surveys have demonstrated a decline in eastern whip-poor-will populations by more than 50% between the first and second breeding bird atlas' (Cadman et al., 2007). The primary breeding range in Ontario extends from Rideau lakes towards Georgian Bay and north to Sudbury (Cadman et al., 2007).

The breeding and foraging habitat of eastern whip-poor-will depends more on forest structure than composition. The species avoids both wide-open spaces and closed-canopy forests, favouring semi-open forests or patchy forests with clearing, such as barrens and forests that are regenerating (COSEWIC, 2009).

Eastern whip-poor-will were not detected during any of the three nocturnal surveys completed in 2021.

Eastern Wood-pewee

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the eastern wood-pewee has a probability of occurrence of over 80% (Cadman et al, 2007). Furthermore, the national capital region is considered to have some of the highest density of wood-pewee in Ontario, indicating a stable, healthy population (Cadmen et al, 2007). Eastern wood-pewee is a woodland species that is often found near clearings and edges. The species was observed calling from site during the 2021 field investigations. Given the mosaic of woodland and open habitat on-site and the eastern wood-pewee's affinity for clearings and edges, there is a high chance of eastern wood-pewee or suitable habitat to occur on-site.

Wood Thrush

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the wood thrush populations in Ontario have shown a significant annual increase of 4.4% between the first and second atlas (Cadman et al., 2007). Wood thrush is a woodland species often found in moist, deciduous hardwood or mixed forests stands, with dense deciduous undergrowth and tall trees. Given the availability of woodland habitat on-site there is a high chance of wood thrush to occur on-site.

4.5.5 Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement corridor: amphibian movement corridors and deer movement corridors. As per guidance presented in MNRF, 2015, animal movement corridors should only be identified as significant wildlife habitat when a *confirmed or candidate* significant wildlife habitat has been identified by the MNRF district office or by the regional planning authority.

Following review of Table C.6 in Appendix C, no animal movement corridors have been identified on-site. Accordingly, animal movement corridors are not discussed or assessed further in this EIS.

4.6 Species at Risk

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.7 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in Section 6.

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area is a plan of subdivision application for part of Lot 11, Concession 10, Lanark County.

The proposed plan of subdivision includes the creation of one residential road providing access to 54 residential lots, occupying 41.5 ha property, with a minimum average lot size of 0.60 ha. All lots will be on private services. Access to the proposed subdivision will be from 10th Line Beckwith and Lake Park Road. Additional elements of the development include two pathway connections to the neighbouring subdivisions, and two blocks – one containing the existing wetland and another the stormwater management area. The proposed plan of subdivision is provided on Figure A.4.

On-site grading will be generally limited to the right-of-way and areas surrounding the houses and septic systems, rear-yard swales, and stormwater management facilities. The remainder of the site is to be left at existing grade wherever possible, to maintain the natural landscape and pre-development conditions. Stormwater management for the site will be employed to provide quality (80% TSS) and quantity control and to ensure pre-development peak flow rates match post-development rates (Novatech, 2025).

Future components of the proposed project considered in the impact assessment presented in Section 6 include: tree clearing and vegetation grubbing, fill placement and elevation grading, road construction, laneway construction, excavation and pouring of foundations, construction of single family dwellings, all on private services, general landscaping activities and the creation of stormwater management facilities adjacent to the subdivision.

The timeline for the proposed project, from lot creation to completion of residential construction is currently unknown. For the purpose of assessing impacts to natural heritage features, it is assumed in this EIS that the creation of individual residential lots will happen in the near-term and will not result in any physical alterations to the natural environment of the site and the broader study area. Future construction of single family residential homes on each of the subdivision lots is assumed to occur over a several year period, and that the construction of any one residential home will be completed such that the duration of any potential impacts on the natural environment during construction will be approximately six months.

6.0 IMPACT ASSESSMENT

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in Section 5 and in accordance with Section 4.6 and Section 5.0 of the Township of Beckwith and County of Lanark official plans, respectively. Natural heritage features identified in Section 5 of this report as present or likely to be present are discussed in the subsections below.

Potential effects to the natural environment from the proposed development outlined in Section 5 include: vegetation removal, disturbance of the natural soil mantle, increased noise generation, increased human disturbance, increase storm water generation and potentially increased nutrient loading to adjacent surface water features.

6.1 Local Wetlands

Minor in-water work associated with grading and construction of check dams are anticipated to occur along the south-west boundary of the mixed cedar swamp. Impacts associated with construction are anticipated to be localized in scope, short in duration and vegetation restored upon completion of construction.

Changes to surface drainage and increases in imperviousness within the wetland catchment area can result in alterations to the hydraulic regime of the swamp. The proposed stormwater management system (Novatech, 2025) for the site has been designed to maintain the natural hydraulic regime for the swamp through the use of check dams and grading to capture surface drainage during critical amphibian breeding periods, while also ensuring the water depths do not permit the establishment of a small bodied fish population or emergent marsh conditions.

Potential impacts associated with urban pollutants with surface runoff entering the wetland are minimal due to the prior passive treatment and polishing provided by the road and lot-side collection ditches and swales. Furthermore, due to the low density and residential land use of the proposed subdivision, urban pollutants are likely to be restricted to lawn fertilizers and associated products.

Potential cumulative and indirect impacts to local wetland are posed by the increased human disturbances such as dumping of refuse, trampling and presence of pets. However, given the existing encroachment of the subdivision to the west into the current wetland, impacts associated with human disturbance as a result of the proposed development are likely negligible.

Mitigation measures to protect local wetlands from development impacts are provided in Section 7.

6.2 Significant Wildlife Habitat

The potential presence of significant wildlife habitat on-site and within the study area was evaluated in Section 4.5, as a result of this assessment three types of significant wildlife habitat were determined to be present on-site or within the study area: *candidate* raptor wintering area, *confirmed* woodland amphibian breeding habitat and habitats of special concern and rare wildlife species.

Potential impacts to significant wildlife habitats are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

6.2.1 Candidate Raptor Wintering Area

Candidate raptor wintering area habitat encompasses all upland and forested areas within the site. Wooded areas occur in the south while the upland thicket habitat occurs in the northern half of the property; however, no raptor or owl species were observed during the 2021, 2023 or 2025 site surveys.

Given the densely populated rural estate subdivisions surrounding the study area, despite the presence of a fragmented yet suitable habitat, it is GEMTEC's opinion that *candidate* raptor wintering areas do not occur on-site or within the study area.

6.2.2 Confirmed Woodland Amphibian Breeding Habitat

Confirmed woodland amphibian breeding habitat has been identified within the white cedar mixed swamp (SWMM1) and the 230 m radius that extends into the adjacent woodland habitat (FOMM). Based on the habitat description outlined in the Significant Wildlife Habitat Criteria Schedule (OMNRF, 2015) habitat for woodland breeding amphibians is the wetland area plus a 230 m radius of woodland area adjacent to the wetland. Non-woodland habitat adjacent to the wetlands is not considered SWH.

Potential impacts to woodland amphibian breeding SWH are associated with short term, localized construction activities within the wetland and the long-term loss of summer dispersal habitat. Direct impacts to woodland amphibian breeding SWH are primarily associated with loss of woodland cover and vegetation as a result of the proposed development. Indirect impacts to wetland habitats may include alterations to water quality due to nutrient and sediment loading as well as alterations to the hydrologic regime due to loss of riparian vegetation and increases in storm water runoff.

The proposed stormwater management system for the site has been designed to maintain shallow flooding within the on-site wetland during spring conditions and following peak precipitation events. This design was informed by the presence of confirmed woodland amphibian breeding habitat within the wetland. Maintaining shallow seasonal flooding while also preventing water

depths that would encourage the establishment of a small-bodied fish population (amphibian predators) and the transition of the swamp to a marsh is important to prevent impacts to woodland amphibian breeding habitat.

Other potential impacts include long-term human disturbance such as noise generation, dumping of refuse and trampling.

Mitigation measures to reduce impacts to *confirmed* woodland amphibian breeding habitat SWH are provided in Section 7.

6.2.3 Confirmed Woodland Area-Sensitive Bird Breeding Habitat

The contiguous woodlands on-site and within the study area meets the Ecoregion Criterion Schedule criteria for Ecogreion 6E for *woodland area-sensitive bird breeding habitat* as it contains contiguous woodlands of greater than 30 ha and site investigations documented occurrences of four indicator species: black-throated green warbler, veery, ovenbird and scarlet tanager. *Confirmed* woodland area-sensitive bird breeding habitat is isolated to a small area centrally located within the site and is present extensively throughout the broader study area (within 2 km).

The proposed subdivision is anticipated to result in the removal of interior woodland habitat on-site which will result in the loss of on-site woodland area-sensitive bird breeding habitat. However, as there is comparable and abundant habitat located within 2 km of the site, specifically northwest and southwest of the site, as well as south east of Beckwith Line, the small loss of on-site is not anticipated to result the reduction of populations of woodland area-sensitive breeding birds on-site or within the study area.

Potential direct impacts to *confirmed* woodland area-sensitive bird breeding habitat are associated with fragmentation of the on-site contiguous forest, removal of trees and vegetation scrubbing which may decrease the availability of specific breeding sites, loss of potential foraging habitat, and disruption to interior forest habitat. Indirect impacts include increase human presence, increased human and wildlife interaction and disturbances, and increased noise levels.

Given the dwindling woodland and available habitat, it is likely that the proposed project will have an impact on area-sensitive bird breeding habitat. Mitigation measures to protect *confirmed* woodland area-sensitive bird breeding habitat are provided in Section 7.

6.3 Habitats of Special Concern and Rare Wildlife Species SWH

Barn Swallow

The barn swallow (*Hirundo rustico*) is a medium-sized, insectivorous bird with a slightly flattened head and broad shoulders that taper to long, pointed wings. The forked tail is long and extends beyond wingtips when perched. Barn swallows have blue-black coloured wings and tail, with a whitish to orange underside and dark rufus throat.

While most abundant in Ontario south of the Shield, the breeding range for barn swallow in Ontario extends from the Carolinian region in extreme southwest Ontario to the Hudson Bay Lowlands (Cadman et al., 2007). In Ontario, breeding bird survey data demonstrated a decline in barn swallow populations of 60-75% between the first and second breeding bird atlas.

Barn swallows typically build their nests out of mud on ledges or walls on barns or other human made structures. Natural sites, including cliffs and caves are not rarely used for nesting (Cadman et al., 2007). Foraging occurs in fields and ponds. Barn swallows are less common in highly urban area and areas with higher forest cover (Cadman et al., 2007).

Potentially suitable nesting structure occurs within the study area, with potentially suitable foraging habitat in the existing cultural meadow. However, no barn swallow were observed during any site investigations. As the proposed development does not include the removal or modification of any existing structures on-site, no negative impacts are anticipated to occur to potential barn swallow habitat on-site. As such no mitigation measures are provided in Section 7 for the protection of barn swallow and they are not discussed or evaluated further in this EIS.

Eastern Wood-Pewee

Eastern wood-pewee (*Contopus virens*) is a small, avian insectivore that lives in a variety of deciduous, mixed, and to a lesser extent, coniferous woodland habitat (COSEWIC, 2012a). Adult eastern wood-pewee are grey-olive with pale wing-bars, the breast and sides are slightly darker green than the wings. It is best identified by its three-phrased song, often paraphrased as a whistled 'pee-ah-wee' (COSEWIC, 2012a). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Threats to eastern wood-pewee are not well understood however, loss of suitable forest habitat does not appear to be a significant issue across their Canadian breeding range (COSEWIC, 2012a). Furthermore, research indicates that the species is not very sensitive to forest fragmentation effects or forest size (COSEWIC, 2012a). Eastern wood-pewee may be sensitive to human habitation, in Ontario they occur less frequently in woods with surrounding development than those without houses (COSEWIC, 2012a). Other threats to eastern wood-pewee may include changes in the availability of aerial insects, mortality during migration and/or wintering, nest predation and habitat changes due to white-tailed deer browsing (COSEWIC, 2012a).

Impacts to eastern wood-pewee and their habitat on-site from the proposed development is limited to the wooded and forested habitat on-site (ELC Codes FOMM4 and CUW on Figure A.4 in Appendix A), which may provide suitable nesting and foraging habitat. Impacts to eastern wood-pewee habitat may include loss of forest habitat and increased human presence and disturbance.

While the proposed development may result in the loss of suitable habitat on-site, suitable habitat is readily available within the broader study area. Impacts from increased human presence are

anticipated to be negligible given the existing development surrounding the proposed development and the availability of suitable habitat in the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

Wood Thrush

The wood thrush (*Hylocichla mustelina*) is a medium-sized songbird, similar in shape to an American robin, but slightly smaller. Generally wood thrush plumage is distinct from other thrush species, with rusty-brown upper parts, white underparts and large blackish spots on the breast and sides.

In Ontario, the wood thrush breeding range extends from southern Ontario north to northern Georgian Bay and eastern Lake Superior (COSEWIC, 2012b). While wood thrush populations have declined over most of its North American range, between 1981 and 2005, breeding bird data indicates populations in Ontario have increased by 4%, likely due to increases in woodland cover south of the Canadian Shield (Cadman et al., 2007). The probability of occurrence in Ontario however, has decreased by 15% between the first and second breeding bird atlas (Cadman et al., 2007). The wood thrush is listed as a species of special concern in Ontario.

During the breeding season, the wood thrush is found in moist, deciduous hardwood or mixed forest stands, often in previously disturbed sites with dense, deciduous undergrowth and tall trees that are used as singing perches (COSEWIC, 2012b). For wood thrush, habitat selection is based more on the structure of the forest, preferring sites with lower elevations, trees taller than 16 m, closed canopy (>70%), with a high variety of deciduous species, moist soil and decaying leaf litter (COSEWIC, 2012b).

No wood thrush observations were provided by the NHIC for the subject property or broader study area. Wood thrush were however detected during breeding bird surveys on-site.

Impacts to wood thrush and their habitat on-site from the proposed subdivision are limited to the forest habitat on-site (FOMM4), which may provide suitable nesting and foraging habitat. Impacts to wood thrush habitat may include the loss of forest habitat and increased human interaction. While the proposed development will result in the loss of suitable forest habitat on-site suitable habitat is readily available within the broader study area. Impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging wood thrush are presented in Section 7.

Eastern Whip-poor-will

The eastern whip-poor-will (*Caprimulgus vociferous*) is a medium-sized, insectivorous bird with a large round head, and stout chest that tapers to a long tail and wings. They are heavily camouflaged with a complicated pattern of gray and brown, allowing the bird to blend seamlessly into the forest floor, where it lays its eggs without the safety of a nest.

In Ontario, breeding bird surveys have demonstrated a decline in eastern whip-poor-will populations by more than 50% between the first and second breeding bird atlas' (Cadman et al., 2007). The primary breeding range in Ontario extends from Rideau lakes towards Georgian Bay and north to Sudbury (Cadman et al., 2007).

The breeding and foraging habitat of eastern whip-poor-will depends more on forest structure than composition. The species avoids both wide-open spaces and closed-canopy forests, favouring semi-open forests or patchy forests with clearing, such as barrens and forests that are regenerating (COSEWIC, 2009). Where the proposed development cannot avoid potentially suitable whip-poor-will habitat, impacts may include vegetation removal and increased human disturbance during construction including increased noise and light pollution and increased wildlife and human interaction.

Eastern whip-poor-will were not detected during any of the three nocturnal surveys completed in 2021; however, there is a potential for eastern whip-poor-will to occur on-site. Accordingly, mitigation measures for the protection of eastern whip-poor-will and their habitat from impacts of the proposed development are provided in Section 7.

6.4 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their habitat receive automatic protection. Following enactment of Bill 5, species specific habitat regulations are no longer valid for species protection, this includes documents such as general habitat descriptions that outlined Category 1, Category 2 and Category 3 habitats for species. Presently, habitat protections refer to the definition outlined in Bill 5 as follows:

“‘habitat’ means:

a) In respect of an animal species:

- i. A dwelling-place such as a den, nest or other similar place, that is occupied or habitually occupied by one or more members of a species for the purposes of breeding, rearing, staging, wintering or hibernating, and*
- ii. The area immediately around a dwelling place described in subclause (i) above that is essential for the purposes set out in that subclause.*

- b) *In respect of a vascular plant species: the critical root zone surroundings a member of the species, and*
- c) *In respect of all other species: an area on which any member of a species directly depends in order to carry on its life processes”*

Under the ESA, species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.6, are discussed on a species-by-species basis in subsections below.

6.4.1 Bobolink

Bobolink (*Dolichonyx oryzivorus*) are small, omnivorous songbirds with large, somewhat flat heads, short necks and short tails. The male bobolink has a white back, black underside and a straw-yellow coloured patch on the back of the head. Female bobolinks have a non-descript buff and brown plumage not unlike most species of sparrows.

In Ontario, bobolink are restricted to southern Ontario and occur south of the Highway 17 corridor between North Bay and Sault Ste. Marie. Scattered populations exist in correlation with Clay Belt areas in Timiskamin, Cochrane and Thunder Bay areas. Between the first and second breeding bird atlas, the probability of bobolink observations declined by 28% province wide (Cadman et al., 2007).

Bobolink breed primarily in hayfields and other grasslands with tall vegetation that provides cover for nests which are established on the ground (Cadman et al., 2007). The bobolink is generally sensitive to vegetation structure and composition in its habitat that are generally found in old (> 8 years old) forage crops. Abundance and density are positively correlated with a moderate litter depth, high lateral litter cover, high grass-to-legume rations, an abundance of small shrubs and a high percentage of forb cover (COSEWIC, 2010). Bobolinks typically avoid nesting in habitats that are dominated by overly dense shrub vegetation with an overly deep littler layer or a high percentage of bare soil (COSEWIC, 2010).

Bobolink were not detected on-site; however, they have been observed within the area and suitable foraging and nesting habitat is present on-site. Where the development cannot avoid potentially suitable habitat, impacts may include vegetation removal, increased human disturbance and noise generation and short-term construction impacts including heavy machine encroachment, increased noise, and fill placement.

As there is a potential for bobolink to occur on-site, avoidance and mitigation measures for the protection of bobolink and their habitat from impacts of the proposed development are provided in Section 7.

6.4.2 Eastern Meadowlark

Eastern meadowlark (*Sturnella magna*) is a chunky, medium-sized grassland songbird, with a short tail, and a long spear-shaped bill. The colour pattern of the species is pale brown marked with black, the underside is bright yellow and a bold black 'V' pattern across the chest.

The eastern meadowlark was once well established in southern Ontario, however, due to the natural succession of abandoned agricultural fields transitioning back to forested habitat on the Canadian shield and through the northern portion of the Lake Simcoe-Rideau region, along with intensive farming practices and expanding of urbanization in southwestern and eastern Ontario, the eastern meadowlark has suffered significant habitat loss (Cadman et al., 2007). Between the first and second breeding bird atlas, the probability of observation declined by 13% province wide (Cadman et al., 2007). The current distribution of eastern meadowlark is concentrated through the Lake Simcoe-Rideau region, primarily from Kingston to Lake Simcoe.

The eastern meadowlark prefers native grassland, pasture and savannah habitat, however it is known to use a variety of anthropogenic grassland habitats including hayfields, weedy meadows, young orchards, grain fields and herbaceous fence rows (COSEWIC, 2011). Preferred grassland habitat typically contains moderately tall (25 to 50 cm) grass species with abundant litter cover, with a high proportion of grass, moderate to high forb density a low percent of shrub cover (typically <5%) and low percent cover of bar ground (COSEWIC, 2011).

Eastern meadowlark were not detected on-site; however, they have been observed within the area and suitable foraging habitat is present on-site.

As there is a potential for eastern meadowlark to occur on-site, avoidance and mitigation measures for the protection of eastern meadowlark and their habitat from impacts of the proposed development are provided in Section 7.

6.4.3 Eastern Red Bat

Eastern red bat (*Lasiurus borealis*) is a medium-large sized (typically 10-17 g), insectivorous bat found in Ontario. The fur of an eastern red bat is usually orange, but can vary from yellowish-red to yellowish-grey, with white or white-tipped hairs (COSEWIC, 2023).

The eastern red bat is found throughout Canada (except Prince Edward Island), the United States, and northeast Mexico; with distribution uncommon west of the Western Cordillera. In Ontario, the species occurs throughout Ontario, appearing as far north as James Bay (COSEWIC, 2023).

Eastern red bats overwinter in warmer climates in the southern extent of the United States, typically beneath leaf litter (COSEWIC, 2023). In comparison to many other Ontario bat species, they do not overwinter in caves. During the spring and summer months, they typically utilize the foliage of trees and occasionally shrubs for roosting habitat, with a preference for roosting near the edge of the crown and at sufficient heights to prevent access from mammalian predators (COSEWIC, 2023).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat on-site and within the study area, there is a potential for eastern red bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern red bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern red bat from impacts of the proposed development are discussed in Section 7.

6.4.4 Eastern Small-footed Myotis

Eastern small-footed Myotis (*Myotis leibii*) is the smallest (typically 3-5 g), insectivorous bat found in Ontario. The fur of an eastern small-footed Myotis is golden-brown in colour, with a distinct black mask across the face. The eastern small-footed Myotis is very similar in appearance to the little brown Myotis, and is distinguishable by their small foot and keeled calcar (Fraser, MacKenzie & Davy, 2007).

The eastern small-footed Myotis is found throughout eastern North America. In Ontario the species has been observed in the areas south of Lake Superior across to the Ontario-Quebec border (Humphrey, 2017).

Eastern small-footed Myotis overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2021a).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings within the study area, there is a potential for eastern small-footed Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern small-footed Myotis from impacts of the proposed development are discussed in Section 7.

6.4.5 Hoary Bat

Hoary bat (*Lasiurus cinereus*) is a large (typically 16-38 g), insectivorous bat found in Ontario and is the largest bat found in Canada. The fur of a hoary bat is dense and include a complex mixture of colors, ranging from light to dark brown, and have white tipped hairs on the dorsal and ventral sides (COSEWIC, 2023). The hoary bat is distinguishable by the large size and light yellow-brown fur on the head, throat, and anterior margins of the wings (COSEWIC, 2023).

The hoary bat range spans across all provinces and territories within Canada, all the states within the United States, and has a wide distribution throughout Mexico (COSEWIC, 2023). In Ontario, the hoary bat is found throughout the province, and has been observed north of James Bay (COSEWIC, 2023).

Hoary bats overwinter in warmer climates in the southern extent of the United States, typically beneath leaf litter (COSEWIC, 2023). In comparison to many other Ontario bat species, they do not overwinter in caves. During the spring and summer months, they typically utilize the foliage of trees and occasionally shrubs for roosting habitat, with a preference for roosting near the edge of the crown and at sufficient heights to prevent access from mammalian predators (COSEWIC, 2023).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat on-site and within the study area, there is a potential for hoary bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to hoary bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect hoary bat from impacts of the proposed development are discussed in Section 6.

6.4.6 Northern Myotis

Northern myotis (*Myotis septentrionalis*) has a dull yellow-brown fur with pale grey bellis. They are typically eight centimetres in length and have a wingspan of approximately 25 (cm). Northern myotis, have a similar appearance to little brown myotis, with the exception of long rounded ears.

This species occurs throughout southern Ontario and extending north to the shore of Lake Superior and occasionally as far north as the southern shores of James Bay and west to Lake Nipigon.

Northern myotis have an affinity for boreal forests, often roosting under loose bark and in the cavities of trees. In contrast with little brown myotis, northern myotis typically forages within forest communities. As the case with most bat species, northern myotis typically hibernate in caves and abandoned mines.

Although the forest habitat on-site has not been confirmed to meet the requirements to support bat maternity colonies, given the availability of habitat on-site and within the study area, there is

a potential for Northern Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to Northern Myotis are primarily associated with habitat loss, encroachment, and increased wildlife-human interaction.

Mitigation measures intended to protect Northern Myotis from impacts of the proposed development are discussed in Section 7.

6.4.7 Little Brown Myotis

Little brown Myotis (*Myotis lucifugus*) is a small (typically 4-11 g), insectivorous bat. The fur of a little brown Myotis is bi-coloured; fur is a glossy brown with a darker coloured base. The tragus of the Little Brown Myotis is long and thin, with a rounded tip (Fraser, MacKenzie & Davy, 2007).

In Canada, little brown Myotis' occur throughout all of the provinces and territories (except Nunavut), with its range extending south through the majority of the United States as well. In Ontario, the little brown Myotis is widespread in southern Ontario and has been found as far north as Moose Factory and Favourable Lake (Ontario, 2021b).

Little brown Myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2021b). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little brown Myotis roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clearcuts are not typically utilized for foraging (COSEWIC, 2013).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings within the study area, there is a potential for little brown Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown Myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect little brown Myotis from impacts of the proposed development are discussed in Section 7.

6.4.8 Silver-haired Bat

Silver-haired bat (*Lasionycteris noctivagans*) is a medium-sized (typically 9-17 g), insectivorous bat. The fur is one of the darkest of all bats in Canada, with black skin membranes and black to dark brown fur (COSEWIC, 2023).

In North America, the silver-haired bat is widely distributed and spans from the southern extent of the Canadian provinces to east-central Mexico (COSEWIC, 2023). In Canada, the distribution spans from coast to coast, but appears to be uncommon in Atlantic Canada. Silver-haired bat occurs throughout Ontario, appearing as far north as James Bay (COSEWIC, 2023).

Silver-haired bats overwinter in mines, rock crevices, trees, and snags across North America, including the United States, the Great Lakes region of Ontario, and in some areas of British Columbia (COSEWIC, 2023). Foraging typically occurs in young and old forests. Silver-haired bat roost primarily under bark and in cavities of trees; however, may occasionally roost on or in buildings (COSEWIC, 2023).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for silver-haired bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to silver-haired bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction.

Mitigation measures intended to protect silver-haired bat from impacts of the proposed development are discussed in Section 7.

6.4.9 Tri-Colored Bat

Tri-colored bat (*Perimyotis subflavus*) is a small (typically 5-7 g), insectivorous bat. The fur is uniformly coloured on the ventral and dorsal sides, however when parted fur shows three distinct colour bands. The base of the hair is blackish, with a blonde middle and brownish tip. The snout of the tri-coloured bat is also distinct, with swollen bulbous glands present (Fraser, MacKenzie & Davy, 2007).

In Canada, the tri-colored bat has only been recorded in southern parts of Nova Scotia, New Brunswick, Quebec and central Ontario. In Ontario it occurs primarily from the southern edge of Lake Superior across to the Ontario-Quebec border and south (COSEWIC, 2013).

Tri-colored bat overwinter in caves or mines, and have very rigid habitat requirements; they typically roosting the deepest parts where temperatures are the least variable, and have the strongest correlation with humidity levels and warmer temperatures (COSEWIC, 2013). In the spring and summer, tri-colored bat utilize trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013).

Although the woodlands on-site do not meet minimum snag density requirements to support bat maternity colony habitat, given the availability of habitat on-site there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

6.4.10 Red-Headed Woodpecker

Red-headed woodpecker (*Melanerpes erythrocephalus*) is a medium-sized, omnivorous generalist with a recognizable crimson head, neck, throat, and upper breast, which contrast with its stark white and black upperparts. Red-headed woodpecker is sexually monomorphic, with males and females externally indistinguishable (COSEWIC, 2018).

In Ontario, red-headed woodpecker are restricted to southern Ontario, with the majority of the observations between Carolinian and Lake Simcoe-Rideau regions (Cadman et al., 2007). The breeding bird atlas indicates that the species range has receded almost entirely from the southern shield and from the northernmost areas of the Lake Simcoe-Rideau region (Cadman et al., 2007).

Red-headed woodpecker is a primary excavator and breeds in open woodland and woodland edges, especially oak savannah and riparian forest (Cadman et al., 2007). An important habitat component is the existence of large, dead, weathered trees or live trees with large dead branches (Cadman et al., 2007).

No recent occurrence records exist for the species within 1 km of site with the nearest observation occurring 20 km north of the site. Furthermore, the species was not observed during any of the site investigations.

No red-headed woodpecker were observed or heard during targeted site investigations. As such, red-headed woodpecker and its habitat are not considered to be present within the study area and are not discussed or evaluated further in this EIS.

6.4.11 Butternut

Butternut (*Juglans cinerea*) is a relatively short lived, medium-sized tree that can reach heights of up to 30 m. It is easily distinguished by its compound leaves, made up of 11 to 17 leaflets, arranged in a feather-like patten. Each leaflet is 9 to 15 centimetres in length. The bark is grey and smooth on young trees, becoming more ridged with age. Butternut is a member of the walnut family and produces edible nuts in the fall.

The Canadian range for Butternut extends through southern Ontario into southern Quebec, and New Brunswick (COSEWIC, 2003). Butternut is a shade intolerant tree that is commonly found in riparian habitats, and sites in a regenerative state. Butternut can also be found on rich, moist, well-drained gravels, favouring those of limestone origin. Common associates of Butternut trees include: basswood, black cherry, beech, black walnut, elm, hickory, oak, red maple, sugar maple, yellow poplar, white ash and yellow birch.

No butternut trees was observed on-site during the investigations. As such, butternut trees are not mentioned further in this EIS.

6.5 Cumulative Impacts

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, loss of woodland and meadow habitat, primarily for avian species and increased human and wildlife interactions.

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction, are expected to be negligible given the existing residential and agricultural land use in the surrounding project area. Cumulative impacts associated with woodland and meadow habitats are not anticipated to result in changes to the regional distribution of avian species, in part due to the nature of the development and the adjacent developments and the availability of significantly large and protected habitats located within 2 km of the site to the northeast, southeast and southwest of the study area.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6. As such, the following avoidance and mitigation measures should be enforced throughout the development through clauses within the subdivision agreement.

For the purpose of this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature and the prescribed setback. For the purpose of the following subsections, buffers should be located between natural heritage features and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated with anthropogenic activities in adjacent lands (Beacon, 2012). Buffers recommended in the following subsections and illustrated on Figure A.5, are done so within the context of the existing environmental disturbances but also to promote reasonable natural rehabilitation. In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

To mitigate against woodland loss and its supporting ecological functions, including summer dispersal habitat for woodland amphibians, registration of development envelopes on existing wooded lots is proposed. The proposed development envelopes should be a maximum size of

0.3 ha and be applied to Lots 14-43, inclusive. The location of the development envelope on each lot and the associated tree retention areas should be designed to buffer and protect the adjacent natural areas and support wildlife habitat. The intention of this recommendation is to focus development along the road front allowing for the retention of a contiguous woodland area across the rear lots and side yards.

In addition to the various mitigation measures outlined below, it is recommended that an Owners Awareness Package be prepared for new homeowners which highlights the ecological sensitivities of the study area, the intent of mitigation measures and provides general information for residences about living in nature.

7.1 Unevaluated Wetlands

No negative impacts on the integrity of the unevaluated wetlands are anticipated as a result of the proposed development if all mitigation measures recommended below are enacted and best management practices followed. Wetlands on-site can be protected against potential impacts of the proposed development through the implementation of a construction setback and maintenance of the pre-development hydraulic regime.

Beacon Environmental Review of Ecological Buffers (2012), provides a range for buffer widths to protect various natural heritage features based on the current science. The buffers are presented in a way that determines the risk of not achieving the desired buffer function (i.e. high, moderate and low). The functions analysed include water quantity, water quality, screening or human disturbance/changes in land use, hazard mitigation zone and core habitat protection.

In consideration of the local wetlands, and the nature of the proposed development, a minimum 15 m setback from the local wetlands is recommended. The recommended 15 m setback provides sufficient protection for mitigating water quality impacts and human disturbances. At 15 m, the protection the buffer offers for core habitat protection, and in conjunction with proposed development envelopes for each existing wooded parcel, primarily for the purpose of protecting seasonal amphibian breeding habitat, development is not anticipated to negatively impact the core habitat functions of the wetlands and adjacent woodlands. As such a 15 m setback is sufficient to protect core habitat within the local wetlands. The proposed 15 m is illustrated on Figure A.6.

General mitigation measures recommended for the protection of water quality and wetland habitat include:

- The existing catchment area of the local wetland should be maintained to the extent possible to ensure that the hydraulic regime of the local wetland is not impacted.
- Buffers should be comprised of a mixture of native or non-invasive, self sustaining trees, shrubs and tall grasses.

- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- Downspouts should be directed towards lot-side swales that are in turn directed to road side ditches and not adjacent surface water features. Rain gardens or soak away pits could be utilized in areas of difficult topography.
- Septic systems shall be installed no closer than 30 m from the high water mark of any surface water feature and not located in areas of exposed bedrock.

7.2 Significant Wildlife Habitat

7.2.1 Woodland Amphibian Breeding Habitat

The 15 m setback from local wetlands on-site, presented above, is sufficient to protect *confirmed* woodland amphibian breeding habitat. Furthermore, the development envelopes over the proposed wooded parcels ensure that the sufficient forest cover and surrounding summer habitat is maintained, which is important for amphibians moving between habitats throughout the year.

7.2.2 Confirmed Woodland Area-Sensitive Bird Breeding Habitat

The proposed development is likely to result in the loss of interior forest habitat and associated habitat for area-sensitive bird breeding habitat. However, as outlined in Section 6.2.3, the relative abundance of suitable habitat within close proximity of the site, coupled with tree conservation efforts on wooded parcels through implementation of development envelopes, it is anticipated that the proposed development will not result in any negative impacts to significant wildlife habitat within the vicinity of the site.

7.2.3 Habitats of Special Concern and Rare Wildlife Species – Barn Swallow, Eastern Whip-poor-will, Eastern Wood Pewee, Wood Thrush

Impacts to barn swallow, eastern whip-poor-will, eastern wood-pewee and wood thrush primarily concern habitat loss and increased fragmentation, the proposed development envelopes presented above to protect significant woodlands on-site are sufficient to protect special concern and rare wildlife habitat (eastern wood-pewee and wood thrush) from large amounts of habitat loss and fragmentation. To further minimize the impact of the proposed development on eastern wood-pewee habitat, vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of nesting and foraging eastern wood-pewee and wood thrush and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window then a nest survey shall be conducted by a qualified professional.

7.3 Species at Risk

7.3.1 Bobolink and Eastern Meadowlark

As indicated in Section 6.5, bobolink, eastern meadowlark and eastern whip-poor-will, have the potential to occur on-site however, no Category 1, Category 2 and Category 3 habitat were identified on-site. In order to avoid contravention of the Endangered Species Act, specifically Section 9, the measures are provided in Section 7.4 should be implemented.

7.3.2 Bat Species

To protect roosting and foraging bats, tree removal where required should take place outside of the spring and summer active season (typically May 1 to September 1), when bats are more likely to be using forest habitat. If vegetation clearing must be conducted during the spring and summer timing window then a roost survey should be conducted by a qualified professional.

7.4 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:

- Vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of migratory birds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window then a nest survey shall be conducted by a qualified professional.
- Installation of silt fence barriers around the entire construction envelope of each future residential dwelling to prohibit the emigration of wildlife into the construction area.
- Perform daily pre-work sweeps of the construction area to ensure no species at risk are present and to remove any wildlife from inside the construction area.
- Should any species at risk be discovered throughout the course of the proposed works, the species at risk biologist with the local MECP district should be contacted immediately and operations modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.5 Best Practice Measures for Mitigation of Cumulative Impacts

The following best management practice measures are provided for the mitigation of cumulative impacts resulting from general construction and development activities;

- To protect trees identified to be retained during construction, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.
- Maintain as much permeable surface as possible in future development plans to minimize the generation of storm water runoff.

- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple and red oak.

8.0 CONCLUSIONS

The proposed project supported by this EIS is the creation of a residential subdivision on an existing 41.5 ha property.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual impacts are anticipated from the proposed development.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant impacts to natural heritage features identified on-site, including fish habitat, significant wildlife habitat or habitats of species at risk are anticipated as a result of future residential development.
- The proposed project complies with the natural heritage policies of the Provincial Planning Statement.
- The proposed development complies with the natural heritage policies of the Township of Beckwith and Lanark County official plans.

9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd (GEMTEC), and prepared for Cavanagh Developments and is intended for the exclusive use of Cavanagh Developments. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Cavanagh Developments. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation.

Should new information become available during future work, including excavations, borings or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read 'Drew Paulusse', with a stylized, cursive script.

Drew Paulusse, B.Sc.
Senior Biologist

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<https://www.ontarioinsects.org/herp/index.html?Sort=1&area2=squaresCounties&records=all&myZoom=5&Lat=42.95&Long=-81.01>Rowe, J.S. 1972. Forest Regions of Canada. Canadian Forestry Service Publication no. 1300. Publishing Division, Information Canada .

Novatech. 2025. 10th Line Beckwith Subdivision – Servicing Options and Conceptual Stormwater Management Report – 2763 10th Line Beckwith, Carleton Place. Draft. September 25.



APPENDIX A

Report Figures

Figure A.1 – Site Location

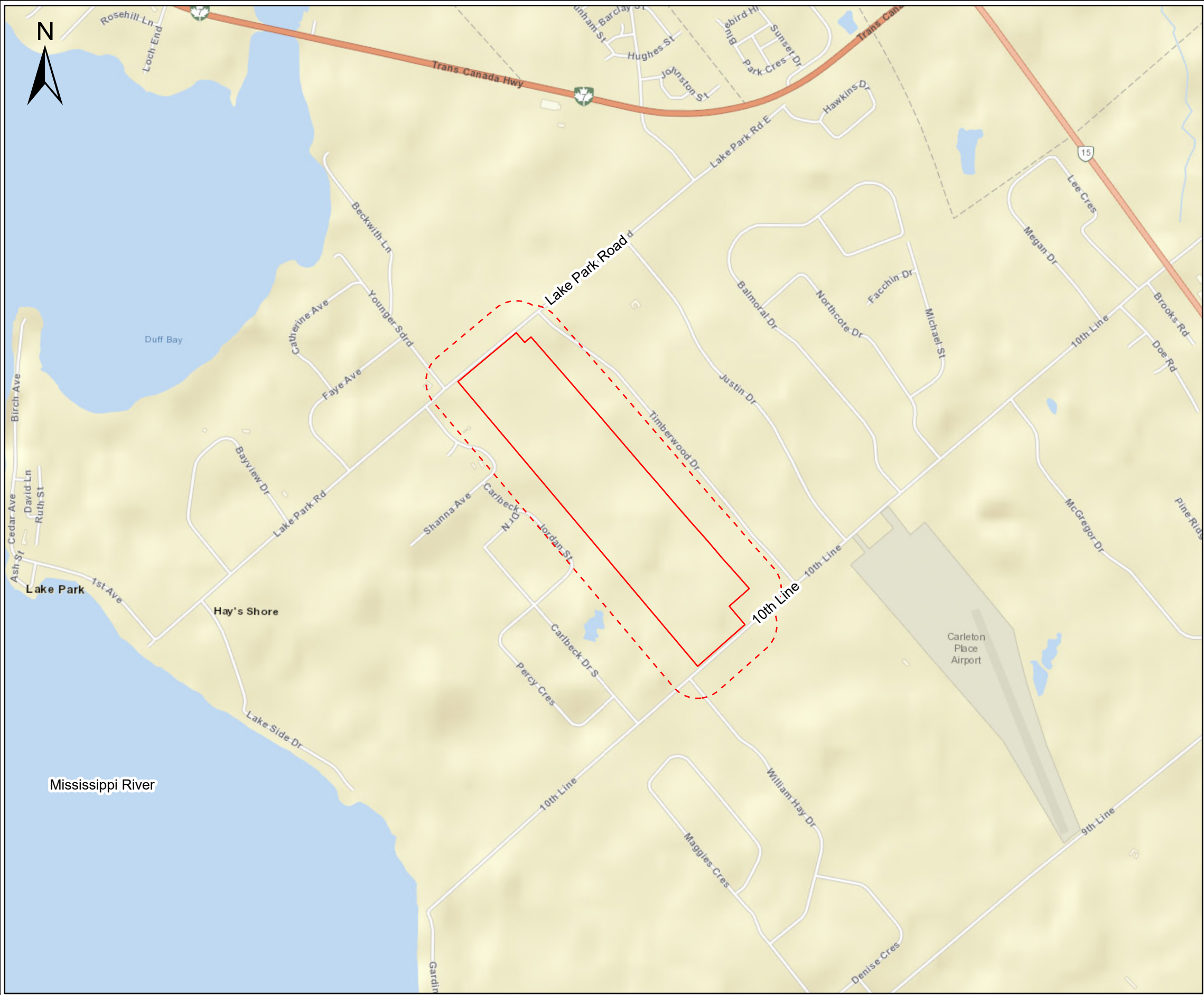
Figure A.2 – Site Layout

Figure A.3 – Vegetation Communities

Figure A.4 – Proposed Development Plan

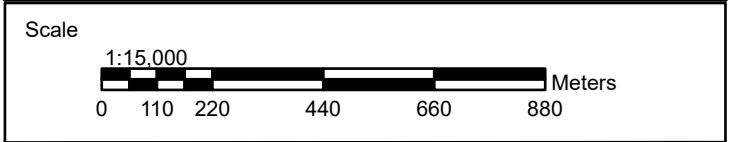
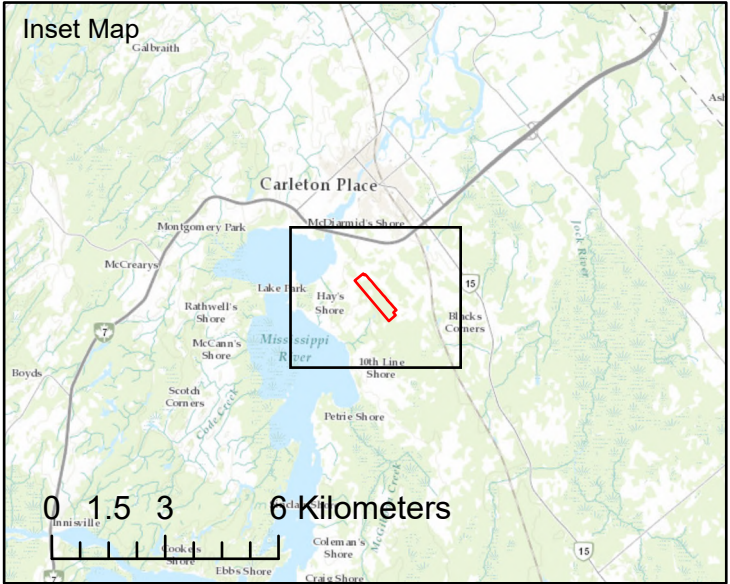
Figure A.5 – Natural Heritage Features

Figure A.6 – Mitigation Measures



Legend

- Property Boundary
- Study Area





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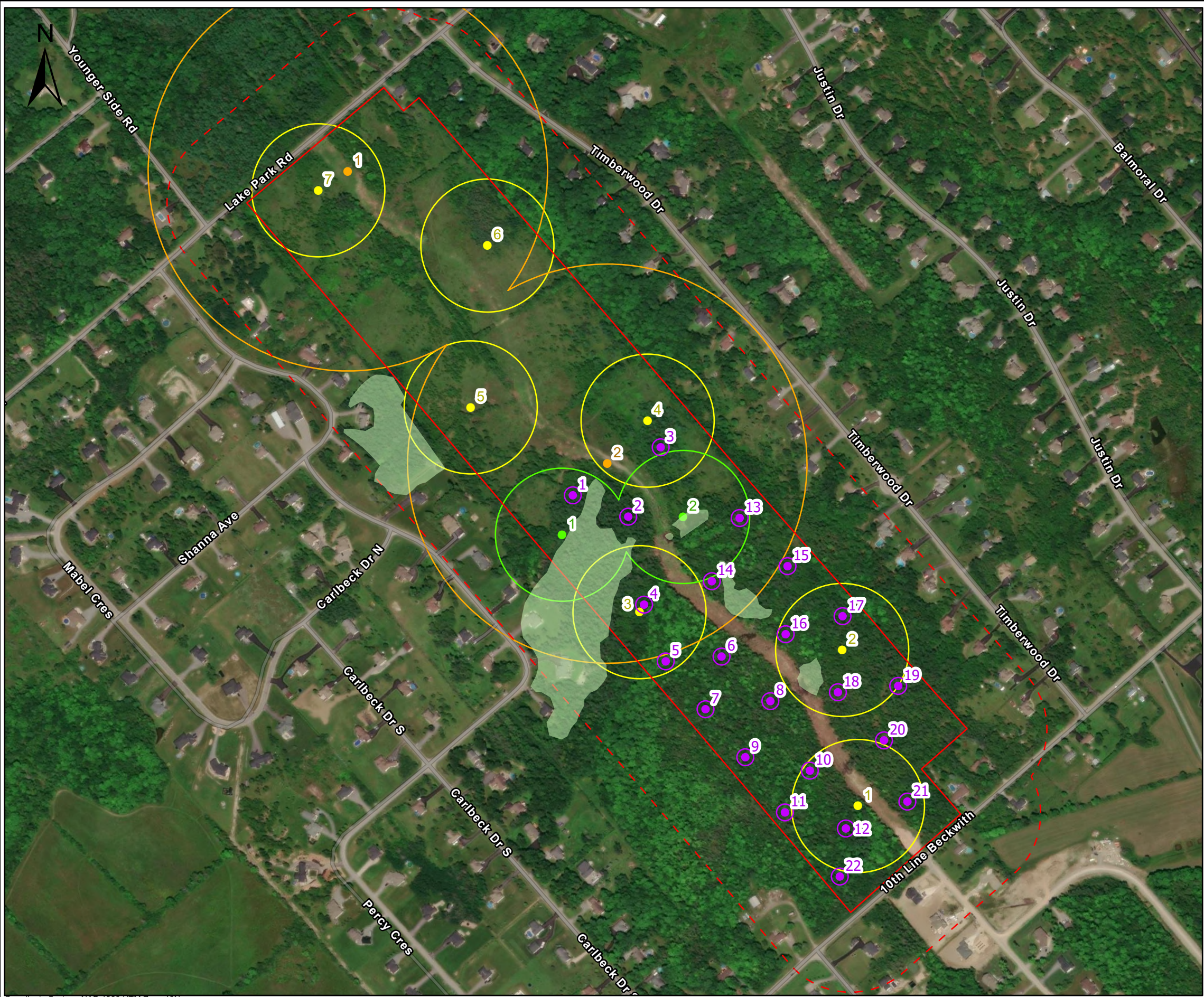
Client:	McIntosh Perry	Project:	100165.007
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Location	10th Line Road Beckwith Township, Lanark County, Ontario
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Drwn By: EP	Chkd By: DP	Site Location
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Date: September 2025	Rev. 0	Figure A.1
© Queen's Printer for Ontario		

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Leeds and Grenville, Province of Ontario, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, AAFC, NRCan
World Street Map: Esri, HERE, Garmin, INCREMENT P, Intermap, NGA, USGS, NRCan



Legend

- Property Boundary
- Study Area
- Local Wetland
- Amphibian Breeding Survey Location (100 m radius)
- Breeding Bird Survey Location (100 m radius)
- Whip-poor-will Breeding Survey Location (300 m radius)
- Bat Maternity Roost Survey Location (12.6 m radius)

Scale

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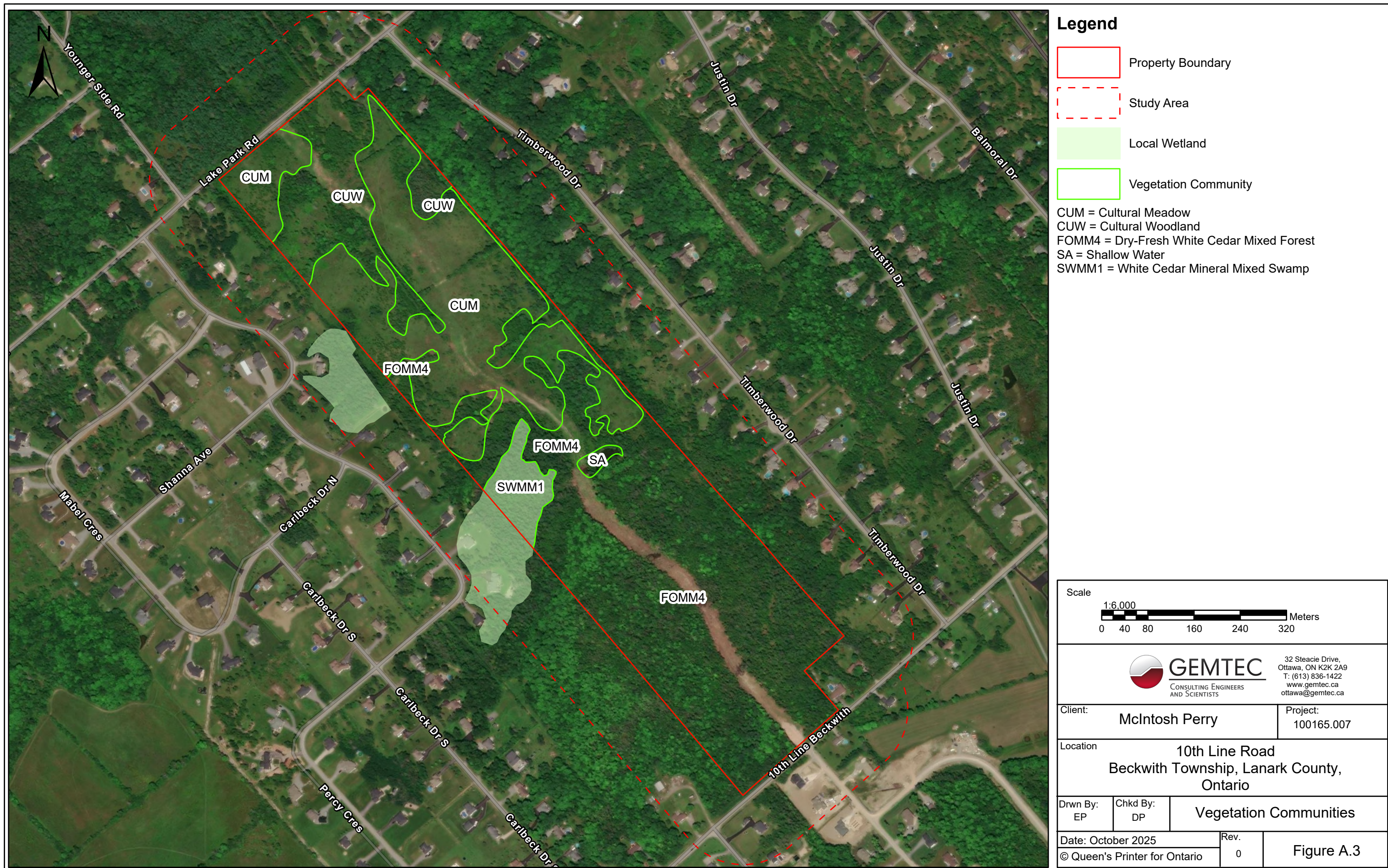
0 40 80 160 240 320 Meters



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Client:		McIntosh Perry		Project:		100165.007	
Location 10th Line Road Beckwith Township, Lanark County, Ontario							
Drwn By: EP		Chkd By: DP		Site Layout			
Date: October 2025				Rev.		0	
© Queen's Printer for Ontario						Figure A.2	





Legend

- Property Boundary
- Study Area
- Local Wetland

Development Concept

- Proposed Block
- Proposed Road

Scale

1:6,000

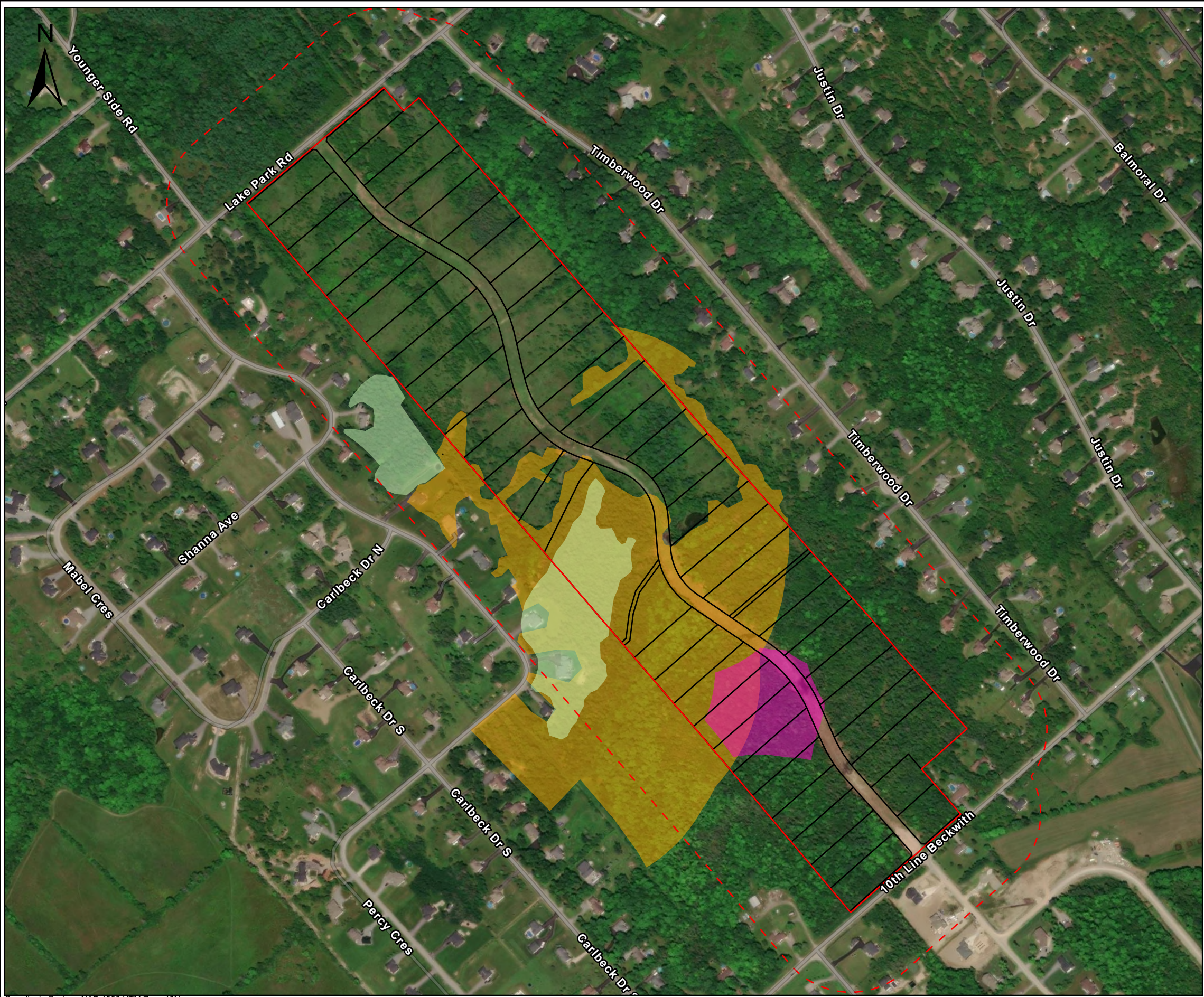
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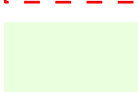
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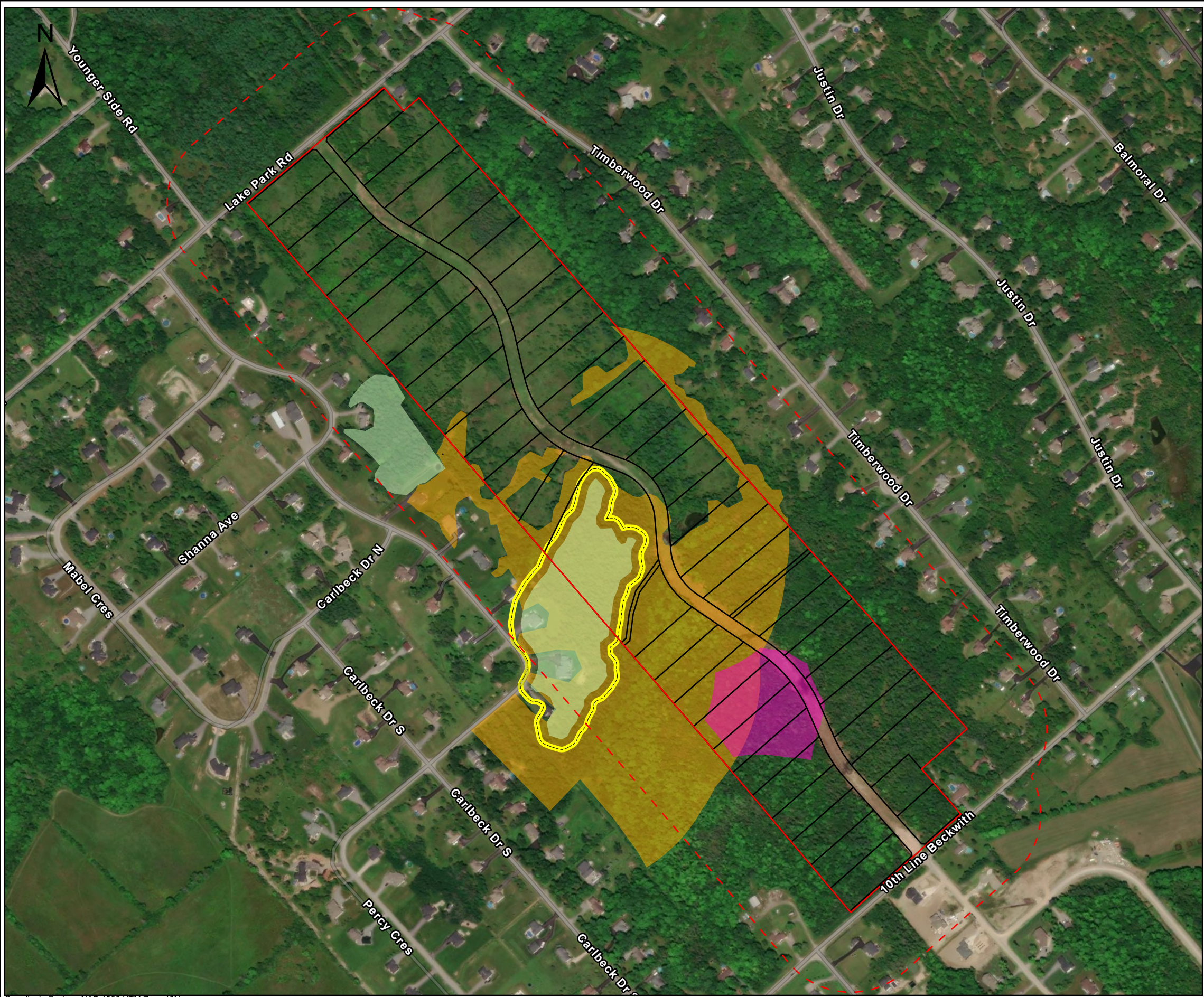
Client:		McIntosh Perry		Project:		100165.007	
Location 10th Line Road Beckwith Township, Lanark County, Ontario							
Drwn By: EP		Chkd By: DP		Development Concept			
Date: October 2025				Rev.		Figure A.4	
© Queen's Printer for Ontario				0			



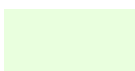
Legend

-  Property Boundary
-  Study Area
-  Local Wetland
-  Proposed Development Concept
-  Woodland Amphibian Breeding Habitat (230 m radius)
-  Area-Sensitive Bird Breeding Habitat

Scale 1:6,000 0 40 80 160 240 320 Meters			
		GEMTEC CONSULTING ENGINEERS AND SCIENTISTS	
Client: McIntosh Perry		Project: 100165.007	
Location 10th Line Road Beckwith Township, Lanark County, Ontario			
Drwn By: EP	Chkd By: DP	Natural Heritage Features	
Date: October 2025		Rev. 0	Figure A.5
© Queen's Printer for Ontario			



Legend

-  Property Boundary
-  Study Area
-  Local Wetland
-  Proposed Development Concept
-  Woodland Amphibian Breeding Habitat (230 m radius)
-  Area-Sensitive Bird Breeding Habitat
-  15 m Setback

Scale

1:6,000

0 40 80 160 240 320 Meters



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Client:		McIntosh Perry		Project:		100165.007	
Location 10th Line Road Beckwith Township, Lanark County, Ontario							
Drwn By: EP		Chkd By: DP		Mitigation Measures			
Date: October 2025				Rev.		Figure A.6	
© Queen's Printer for Ontario				0			



APPENDIX B

Site Photographs



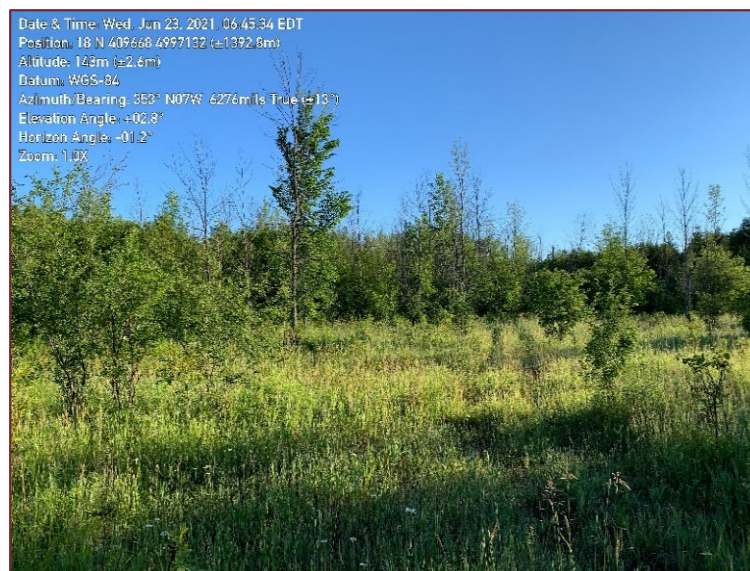
Site Photograph 1 – Dry - Fresh White Cedar
Mixed Forest (FOMM4)



Site Photograph 2 – Dry - Fresh White Cedar
Mixed Forest (FOMM4)



Site Photograph 3 – Dry - Fresh White Cedar
Mixed Forest (FOMM4)



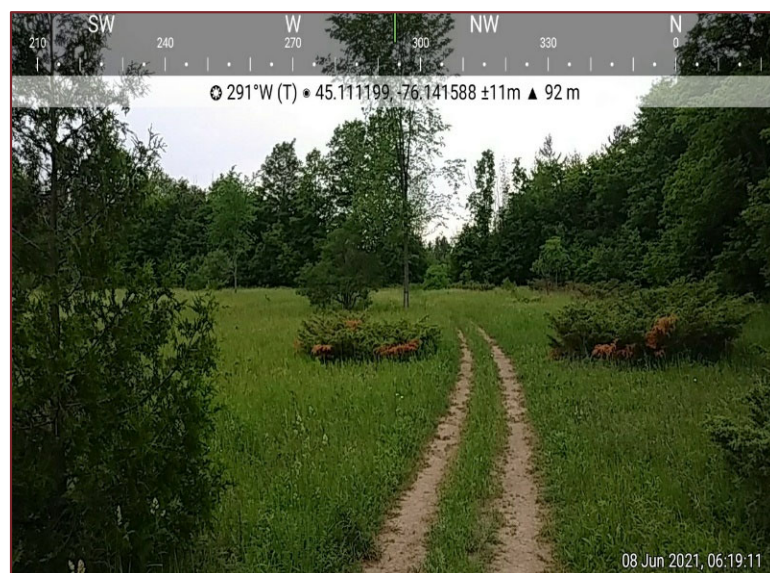
Site Photograph 4 – Cultural Meadow (CUM)



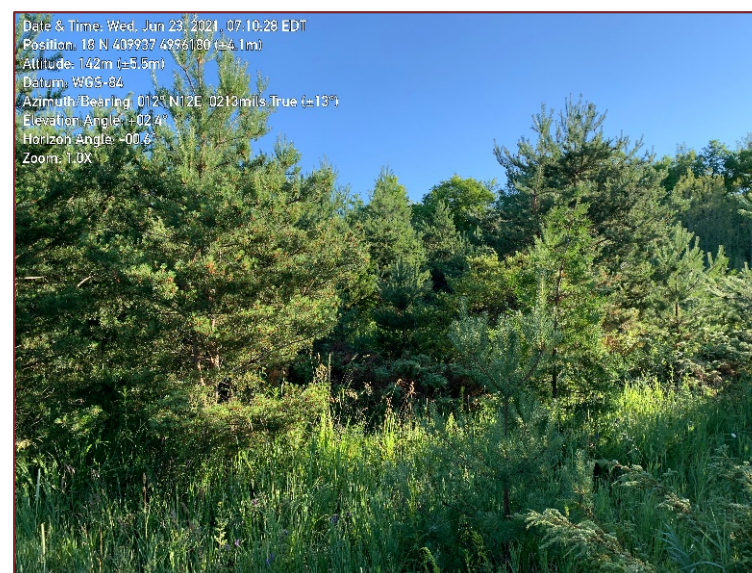
Site Photograph 5 – Cultural Meadow (CUM)



Site Photograph 6 – Cultural Meadow (CUM)



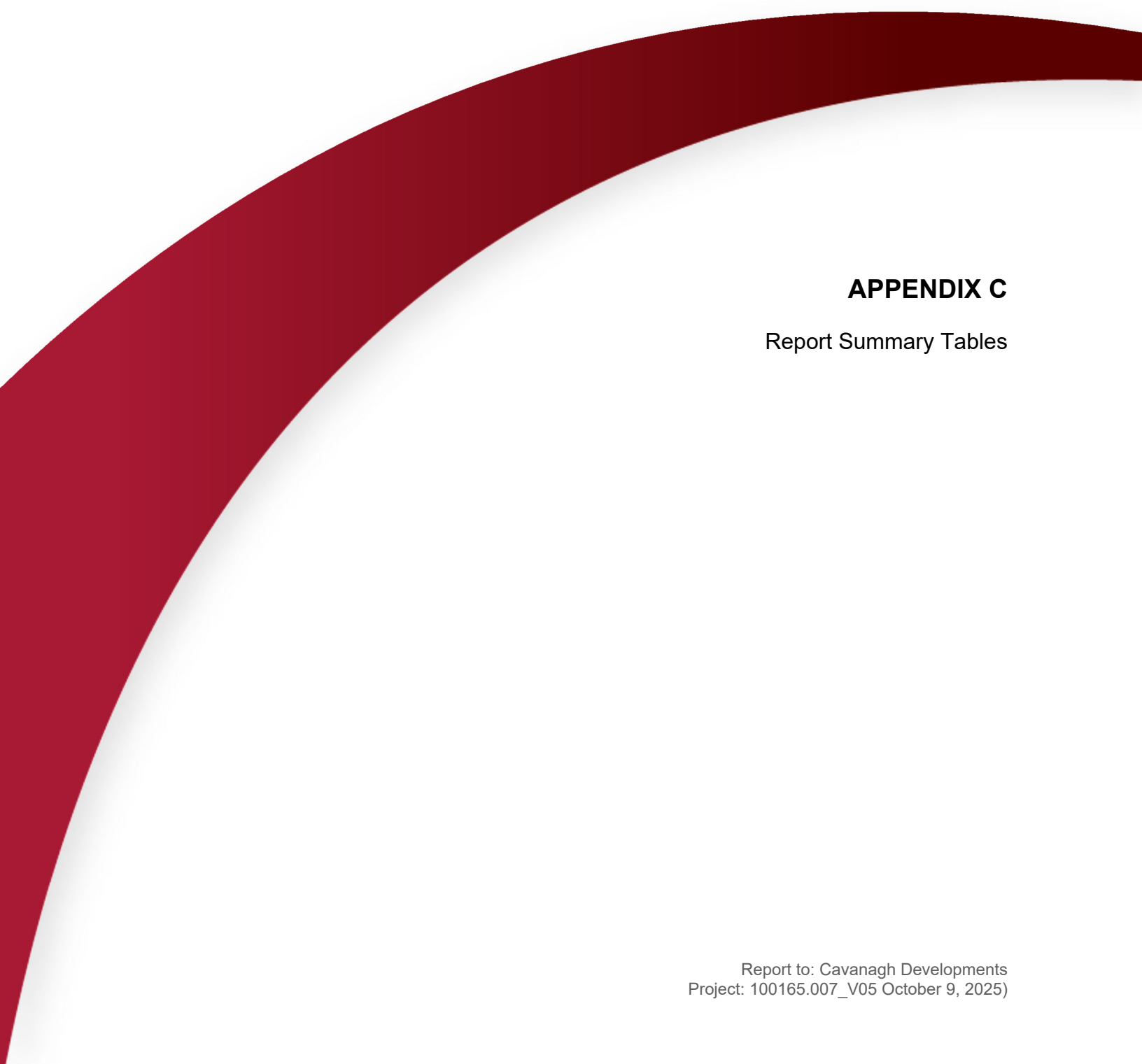
Site Photograph 7 – Cultural Meadow (CUM)



Site Photograph 8 – Cultural Woodland (CUW)



Site Photograph 9 – Cultural Woodland (CUW)



APPENDIX C

Report Summary Tables

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
American crow	<i>Corvus brachyrhynchos</i>	S5B	Heard calling
American goldfinch	<i>Spinu tristis</i>	S5B	Heard calling
American robin	<i>Turdus migratorius</i>	S5B	Heard calling, observed foraging
Black-and-white warbler	<i>Mniotilta varia</i>	S5B	Heard calling
Black-capped chickadee	<i>Poecile atricapillus</i>	S5	Heard calling
Black-throated green warbler	<i>Setophaga virens</i>	S5B	Heard calling
Blue jay	<i>Cyanocitta cristata</i>	S5	Heard calling
Cedar waxwing	<i>Bobycilla cedrorum</i>	S5B	Heard calling, observed perched
Chestnut-sided warbler	<i>Setophaga pensylvanica</i>	S5B	Heard calling
Common yellowthroat	<i>Geothlypis trichas</i>	S5B	Heard calling
Downy woodpecker	<i>Picoides pubescens</i>	S5	Heard calling
Eastern phoebe	<i>Sayornis phoebe</i>	S5B	Heard calling
Eastern towhee	<i>Pipilo erythrophthalmus</i>	S4B	Heard calling
Eastern wood-pewee	<i>Contopus virens</i>	S4B	Heard calling
European starling	<i>Sturnus vulgaris</i>	SNA	Heard calling
Field sparrow	<i>Spizella pusilla</i>	S4B	Heard calling
Gray catbird	<i>Dumetella caroliniensis</i>	S4B	Heard calling
Great blue heron	<i>Ardea herodias</i>	S4	Observed foraging
Great-crested flycatcher	<i>Myiarchus crinitus</i>	S4B	Heard calling
Hairy woodpecker	<i>Picoides villosus</i>	S5	Heard calling
House wren	<i>Troglodytes aedon</i>	S5B	Heard calling
Mourning dove	<i>Senaida macroura</i>	S5	Heard calling
Northern cardinal	<i>Cardinalis cardinalis</i>	S5	Heard calling
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	Heard calling
Pileated woodpecker	<i>Dryocopus pileatus</i>	S5	Observed on-site
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	Heard calling
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	S4B	Heard calling
Ruby-throated hummingbird	<i>Archilochus colubrus</i>	S5B	Observed on-site
Scarlet tanager	<i>Piranga olivacea</i>	S4B	Heard calling
Song sparrow	<i>Melospiza melodia</i>	S5B	Heard calling
Veery	<i>Catharus fuscenscens</i>	S4B	Heard calling
White-breasted nuthatch	<i>Sitta carolinensis</i>	S5	Heard calling
White-throated sparrow	<i>Zonotrichia albicollis</i>	S5B	Heard calling
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	S4B	Heard calling
Wild turkey	<i>Meleagris gallopavo</i>	S5	Observed on-site
Wood thrush	<i>Hylocichla mustelina</i>	S4B	Heard calling
Yellow warbler	<i>Setophaga petechia</i>	S5B	Heard calling
Yellow-rumped warbler	<i>Setophaga coronata</i>	S5B	Heard calling
Mammalian Species			
Coyote	<i>Canis latrans</i>	S5	Camera trap
Striped skunk	<i>Mephitis mephitis</i>	S5	Observed on-site
White-tailed deer	<i>Odocoileus virginianus</i>	S5	Observed on-site
Eastern Cottontail	<i>Sylvilagus floridanus</i>	S5	Observed on-site
Amphibian Species			
American toad	<i>Anaxyrus americanus</i>	S5	Heard calling
Bull frog	<i>Lithobates catesbeianus</i>	S4	Heard calling
Gray treefrog	<i>Hyla versicolor</i>	S5	Heard calling
Northern leopard frog	<i>Lithobates pipiens</i>	S5	Heard calling
Spring peeper	<i>Pseudacris crucifer</i>	S5	Heard calling
Western chorus frog	<i>Pseudacris triseriata</i>	S4	Heard calling

Notes:

Subnational Conservation Status Ranks:

S1 - Critically Imperilled, at very high risk of extirpation, very few populations or occurrences or very steep population decline

S2 - Imperiled, at high risk of extirpation, few populations or occurrences or steep population decline

S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline

S4 - Apparently Secure, at a family low risk of extirpation, many populations or occurrences, some concern for local population decline

S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline

Qualifiers:

S#B - Conservation status refers to the breeding population of the species

S#N -Conservation status refers to the non-breeding population of the species

S#M - Migrant species, conservation status refers to the aggregating transient population of the species

TABLE C.2
SCREENING RATIONALE FOR SIGNIFICANT WOODLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	No	Contiguous woodlands on-site (44.3 ha) do not meet the minimum size requirement for the planning area (> 50 ha).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site does not meet the minimum size requirement for the planning area (> 8 ha).
b) Proximity	No	Woodlands on-site are proximate to local wetlands and/or fish habitat; however, they do not meet the minimum size requirement.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	No	Woodlands on-site are proximate to local wetlands and/or fish habitat; however, they do not meet the minimum size requirement.
e) Diversity	No	Species composition within the on-site woodland is well represented on the landscape and no rare species communities were observed on-site.
Uncommon Characteristics	No	The woodlands on-site do not have a unique species composition, vegetation communities with a ranking of S1, S2 or S3, or a mature size structure.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical cultural or educational values.

TABLE C.3
SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION AREAS

Wildlife Habitat	Further Considered in EIS	Rationale
Winter Deer Yard	No	While there are stands of coniferous woodlands on-site, as outlined in the the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer management are an MNRF responsibility. Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no Stratum I deer yards, Stratum II deer yards, or winter congregation areas have been identified on-site or within the broader study area. The closest deer yard to site is a patch of Stratum I deer yard located approximately 6.5 km to the west.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
Waterfowl Stopover and Staging Areas	No	Wetland habitat on-site does not provide suitable conditions for waterfowl stopover and staging areas (aquatic). Terrestrial stopover and staging areas are not present on-site.
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	Yes	The site contains both forest and upland habitat, with a minimum size criteria of greater than 20 ha of total CUM, CUW and FOMM4 habitat.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site do not meet minimum snag density (>10 snags/hectare) requirement to be considered SWH for bat maternity colonies. Calculated snag density for forested sites was 5.4 snag/ha.
Turtle Wintering Area	No	Wetlands on-site are too shallow and do not contain thick sediments to support turtle wintering areas.
Reptile Hibernaculum	No	No structures such as large rock piles, bedrock outcrops, cervices or other karstic features have been identified on-site.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.

TABLE C.4
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	No	While upland habitat is present in proximity to a wetland, the wetland is not of sufficient size to support a breeding population of waterfowl.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	The site is located >120 m from any habitat which could support foraging bald eagles or osprey. Nesting sites for these species are uncommon in Ecoregion 6E (MNRF, 2012).
Woodland Nesting Raptor Habitat	No	Nesting may occur in any ecosite and species preference is towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands >30 ha are present; however, interior forest habitat with a 200 m buffer does not meet the minimum size criteria. No stick nests were observed on-site.
Turtle Nesting Habitat	No	No suitable habitat (exposed mineral soil with minimal vegetation cover) is present within 100 m of the wetlands on-site.
Seeps and Springs	No	No seeps or springs were identified on-site.
Woodland Amphibian Breeding Habitat	Yes	Suitable wetland and pond habitat within or adjacent to a woodland occurs on-site may support woodland amphibian breeding habitat.
Wetland Amphibian Breeding Habitat	No	No suitable wetland habitat greater than 200 m from a woodland.
Woodland Area-Sensitive Bird Breeding Habitat	Yes	Woodland area-sensitive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site and adjacent to the site meet the defining criteria.

TABLE C.5
SCREENING RATIONALE FOR HABITAT FOR SPECIES OF CONSERVATION CONCERN

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	No	Necessary marsh habitat is not present on-site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	Suitable meadow habitat on-site does not meet minimum size requirement of greater than 30 ha.
Shrub/Early Successional Breeding Bird Habitat	Yes	Candidate early successional breeding bird habitat typically includes fallow fields transitioning to early successional forest habitats that are > 10 ha but have not been actively used for farming. The cultural woodlands on-site and surrounding fallow fields meets the required size and supports breeding for both field sparrow and eastern towhee.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	The following species of special concern were identified on-site during the site investigation: eastern wood-pewee and wood thrush.

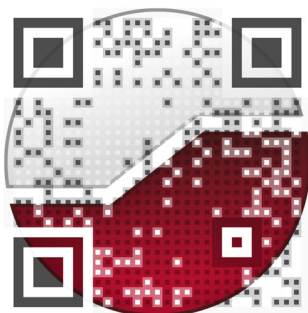
TABLE C.6
SCREENING RATIONALE FOR ANIMAL MOVEMENT CORRIDORS

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No confirmed wetland amphibian breeding habitat has been identified on-site. Woodland amphibian habitat does not require a movement corridor.
Deer Movement Corridor	No	No winter deer yards have been identified on-site by the OMNRF.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian				
Barn Swallow	Special Concern	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Moderate	No suitable nesting structures occur on-site however, suitable foraging habitat is present.
Black Tern	Special Concern	Breeds in loose colonies in shallow marshes, particularly cattails.	Low	Site does not provide suitable marsh habitat.
Bobolink	Threatened	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Moderate	Suitable grassland habitat available on-site and within study area. NHIC data indicates species has been observed within 1 km of the site.
Cerulean Warbler	Threatened	Prefers mature, deciduous forests	Low	Woodlands on-site do not provide preferred habitat.
Chimney Swift	Threatened	Nests in traditional-style open brick chimneys.	Low	No suitable nesting structures within the broader study area.
Eastern Meadowlark	Threatened	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Moderate	Suitable grassland habitat available on-site and within study area.
Eastern Whip-poor-will	Special Concern	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Moderate	Woodlands and cultural lands on-site provide suitable habitat conditions for eastern whip-poor-will.
Eastern Wood-pewee	Special Concern	Woodland species, often found near clearings and edges.	High	Eastern wood-pewee was observed on-site during site investigations.
Henslow's Sparrow	Endangered	Prefers open, moist tallgrass fields.	Low	No suitable grassland habitat to support Henslow's sparrow nesting on-site.
Wood Thrush	Special Concern	Prefers deciduous or mixed woodlands	High	Wood Thrush was observed on-site during site investigations.
Mammalian				
Eastern Red Bat	Endangered	Roosts in tree foliage; overwinters in leaf litter. Do not roost in anthropogenic structures.	Moderate	Potentially suitable vegetation adjacent to site. Potential summer habitat present within study area.
Eastern Small-footed Myotis	Endangered	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Hoary Bat	Endangered	Roosts in tree foliage; overwinters in leaf litter. Do not roost in anthropogenic structures.	Moderate	Potentially suitable vegetation and anthropogenic structures adjacent to site. Potential summer habitat present within study area.
Little Brown Myotis	Endangered	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	Species affinity is for Boreal forests and rarely roosts in anthropogenic structures.
Silver-haired Bat	Endangered	Roosts in tree foliage. Overwinters in in mines, rock crevices, trees, and snags. May use anthropogenic structures for roosting.	Moderate	Potentially suitable vegetation and anthropogenic structures adjacent to site. Potential summer habitat present within study area.
Tri-colored Bat	Endangered	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Reptilian				
Blanding's Turtle	Threatened	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Low	Historic occurrence data for species within 1 km of the site (NHIC), and according to the Herp Atlas (Ontario Nature, 2019), Blanding's turtle have been observed 9 times between 2007 and 2019 within the two 10 km2 grid squares that encompass the site. The site does provide potentially suitable aquatic habitat for Blanding's turtle.
Eastern Musk Turtle	Special Concern	Permanent ponds, lakes, marshes and rivers.	Low	According to the Herp Atlas (Ontario Nature, 2019), the species has been detected twice in 2017 within the two 10km2 grid squares that encompass the site. However, NHIC data does not indicate any known observations. The site does not provide potentially suitable aquatic habitat for eastern musk turtle.
Gray Ratsnake	Threatened	On the Frontenac Axis, preference to a mosaic of forest and open habitats (fields; bedrock outcrops) with a high amount of edge habitat. In summer, seeks shelter in standing snags, hollow logs, and rock crevices. Nesting occurs inside standing snags, logs, stumps, compost piles. Overwinters in below ground hibernacula.	Low	No suitable habitat present on-site to support gray ratsnake.
Snapping Turtle	Special Concern	Highly aquatic species, found in a wide variety of permanent ponds, lakes, marshes and rivers.	Low	Historic occurrence data for species within 1 km of the site (NHIC), and according to the Herp Atlas (Ontario Nature, 2019), the species has been detected 9 times between 2016 and 2019 within the two 10km2 grid squares that encompass the site. The site does provide potentially suitable aquatic habitat for snapping turtle.
Plants				
American Ginseng	Endangered	Grows in rich, moist but well-drained and relatively mature, deciduous woodlands dominated by sugar maple, white ash and American basswood.	Low	Woodlands on-site are mixed and are unlikely to support habitat requirements for American ginseng growth.
Black Ash	Endangered	Predominantly a wetland species, found in swamps, floodplains and fens.	Moderate	Suitable habitat present on-site. Historic occurrence data for species within 1 km of the site (NHIC).
Butternut	Endangered	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Moderate	Historic occurrence data for species within 1 km of the site (NHIC) and large portions of the site are open and in a regenerative state.
Insects				
Bogbean Buckmoth	Endangered	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Monarch Butterfly	Special Concern	Caterpillars required milkweed plants that are confined to meadows and open areas. Adult butterflies use more diverse habitats with a variety of wildflowers.	Moderate	Potentially suitable foraging vegetation available for Monarch on-site.
Mottled Duskywing	Endangered	Larval food plant, New Jersey Tea, is found in sandy areas and alvars.	Low	Preferred habitat of sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.
Rusty-patched Bumble Bee	Endangered	Habitat generalist	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Traverse Lady Beetle	Endangered	Habitat generalist	Low	No new records in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Requires mature moist, deciduous woods, with larval host plant, toothwort.	Low	Necessary vegetation and toothwort plant are not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Habitat generalist: mixed woodlands, variety of open habitat.	Moderate	Potentially suitable foraging habitat available for yellow-banded bumble bee on-site.

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