Prepared for:

**Planmac Engineering Inc.**

# Line 8 from Barrie Street/Hwy. 11 to Sideroad 10 & Sideroad 10 from North of Line 8 to Reagens Industrial Parkway - Class EA Study

# Natural Environmental Assessment Report (Update)


submitted by:

**Aquafor Beech Ltd.**


**April 23, 2025**

**Ref.: 66054**

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## APPENDICES

# 1 Introduction

Aquafor Beech Limited (hereafter "Aquafor") was retained by Planmac Engineering Inc. ("Planmac") in 2017 to prepare a Natural Environmental Assessment Report in support of the Class EA study for road widening on Line 8 from Barrie Street/Highway 11 to Sideroad 10 and on Sideroad 10 from North of Line 8 to Reagens Industrial Parkway, in the Town of Bradford West Gwillimbury. That initial study was completed and the Natural Environment Assessment Report was published in April, 2017. Aquafor was then asked to provide additional environmental assessment services, expanding upon a portion of the study area which contained natural heritage features and which was proposed for construction related to stormwater management. Field investigations were completed in support of that task in 2019, and the findings of that expanded study were published as a standalone Environmental Impact Study in February, 2020.

The Natural Environment Assessment Report was then updated once more, because the Town of Bradford West Gwillimbury requested an update to the previous Class EA study as a result of the update to the associated Traffic Management Plan (TMP). Planmac and Aquafor were retained in November 2022 to provide this work. Included in the scope was an update to the previous Natural Environment Assessment to provide a due-diligence update of information and analysis based on current standards to ensure that there was up-to-date, accurate information available for the study area. Scoped field investigations were completed in support of that task in 2023. The updated assessment report was published in December 2023 using interim road designs that were prepared to address current road conditions and a need to re-pave as an interim measure to allow for the use of the roads as a detour route for another roadwork project.

Since that time, the Class EA process has moved forward and final design concepts have been prepared for the study area. The following document provides an updated Natural Environment Assessment which consolidates all of the previous data and assessment from the prior stages of the project, summarizes the constraints present in the study area, provides an overview of potential impacts associated with the proposed design, and details preliminary recommendations for mitigation and protection measures intended to address those potential impacts in order to protect natural heritage features and functions.

## 1.1 Study Area Overview

The study area for this assignment is generally restricted to the existing road rights-of-way (ROW) as illustrated in **Figure 1-1**. Adjacent lands to the existing road ROW are predominantly developed or cleared (e.g., for agriculture), save for small remnant natural heritage features or constructed features/open space parkland. Where natural features or areas exist adjacent to the ROW, the study area included such area as was required to characterize the features and functions of that feature, to inform design and permitting requirements.


**Figure 1-1: Study Area Location Map**

## 1.2 Overview of Proposed Work

The preferred alternative resulting from the original Class EA was a four-lane widened profile. Through the subsequent design and assessment process, it was determined that the site would instead only be increased to four lanes between Barrie Street and Professor Day Drive. The remainder of the site (i.e., 10 Sideroad and Line 8 between 10 Sideroad and Professor Day Drive) would retain the existing two-lane road profile. Storm sewer improvements would be incorporated into the new four-lane section of Line 8, and other localized improvements are also proposed, including the following:

- The intersection of Line 8 and 10 Sideroad will be upgraded to a roundabout;
- Existing open ditches on the west side of 10 Sideroad will be maintained, but the east side will be urbanized with curb and gutter plus a multi-use trail;
- Multi-use trails will be created on both the north and south sides of Line 8;
- Existing culverts will be replaced on 10 Sideroad at the south end of the study area, and at the intersection of Line 8 and 10 Sideroad; and
- Low Impact Development (LID) stormwater management will be utilized from Professor Day Drive to 10 Sideroad.

All construction is intended to be maintained within the existing road ROW. Construction is scheduled for 2027.

# 2 Methods

Characterization of the natural heritage features and functions within the study area was completed via the field surveys listed below, plus review of background information sources. The existing conditions of the study area are discussed in the subsequent subsections.

## 2.1 Background Information Review

In the preparation of this report, the following background information was reviewed and relevant data incorporated where appropriate:

- Previous study reports and related documents related to the Line 8 improvements and stormwater works on adjacent lands;
- The Provincial Planning Statement (2024);
- Town of Bradford West Gwillimbury Official Plan (2002 consolidation);
- Lake Simcoe Region Conservation Authority policies and mapping;
- Natural Heritage Information Centre (NHIC)/Ministry of Natural Resources (MNR) species occurrence database (via online Make-a-Map website);
- Community science records (e.g., eBird, iNaturalist) and provincial species atlases; and
- Historic and current aerial photography.

## 2.2 Field Investigations

Aquafor undertook field studies and reviewed available background information in order to characterize natural heritage features and functions within the study area, both during previous phases of the study and in direct support of the current NEA Update. Field inventory methodologies and timing are detailed in **Table 2-1**, below.

**Table 2-1: Field Investigations Timing and Methodology**

| Task | Methodology | Date Completed |
|---|---|---|
| **Vegetation Community Assessment** | Vegetation community assessments were completed in accordance with the Ecological Land Classification system for Southern Ontario (Lee et al., 1998). | May 8, June 8, and June 27, 2017<br>June 25, 2019<br>May 10, 2023 |
| **Botanical Inventory** | A botanical inventory was conducted in concert with vegetation community surveys. The area search method was used to identify flora within the study area. | May 8, June 8, and June 27, 2017<br>June 25, 2019<br>May 10, 2023 |
| **Breeding Bird Surveys** | Breeding bird surveys were conducted in the early morning, over two visits at least 15 days apart during the core breeding season (late May to early July), in favourable weather. Each survey was conducted using 10-minute roadside point counts plus an additional 10-minute point count within the woodlot on the south side of Line 8. All birds seen and heard were recorded, as was all breeding evidence observed for all species. | June 3 and 19, 2017 |
| **Amphibian Calling Surveys** | Amphibian calling surveys were conducted according to the Marsh Monitoring Program (Bird Studies Canada et al., 2008). Surveys commenced a minimum of half an hour after sunset and ended before midnight, on three separate nights between April and June that met the minimum air temperature requirements (5, 10, and 17°C, respectively). Due to the late start of that project phase in 2019, it was agreed in the initial site meeting with LSRCA that the May 8 survey date would be allowable for the first survey despite it being later than the ideal timing for early spring amphibians. | May 8, May 29, and June 25, 2019 |

| Task | Methodology | Date Completed |
|---|---|---|
| **Bat Maternity Roosting Surveys** | Phase 1 and 2 of the Guelph District MNRF's *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-colored Bat* (OMNRF, 2017) were completed to identify candidate maternity roosting sites. Trees in various states of decay with snag attributes (e.g., loose bark, knot holes, cracks, etc.) were identified and mapped within the study area. | February 17, June 8 and 27, 2017 |
| **Incidental Wildlife** | Incidental wildlife observations, both direct and indirect (e.g., tracks, scat), were recorded during all field surveys. | Throughout |

A tree inventory and arborist assessment were also completed for the Class EA study area (ROW plus 30 m buffer) in February 2017. Information from that assessment was used by this assessment in a general sense to discuss impact avoidance/mitigation and similar requirements. However, it is recommended that a scoped, updated tree inventory be completed during detailed design, once any anticipated areas of disturbance/removal are known with greater confidence. This approach will provide the greatest efficiency in determining tree removals/impacts and associated requirements and in ensuring that up-to-date information is available as the project moves to tender and construction. Tree impacts are generally expected to be minimal for this project, since construction is intended to remain within the existing disturbed ROW for the majority of the study area, so discussion of tree impacts is not considered a critical component of the Natural Environment Assessment Report update. The updated tree inventory and related assessment, if required, is recommended to be published under separate cover (e.g., arborist assessment or tree preservation plan).

## 2.3 Species at Risk and Significant Wildlife Habitat Screening

For the purpose of this study, Species at Risk (SAR) are defined as species listed as Endangered (END), Threatened (THR), or Special Concern (SC) under the provincial Endangered Species Act (ESA) and/or the federal Species at Risk Act (SARA). Information from all background sources was combined to create a comprehensive list of potential SAR associations in the study area, which was then screened by comparing the habitat needs of each species with the habitat conditions present within the subject property. Species with no suitable habitat or potential for occurrence were screened out, and the remaining species were carried forward for further discussion in terms of potential impacts, mitigation, and regulatory requirements.

Similarly, the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNR, 2015) document was used in concert with the Significant Wildlife Habitat Technical Guide (MNR, 2000) to screen for the presence of Significant Wildlife Habitat (SWH) within the study area by comparing the criteria for the various SWH categories with the features and habitats present in the study area.

Any observations of other Species of Conservation Concern (SOCC) in the study area were documented by Aquafor staff through the study process. SOCC include those with Subnational (Provincial) ranks of S1-S3 as assigned by the NHIC, indicating a degree of provincial rarity, or local/regional rarity as identified by appropriate sources.

# 3 Existing Conditions

The majority of natural heritage features in the study area are restricted to the single remnant woodland and wetland area located south of Line 8 between Professor Day Drive and Summerlyn Trail; it was this area that was the focus of the 2019 EIS and which will form the bulk of the discussion below. Additional patches of remnant or restored habitat are present in other locations as well and will be discussed where appropriate to the proposed design.

## 3.1 Vegetation Communities

Vegetation communities identified during all field investigations are illustrated on **Figure 3-1** and described in **Table 3-1**. None of the vegetation communities within the study area are considered globally or provincially significant.

**Table 3-1: Vegetation Community Information**

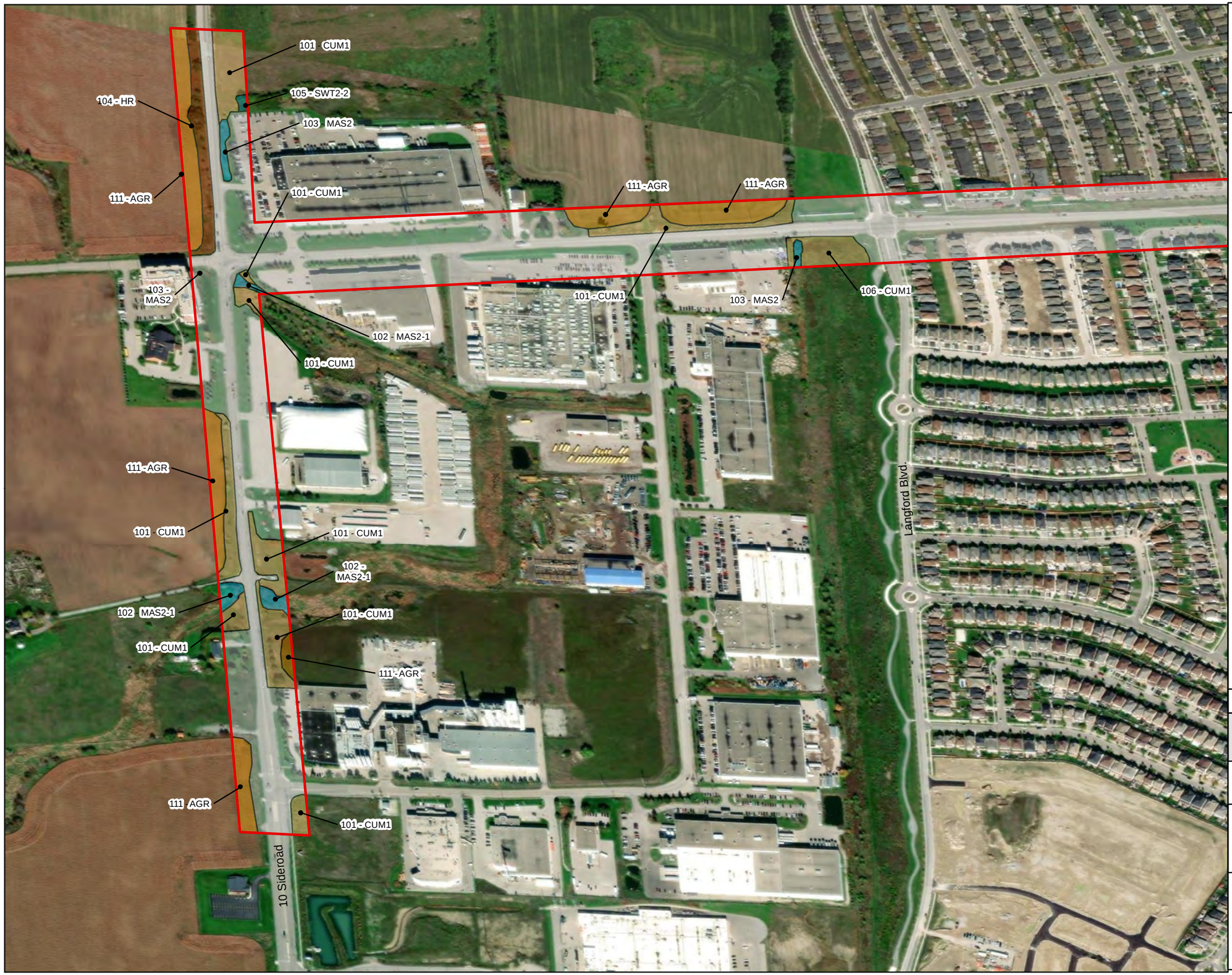
| Polygon | ELC Code | Description |
|---|---|---|
| 001 and 001.2 | 001: MAS2-1 - Cattail Mineral Shallow Marsh and SWD3-2 - Silver Maple Mineral Deciduous Swamp Complex<br><br>001.2 CUW1 - Mineral Cultural Woodland (inclusion) | Located on the south side of Line 8. At the time of survey, the water table was between 6 cm and 20 cm above the soil surface. Deeper areas are within open "pond" areas of the wetland; shallower water is associated with dense vegetation. The marsh/swamp complex is dominated by Silver Maple (*Acer saccharinum*) in the canopy and sub-canopy layers, with Crack Willow (*Salix* x *fragilis*) occasional in both layers. The majority of Silver Maple trees in this community are dead or dying, thus the canopy and sub-canopy cover is 10-25% and <10% respectively. The understory layer (i.e., the shallow marsh) is abundant with Broad-leaved Cattail (*Typha latifolia*), Reed Canary Grass (*Phalaris arundinacea*), and sedges (*Carex* spp.) including Hop Sedge (*Carex lupulina*). The effective soil texture is clay.<br><br>The cultural woodland inclusion is adjacent to Line 8 across from Gosnel Circle, and characterized by American Elm (*Ulmus americana*), White Spruce (*Picea glauca*), Trembling Aspen (*Populus tremuloides*), Nannyberry (*Viburnum lentago*), and Highbush Cranberry (*Viburnum trilobum*). |
| 002 | FOC4-1 - Fresh-Moist White Cedar Coniferous Forest | Located adjacent to ELC polygon 1, on the south side, this community is a small, very thick upland area dominated by Eastern White Cedar (*Thuja occidentalis*) with a few American Elm, Eastern White Pine (*Pinus strobus*), and hawthorn (*Crataegus* sp.). The water table was 88 cm below the soil surface, with mottling observed at 47 cm at the time of survey. The effective texture is clay. The ground layer at the time of survey was dominated by Yellow Trout Lily (*Erythronium americanum* ssp. *americanum*), which is a spring ephemeral that blooms in spring covering the ground layer. Accordingly, it is likely that the composition of the ground layer will change with the seasons. Other species observed in the ground layer include Canada Mayflower (*Maianthemum canadense*), Colt's-foot (*Tussilago farfara*), and Spotted Geranium (*Geranium maculatum*). |

| Polygon | ELC Code | Description |
|---|---|---|
| 004 | SWD3-2 - Silver Maple Mineral Deciduous Swamp and SWD4-1 - Willow Mineral Deciduous Swamp complex | This wetland complex is hydrologically connected to ELC polygon 1; however, the species composition represents a Silver Maple and willow swamp complex. Silver Maple and Crack Willow in this community are mature large trees. The canopy and sub-canopy are both close to 60%. The reduced canopy cover is largely due to broken branches of large Crack Willow. Other associate species include American Elm, Paper Birch (*Betula papyrifera*), and Freeman's Maple (*Acer x freemanii*). The understory contains abundant Silver Maple saplings, plus shrubs such as Red-osier Dogwood (*Cornus sericea*), Nannyberry, European Buckthorn (*Rhamnus cathartica*), and Highbush Cranberry. Most of the shrubs are located close to the trees, on hummocks. The water table was recorded at 15-25 cm above the soil surface, with deeper water located further from trees. The effective soil texture is clay. The ground layer is abundant with sedges, Creeping Bentgrass (*Agrostis stolonifera*), Tall Buttercup (*Ranunculus acris*), and Water Beggarticks (*Bidens beckii*). A pair of Mallards were observed swimming together in this community. |
| 005 | SWD4-1 - Willow Mineral Deciduous Swamp | This willow-dominated swamp community is located adjacent to the south side of Line 8, flanked by the two Eastern White Cedar forest polygons. In the spring, the water was too deep to complete a soil sample. Crack Willow is dominant in the canopy and sub-canopy layers. The understory is sparse, with a few individuals of American Elm, Black Ash (*Fraxinus nigra*), and Manitoba Maple (*Acer negudo*). **Black Ash is a Species at Risk and is discussed further in Section 4**. The ground layer has pockets of Reed Canary Grass and Broad-leaved Cattails, and floating Water Beggarticks. |
| 006 | SWT2-10 - Nannyberry Thicket Swamp and SWT2 - Thicket Swamp (White Cedar) complex | This thicket swamp is a complex of Nannyberry and shrub-sized Eastern White Cedar. In the spring, the swamp has approximately 17 cm of standing water, with mottles observed at 26 cm and gley at 32 cm. The effective soil texture is silty clay. Course fragments prevented soil sampling beyond 54 cm. The sparse canopy is comprised of American Elm, White Pine, Bur Oak (*Quercus macrocarpa*), and Basswood (*Tilia americana*). These trees are located on the periphery of the community, closer to adjacent upland areas. No species were present as a sub-canopy. The understory is dominated by Eastern White Cedar with an abundance of Nannyberry. Other species in the understory include Red-osier Dogwood, Highbush Cranberry, Choke Cherry, and European Buckthorn. Riverbank Grape (*Vitis riparia*) was observed growing over the cedars and shrubs. Species composing the ground layer include Ostrich Fern (*Matteuccia struthiopteris*), Prickly Gooseberry (*Ribes cynosbati*), One-seeded Bur-cucumber (*Sicyos angulatus*), and Spotted Jewelweed (*Impatiens capensis*). |

| Polygon | ELC Code | Description |
|---|---|---|
| 007 | FOM7-2 - Fresh – Moist White Cedar-Hardwood Mixed Forest and CUW1 - Mineral Cultural Woodland complex | Eastern White Cedar is abundant in the canopy and sub-canopy layers, with Bur Oak, Blue-beech (*Carpinus caroliniana*), Green Ash (*Fraxinus pennsylvanica*), American Elm, Basswood, and Eastern Hop-hornbeam (*Ostrya virginiana*) associates. **Black Ash, a Species at Risk, was also found in this polygon** (see Section 4 for further information). The effective soil texture is clay. The water table was observed at 11 cm below the soil surface, with mottles observed at 31 cm. The forest floor has shallow standing pools approximately 2–3 $m^2$ in area. This community is surrounded by wetlands, and has a wide transition zone between it and bordering wetlands.<br><br>An old farm laneway/access road running south from Lane 8 transects this community. The laneway opens the forest canopy and is associated with the cultural woodland portion of the complex. The understory is composed of Eastern White Cedar, Chokecherry, Nannyberry, Wild Red Raspberry (*Rubus idaeus ssp. strigosus*), and Alternate-leaved Dogwood (*Cornus alternifolia*). One Eastern Garter Snake (*Thamnophis sirtalis sirtalis*) was observed in this community. Abundant evidence of garbage dumping was also observed. |
| 009 | MAS2-1- Cattail Mineral Shallow Marsh | This cattail community is associated with the channel that links wetlands on the south and north sides of Line 8. Broad-leaved Cattail and Reed Canary Grass are abundant in the community. There are also pockets of Narrow-leaved Cattail (*Typha angustifolia*). Crack Willow, Freeman's Maple, and American Elm are scattered throughout away from the open channel. Other species associated with this community include Spotted Jewelweed, Marsh Bedstraw (*Galium palustre*), Nannyberry, Pale Dogwood (*Cornus obliqua*), and Cottongrass Bulrush (*Scirpus cyperinus*). A soil survey could not be completed given the depth of water. |
| 012 | MAS2-1- Cattail Mineral Shallow Marsh | This cattail shallow marsh is connected to the watercourse channel in ELC polygon 9 via a culvert. The channel meanders through this community then dissipates into open water ponds. Species found in this community include Broad-leaved Cattail, Narrow-leaved Cattail, Reed Canary Grass, Tamarack (*Larix laricina*), Cottongrass Bulrush, and Floating Pondweed (*Potamogeton natans*). A soil sample was not taken given the depth of water. |

| Polygon | ELC Code | Description |
|---|---|---|
| 013.1 and 013.2 | 013.1: CUM1 - Mineral Cultural Meadow<br><br>013.2: MAM2-5 - Narrow-leaved Sedge Mineral Meadow Marsh inclusion | This cultural meadow is the open community around the constructed SWM ponds on the north side of Line 8. It includes SWM facility infrastructure (e.g., access trails, spillway, etc.) and planted material along paths. Trees planted include Little-leaf Linden (*Tilia cordata*), Eastern White Cedar, Sugar Maple, Eastern White Pine, Bur Oak, Silver Maple, and White Spruce. The meadow is abundant with Canada Goldenrod (*Solidago canadensis var. canadensis*), Creeping Thistle (*Cirsium arvense*), and Garden Bird's-foot Trefoil (*Lotus corniculatus*). Associate species include White Sweet-clover (*Melilotus albus*), Red Clover (*Trifolium pratense*), Colt's-foot, and Black Medic (*Medicago lupulina*). This meadow has a small wet meadow inclusion that was predominantly Fowl Bluegrass (*Poa palustris*). |
| 013.3 | MAM2-2 – Reed Canary Grass Mineral Meadow Marsh | This polygon was originally delineated as a cultural meadow in Aquafor's 2017 evaluation, but was observed in later visits to have become significantly wetter. There were several locations of standing water at the time of survey in 2023. The dominant species was Reed Canary Grass with some Panicled Aster (*Symphyotrichum lanceolatum ssp. lanceolatum*), Narrow-leaved Cattail, Broad-leaved Cattail, and Purple Loosestrife (*Lythrum salicaria*). There was approximately 15% shrub cover, predominantly willows with some Red-osier Dogwood. |
| 101 | CUM1 – Mineral Cultural Meadow | Several polygons were identified along the ROW with similar characteristics, and all were therefore labeled with the same polygon number for simplicity. These meadow communities are dominated by Smooth Brome (*Bromus inermis*) with some Kentucky Bluegrass (*Poa pratensis ssp. pratensis*) and forbs. These areas represent the unmanaged areas adjacent to anthropogenic features such as parking lots, roads, and buildings. |
| 102 | MAS2-1 – Cattail Mineral Shallow Marsh | This creek channel was dominated by a mix of Narrow-leaved Cattail and Broad-leaved Cattails with some European Reed (*Phragmites australis ssp. australis*). |
| 103 | MAS2 - Mineral Shallow Marsh | This polygon was a small patch of European Reed with very few other species. |
| 104 | HR – Hedgerow | This hedgerow is located on the west side of Sideroad 10. It was predominantly Black Locust (*Robinia pseudoacacia*) over Smooth Brome. |
| 105 | SWT2-2 – Willow Mineral Thicket Swamp | This polygon was a jumble of different willows including White Willow (*Salix alba*), Sandbar Willow (*Salix interior*), Heart-leaved Willow (*Salix eriocephala*), and Bebb's Willow (*Salix bebbiana*). Additional facultative wetland species noted were Panicled Aster and Red-osier Dogwood. |
| 106 | CUM1 - Mineral Cultural Meadow | This cultural meadow is located on a large berm between the residential neighbourhood and the industrial buildings to the west. It was recently planted with trees and shrubs and likely a native seed mix. The ground cover was a mix of common seedmix species and common roadside species which tend to colonize recently disturbed areas. |

| Polygon | ELC Code | Description |
|---|---|---|
| 107 | CUM1 - Mineral Cultural Meadow | This location was recently disturbed with compacted soils and gravel. This community was dominated by non-native species such as Common Dandelion (*Taraxacum officinale*), Prickly Lettuce (*Lactuca serriola*), Bull Thistle (*Cirsium vulgare*), and Wild Carrot (*Daucus carota*). |
| 108 | SWT2-2 – Willow Mineral Thicket Swamp | This polygon had many locations of standing water with man facultative and obligate wetland species. These included Creeping Bentgrass (*Agrostis stolonifera*), Purple Loosestrife, European Reed, and Panicled Aster. The dominant shrubs were all facultative wetland species including Heart-leaved Willow, Sandbar Willow, Red-osier Dogwood, and both Green Ash and American Elm seedlings. |
| 109 | CUM1 - Mineral Cultural Meadow | This polygon is located on a hill slope dominated by forbs with variable dominance between White Sweet-clover, Wild Carrot, Common Teasel, Canada Goldenrod, with some Kentucky Bluegrass. |
| 110 | SAS – Shallow Aquatic | This community was the flooded portion of a stormwater pond. There is no species list associated with this polygon. |
| 111 | AGR – Agricultural | Several farm fields were present within the study area. At the time of survey, most were recently planted or tilled. |
| 112 | ANTH – Anthropogenic | This classification was given to lands containing the roadway, mown lawn, parking lots and buildings. |




Bradford West Gwillimbury

**Legend**

- Study
- Agricultural (AGR)
- Anthropogenic (ANTH)
- Cultural Meadow (CUM)
- Cultural Woodland (CUW)
- Coniferous Forest (FOC)
- Mixed Forest (FOM)
- Hedgerow (HR)
- Meadow Marsh (MAM)
- Shallow Marsh (MAS)
- Shallow Aquatic (SAS)
- Deciduous Swamp (SWD)
- Swamp Thicket (SWT)

Figure 3-1

Existing Conditions

Date: June 2023
Author: KB
Projection: UTM_Zone_17N
Project #: 66054

0 160 320
Metres

N

Aquafor Beech Limited


Bradford West Gwillimbury

**Legend**

- Study
- Agricultural (AGR)
- Anthropogenic (ANTH)
- Cultural Meadow (CUM)
- Cultural Woodland (CUW)
- Coniferous Forest (FOC)
- Mixed Forest (FOM)
- Hedgerow (HR)
- Meadow Marsh (MAM)
- Shallow Marsh (MAS)
- Shallow Aquatic (SAS)
- Deciduous Swamp (SWD)
- Swamp Thicket (SWT)

Figure 3-1

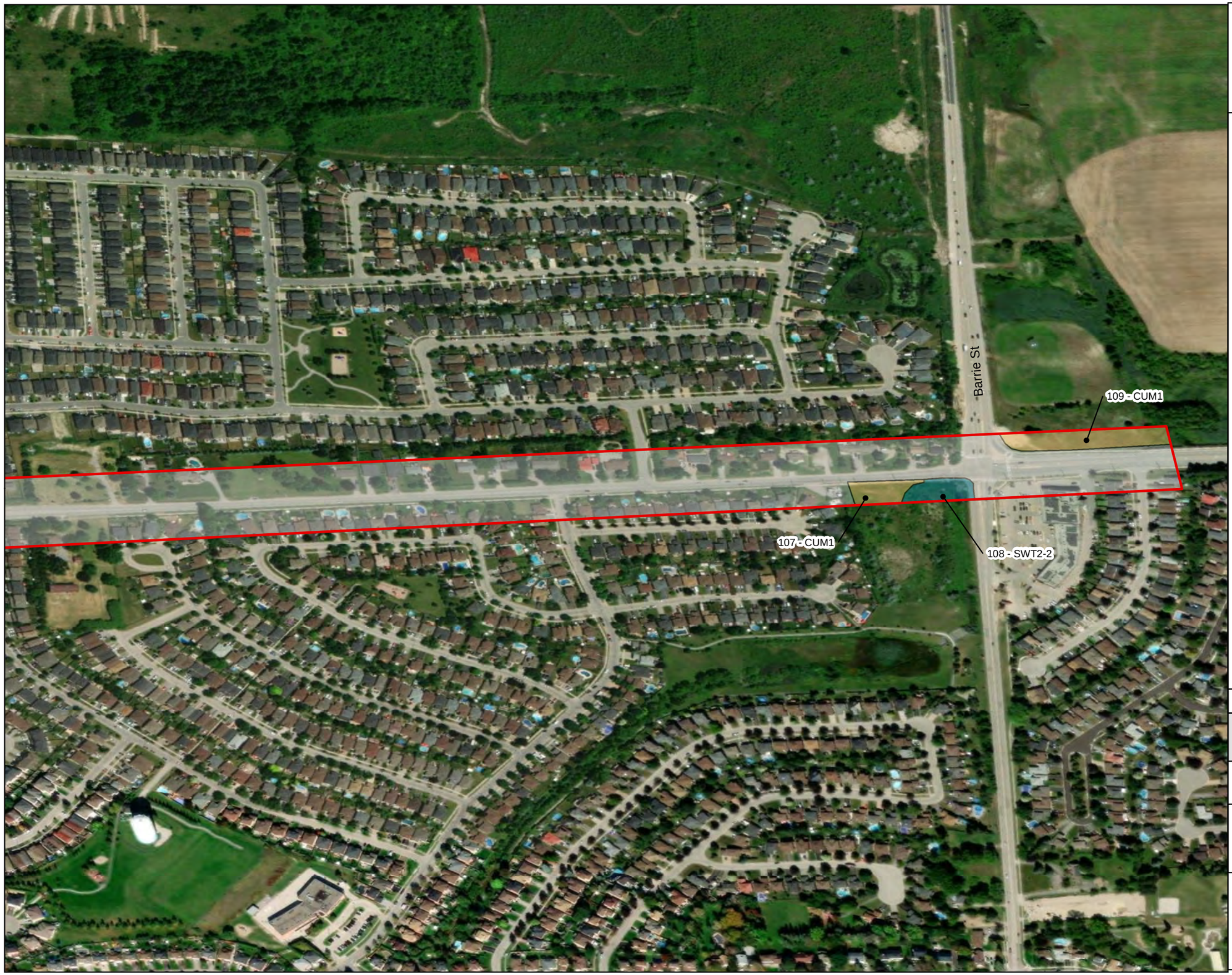
Existing Conditions

Date: June 2023
Author: KB
Projection: UTM_Zone_17N
Project #: 66054

0 137.5 275
Metres

N

Aquafor Beech Limited




Bradford West Gwillimbury

**Legend**

- Study
- Agricultural (AGR)
- Anthropogenic (ANTH)
- Cultural Meadow (CUM)
- Cultural Woodland (CUW)
- Coniferous Forest (FOC)
- Mixed Forest (FOM)
- Hedgerow (HR)
- Meadow Marsh (MAM)
- Shallow Marsh (MAS)
- Shallow Aquatic (SAS)
- Deciduous Swamp (SWD)
- Swamp Thicket (SWT)

Figure 3-1

Existing Conditions

Date: June 2023
Author: KB
Projection: UTM_Zone_17N
Project #: 66054

0 140 280
Metres

N

Aquafor Beech Limited

Photo 1: ELC Polygon 1

Photo 2: ELC Polygon 2

Photo 3: ELC Polygon 4

Photo 4: ELC Polygon 5

Photo 5: ELC Polygon 6

Photo 6: ELC Polygon 7

**Figure 3-2: Vegetation Community Representative Photographs (1 of 4)**

Photo 7: ELC Polygon 9

Photo 8: ELC Polygon 12

Photo 7: ELC Polygon 13.01

Photo 8: ELC Polygon 13.2

Photo 9: ELC Polygon 013.3

Photo 10: ELC Polygon 101

**Figure 3-3: Vegetation Community Representative Photographs (2 of 4)**


Photo 11: ELC Polygon 102


Photo 12: ELC Polygon 103


Photo 13: ELC Polygon 104


Photo 14: ELC Polygon 105


Photo 15: ELC Polygon 106


Photo 16: ELC Polygon 107

**Figure 3-4: Vegetation Community Representative Photographs (3 of 4)**

Photo 11: ELC Polygon 108

Photo 12: ELC Polygon 109

**Figure 3-5: Vegetation Community Representative Photographs (4 of 4)**

## 3.2 Flora

Botanical inventories were undertaken in concert with vegetation community surveys. A total of 168 vascular plants were identified in the study area, of which 162 were identified to species and six were identified only to genus due to a lack of identifiable characteristics. **Table 3-2**, below, provides an overview of the results of the botanical inventory. A complete list of species recorded is provided in **Appendix A.**

One of the observed species, Black Ash, is currently listed as an Endangered species under the provincial *Endangered Species Act*. That species will be discussed further with other at-risk flora and fauna in **Section 4**. Generally, the vegetation communities that were found in the study area are of reasonably high quality; there were nine species found that have a high Coefficient of Conservatism (CC) value, and the overall Floristic Quality Index (FQI) for the area was 38.9. This is likely because of minimal anthropogenic disturbance in the features adjacent to the ROW between Professor Day Drive and Summerlyn Trail.

**Table 3-2: Botanical Inventory Overview**

| | | | |
|---|---|---|---|
| **Species Breakdown** | Total Species: | 168 | 168 species were recorded within the study area. There were significantly more native species recorded than introduced species. The bulk of the native species were recorded in the communities located between Professor Day Dr and Summerlyn Trail. The communities along 10 Sideroad are generally dominated by non native species with some dominated by non-native invasive European Common Reed and Black Locust. |
| | Native Species: | 98 (58.1%) | |
| | Introduced Species: | 64 (38.3%) | |
| | Species identified only to genus: | 6 (3.6%) | |

| | | | |
|---|---|---|---|
| **Significance** | Species at Risk:<br><br>Provincially Rare Species:<br><br>Regionally Rare species: | 1<br><br>0<br><br>8 | Black Ash is provincially Endangered. This species was found in ELC polygons 5 and 7.<br><br>Eight species are considered rare within LSRCA's jurisdiction (LSRCA, 2003):<br>• Water Beggarticks (*Bidens beckii*) - ELC polygons 4 and 5<br>• Marsh Horsetail (*Equisetum palustre*) – ELC polygons 1 and 4<br>• Spotted Geranium (*Geranium maculatum*) – ELC polygon 2<br>• Yellow Water Buttercup (*Ranunculus flabellaris*) – ELC polygon 5<br>• Bristly Black Currant (*Ribes lacustre*) – ELC polygon 7<br>• One-seeded Bur-cucumber (*Sicyos angulatus*) – ELC polygon 6<br>• Arrow-leaved Aster (*Symphyotrichum urophyllum*) – ELC polygon 7<br>• Eastern Ninebark (*Physocarpus opulifolius*) – ELC polygon 13.1 |
| **Coefficient of Conservatism (CC)** | Species with CC greater than 7: | 9 | • Water Beggarticks (*Bidens beckii*) – CC: 8<br>• Marsh Horsetail (*Equisetum palustre*) - CC: 10<br>• Purple Joe Pye Weed (*Eutrochium purpureum var. purpureum*) - CC: 8<br>• Black Ash (*Fraxinus nigra*) - CC: 7<br>• Inland Rush (*Juncus interior*) - CC: 8<br>• Tamarack (*Larix laricina*) - CC: 7<br>• Yellow Water Buttercup (*Ranunculus flabellaris*) - CC: 7<br>• Bristly Black Currant (*Ribes lacustre*) - CC: 7<br>• American Mountain-ash (*Sorbus americana*) - CC: 8<br><br>CC values are range from 1 to 10 and are assigned based on a species' likelihood to be found in a relatively unaltered landscape (Oldham *et al.* 1995). Plants with high CC values are found only in a relatively narrow range of conditions provided by specific habitats and tend to be intolerant to anthropogenic disturbances. Species with low CC values are able to persist in a wide variety of habitats and are generally more tolerant to anthropogenic disturbances. |

| | | | |
|---|---|---|---|
| **Floristic Quality Index (FQI)** | FQI: | 38.9 | FQI is a calculated value based on species richness and quality of species (i.e., CC value), see below for the equation. A high FQI indicates a higher quality of habitat.<br><br>$$FQI = average\ CC\sqrt{species\ richness}$$<br><br>Calculation is based on the number of species with CC values assigned (in this case, 99).<br><br>Generally, FQI greater than 50 is considered high; 30 to 49 is medium, and less than 30 is considered low. This study area has an FQI of 38.9 which is medium likely due to the high ratio of native species that was observed in the remnant natural area south of Line 8. Although there are residential neighbourhoods in close proximity to that feature, there was very little anthropogenic disturbance observed save for dumping activities along the farm laneway/access road in ELC polygon 8. Few to no informal trails were observed, likely due to the prevalence of ponded wetlands, and very few invasive species have established in this area. The remainder of the study area outside of that one natural feature exhibited much higher levels of disturbance. |

## 3.3 Wetlands

Wetland communities were identified during the ELC assessment exercise described above:

- Polygon 1 - MAS2-1 (Cattail Mineral Shallow Marsh) / SWD3-2 (Silver Maple Mineral Deciduous Swamp) complex
- Polygon 4 - SWD3-2 (Silver Maple Mineral Deciduous Swamp) / SWD4-1 (Willow Mineral Deciduous Swamp) complex
- Polygon 5 - SWD4-1 (Willow Mineral Deciduous Swamp)
- Polygon 6 - SWT2-10 (Nannyberry Thicket Swamp) / SWT2 (White Cedar Thicket Swamp) complex
- Polygon 9 - MAS2-1 (Cattail Mineral Shallow Marsh)
- Polygon 12 - MAS2-1 (Cattail Mineral Shallow Marsh)
- Polygon 13.2 – MAM2-5 - Narrow-leaved Sedge Mineral Meadow Marsh inclusion within polygon 13.1
- Polygon 13.3 – MAM2-2 – Reed Canary Grass Mineral Meadow Marsh
- Polygon 102 – MAS2-1 – Cattail Mineral Shallow Marsh
- Polygon 103 – MAS2 - Mineral Shallow Marsh
- Polygon 105 – SWT2-2 – Willow Mineral Thicket Swamp
- Polygon 108 – SWT2-2 – Willow Mineral Thicket Swamp

Wetland areas have been illustrated for reference on **Figure 3-6**. No wetlands are classified as a Provincially Significant Wetland (PSW).




**Legend**

- Study Area

Ecological Land Classification

- Meadow Marsh (MAM)
- Shallow Marsh (MAS)
- Shallow Aquatic (SAS)
- Deciduous Swamp (SWD)
- Swamp Thicket (SWT)

Figure 3-6

Wetlands

Date: November 2023
Projection: UTM_Zone_17N
Author: KB

0 462.5 925
Metres

N

Aquafor Beech Limited

## 3.4 Terrestrial Wildlife

### 3.4.1 Migratory Birds

Breeding bird surveys were initially conducted in the study area over the course of two site visits in 2017, as was defined in **Table 2-1**. Aquafor's ecologists surveyed for birds during additional site visits completed in 2019 and 2023, although the timing of those site visits was not consistent with the recommended breeding bird survey window and could therefore have included some migrant species. Nevertheless, the completed surveys provide an accounting of the bird species and community/habitat types that are present in the study area, and are considered sufficient to provide an accounting of constraints/sensitivities for the current assignment.

A total of 48 bird species were encountered during one or both of the survey periods; a full species list of birds for the study area is provided in **Table 3-3**, including incidental observations and species from background records where available.

Of the 48 species encountered, the vast majority are considered common and widespread in Ontario. Two SAR birds were recorded, Bank Swallow and Barn Swallow. Bank Swallows were observed 2017 north of the study area along Sideroad 10 but were not seen or heard in 2023. Barn Swallows were observed flying over stormwater ponds north of Line 8 in 2023. No nests were noted but the culvert located between Professor Day Dr. and Summerlyn Trail. was not possible due to high water levels and had some potential to provide nesting habitat (i.e., a precast concrete box culvert). Culverts along Sideroad 10 were all small corrugated pipe culverts that don't tend to provide nesting opportunities for this species.

**Table 3-3: Bird Species List**

| Common Name | Scientific Name | Highest Observed Breeding Evidence | Status | | Data Source |
|---|---|---|---|---|---|
| | | | S-Rank | ESA/ SARA | |
| American Crow | *Corvus brachyrhychos* | Possible | S5 | - | ABL 2017<br>ABL 2023 |
| American Goldfinch | *Spinus tristis* | Possible | S5 | - | ABL 2017<br>ABL 2019<br>ABL 2023 |
| American Kestrel | *Falco sparverius* | Possible | S4 | - | ABL 2017 |
| American Redstart | *Setophaga ruticilla* | Probable | S5B | - | ABL 2017<br>ABL 2019 |
| American Robin | *Turdus migratorius* | Probable | S5 | - | ABL 2017<br>ABL 2019<br>ABL 2023<br>iNaturalist |
| Baltimore Oriole | *Icterus galbula* | Possible | S4B | - | ABL 2017 |
| **Bank Swallow** | ***Riparia riparia*** | **Probable** | **S4B** | **THR** | **ABL 2017** |
| **Barn Swallow** | ***Hirundo rustica*** | **Observed** | **S4B** | **SC** | **ABL 2023** |
| Belted Kingfisher | *Megaceryle alcyon* | Confirmed | S5B | - | ABL 2017 |
| Black-capped Chickadee | *Poecile atricapillus* | Probable | S5 | - | ABL 2017<br>ABL 2019<br>ABL 2023 |
| Black-throated Green Warbler | *Setophaga virens* | Possible | S5B | - | ABL 2023 |
| Blue Jay | *Cyanocitta cristata* | Possible | S5 | - | ABL 2017 |

| Common Name | Scientific Name | Highest Observed Breeding Evidence | Status | | Data Source |
|---|---|---|---|---|---|
| | | | S-Rank | ESA/ SARA | |
| Brown-headed Cowbird | *Molothrus ater* | Probable | S5 | - | ABL 2017<br>ABL 2023 |
| Canada Goose | *Branta canadensis* | Possible | S5 | - | ABL 2017<br>ABL 2023<br>iNaturalist |
| Cedar Waxwing | *Bombycilla cedrorum* | Possible | S5 | - | ABL 2017<br>ABL 2019 |
| Chipping Sparrow | *Spizella passerina* | Possible | S5B | - | ABL 2017 |
| Common Grackle | *Quiscalus quiscula* | Possible | S5 | - | ABL 2017<br>ABL 2023 |
| Common Yellowthroat | *Geothlypas trichas* | Probable | S5B | - | ABL 2017 |
| Cooper's Hawk | *Accipiter cooperii* | Possible | S4 | - | ABL 2017 |
| Eastern Phoebe | *Sayornis phoebe* | Possible | S5B | - | ABL 2017<br>ABL 2019 |
| European Starling | *Sturnus vulgaris* | Confirmed | SNA | - | ABL 2017<br>ABL 2023 |
| Gray Catbird | *Dumetella carolinensis* | Possible | S5B | - | ABL 2017<br>ABL 2019 |
| Great Blue Heron | *Ardea herodias* | Possible | S4 | - | ABL 2017 |
| Great Crested Flycatcher | *Myiarchus crinitus* | Possible | S5B | - | ABL 2017<br>ABL 2019 |
| Hairy Woodpecker | *Dryobates villosus* | n/a - incidental | S5 | - | ABL 2017 |
| Horned Lark | *Eremophila alpestris* | Possible | S4 | - | ABL 2017 |
| House Finch | *Haemorhous mexicanus* | Probable | SNA | - | ABL 2017<br>ABL 2023<br>iNaturalist |
| House Sparrow | *Passer domesticus* | Confirmed | SNA | - | ABL 2017<br>ABL 2023 |
| Killdeer | *Charadrius vociferous* | Probable | S4B | - | ABL 2017<br>ABL 2023 |
| Mallard | *Anas platyrhynchos* | Possible | S5 | - | ABL 2017<br>ABL 2023 |
| Marsh Wren | *Cistothorus palustris* | Possible | S4B, S3N | - | ABL 2023 |
| Mourning Dove | *Zenaida macroura* | Confirmed | S5 | - | ABL 2017<br>ABL 2023 |
| Northern Cardinal | *Cardinalis cardinalis* | Possible | S5 | - | ABL 2017<br>ABL 2019<br>ABL 2023 |
| Northern Flicker | *Colaptes auratus* | Possible | S5 | - | ABL 2017 |
| Northern Harrier | *Circus cyaneus* | Possible | S5B | - | ABL 2017 |
| Northern Rough-winged Swallow | *Stelgidopteryx serripennis* | Possible | S4B | - | ABL 2017 |
| Red-eyed Vireo | *Vireo olivaceus* | Possible | S5B | - | ABL 2017 |
| Red-tailed Hawk | *Buteo jamaicensis* | n/a | S5 | - | iNaturalist |
| Red-winged Blackbird | *Agelaius phoeniceus* | Probable | S5 | - | ABL 2017<br>ABL 2019<br>ABL 2023 |

| Common Name | Scientific Name | Highest Observed Breeding Evidence | Status | | Data Source |
|---|---|---|---|---|---|
| | | | S-Rank | ESA/ SARA | |
| Ring-billed Gull | *Larus delawarensis* | Observed | S5 | - | ABL 2017<br>ABL 2023 |
| Rock Pigeon (feral pigeon) | *Columba livia* | Possible | SNA | - | ABL 2017 |
| Savannah Sparrow | *Passerculus sandwichensis* | Probable | S5B | - | ABL 2017<br>ABL 2023 |
| Song Sparrow | *Melospiza melodia* | Probable | S5 | - | ABL 2017<br>ABL 2019<br>ABL 2023 |
| Swamp Sparrow | *Melospiza georgiana* | Possible | S5B S4N | - | ABL 2023 |
| Tree Swallow | *Tachycineta bicolor* | Possible | S4S5B | - | ABL 2017<br>ABL 2019 |
| Warbling Vireo | *Vireo gilvus* | Probable | S5B | - | ABL 2017 |
| Willow Flycatcher | *Empidonax traillii* | Probable | S4B | - | ABL 2017 |
| Yellow Warbler | *Setophaga petechia* | Probable | S5B | - | ABL 2017<br>ABL 2019<br>ABL 2023 |

### 3.4.2 Amphibians

Amphibian calling surveys were completed in 2019 to determine the relative extent and significance of breeding habitat in natural wetland communities in the study area; wetland areas were previously identified and illustrated in **Section 3.3**. The habitat condition in the study area wetlands (particularly in ELC community #1) consists of isolated and interconnected wetland pools in a predominantly treed landscape. Amphibian breeding was observed to be scattered in small numbers throughout the area, rather than concentrated in any one location. Due to this homogeneity of habitat as well as the overall small size of the feature as a whole, the entire feature was considered to be one survey location. The conditions during and results of Aquafor's 2019 amphibian surveys are summarized in **Table 3-4** and **Table 3-5**, respectively.

**Table 3-4: Amphibian Call Survey Conditions Summary**

| Survey # | Date | Start Time | Air Temp. | Site Conditions/Comments |
|---|---|---|---|---|
| 1 | 2019-05-08 | 20:53 | 10°C | No precipitation; 20% cloud cover; low wind; high traffic noise from Line 8 causing interference w/ survey |
| 2 | 2019-05-29 | 22:14 | 15°C | No precipitation or cloud cover; low wind; traffic noise still present |
| 3 | 2019-06-25 | 22:25 | 20°C | No precipitation, wind, or cloud cover; traffic noise still present. |

**Table 3-5: Amphibian Call Survey Results Summary**

| Species | | Max Calling Code Observed |
|---|---|---|
| Scientific Name | Common Name | |
| *Pseudacris crucifer* | Spring Peeper | 2 (10 individuals estimated) |
| *Dryophytes versicolor* | Gray Treefrog | 3 (full chorus) |
| *Lithobates clamitans* | Green Frog | 1 (2 individuals) |

Additional incidental observations and records of amphibians in the study area are as follows:

- A single American Toad (*Anaxyrus americanus*) was heard calling by Aquafor staff on May 29 as the surveyors pulled up on the roadside adjacent to the wetland, but it ceased calling shortly thereafter and did not recommence during the timed survey period.
- Green Frogs were observed directly (no calls) during daytime surveys along the ELC community #1 corridor, more so in the eastern portion of the unit. Multiple records of Green Frogs exist for the study area via the iNaturalist website.
- In 2023, a Northern Leopard Frog (*Lithobates clamitans*) and American Toad were heard calling by Aquafor during the daytime from ELC polygon 9.

### 3.4.3 Other Wildlife

Observations of other wildlife groups (e.g., reptiles, mammals, insects) made incidentally during field surveys are detailed in **Table 3-6**, below. Please note that incidentally-observed bird and amphibian species have been previously discussed in the preceding sections and will not be repeated.

All wildlife species observed are considered secure in the province.

**Table 3-6: Other Wildlife Species List**

| Species | | Status | Data Source | Discussion |
|---|---|---|---|---|
| *Mammals* | | | | |
| Beaver | *Castor canadensis* | S5 | Aquafor | Chewed stumps |
| Eastern Cottontail | *Sylvilagus floridanus* | S5 | iNaturalist | |
| Eastern Gray Squirrel | *Sciurus carolinensis* | S5 | iNaturalist | |
| *Reptiles* | | | | |
| Eastern Garter Snake | *Thamnophis sirtalis sirtalis* | S5 | Aquafor, iNaturalist | |
| *Arthropods* | | | | |
| Autumn Meadowhawk | *Sympetrum vicinum* | S5 | iNaturalist | |
| Bicolored Sweat Bee | *Agapostemon virescens* | S5 | Aquafor | |
| Bee-mimic Beetle | *Trichiotinus assimilis* | S4S5 | Aquafor | |
| Bluet species | *Enallagma* sp. | - | Aquafor | |
| Bold Jumping Spider | *Phidippus audax* | SU | iNaturalist | |
| Brown-belted Bumble Bee | *Bombus griseocollis* | S5 | iNaturalist | |
| Cabbage White | *Pieris rapae* | SNA | Aquafor | |
| Common Eastern Bumble Bee | *Bombus impatiens* | S5 | Aquafor | |
| Common Whitetail | *Plathemis lydia* | S5 | Aquafor | |
| Common Willow Calligrapher Beetle | *Calligrapha multipunctata* | S4S5 | Aquafor | |
| Eastern Forktail | *Ischnura verticalis* | S5 | Aquafor | |
| Eastern Parson Spider | *Herpyllus ecclesiasticus* | S4S5 | iNaturalist | |
| Emerald Spreadwing | *Lestes dryas* | S5 | Aquafor | |
| Forest Tent Caterpillar Moth | *Malacosoma disstria* | S5 | iNaturalist | |
| Japanese Beetle | *Popillia japonica* | SNA | iNaturalist | |

| Species | | Status | Data Source | Discussion |
|---|---|---|---|---|
| Little Wood Satyr | *Megisto cymela* | S5 | Aquafor | |
| Mourning Cloak | *Nymphalis antiopa* | S5 | Aquafor | |
| Northern Crescent | *Phyciodes cocyta* | S5 | Aquafor | |
| Pale Glyph Moth | *Protodeltote albidula* | S5 | Aquafor | |
| Pearl Crescent | *Phyciodes tharos* | S5 | Aquafor | |
| Polyphemus Moth | *Antheraea polyphemus* | S5 | iNaturalist | |
| Shamrock Orbweaver | *Araneus trifolium* | S5 | iNaturalist | |
| Squash Vine Borer Moth | *Melittia cucurbitae* | S4S5 | iNaturalist | |
| Stink bug species | *Euschistus* sp. | - | Aquafor | |
| Virginian Tiger Moth | *Spilosoma virginica* | S5 | iNaturalist | |
| Western Honey Bee | *Apis mellifera* | SNA | iNaturalist | |
| White-striped Black Moth | *Trichodezia albovittata* | S5 | Aquafor | |
| Widow Skimmer | *Libellula luctuosa* | S5 | Aquafor | |

## 3.5 Aquatic Habitat

Three unnamed tributaries are present within the study area. The first tributary crosses Sideroad 10 at two locations, and at one location on Line 8 to the northwest of the Line 8/Sideroad 10 Intersection. The second tributary crosses Line 8 approximately 160 m west of Professor Day Drive, and the third tributary crosses Line 8 at approximately 140 m east of the Line 8/Barrie Street/Yonge Street Intersection and on Barrie Street, approximately 140 m south of the intersection.

The first and third unnamed tributaries are considered to be intermittent drainage features and may act as supporting fish habitat during wet conditions. The second unnamed tributary is a significant drainage feature conveyed by a large box culvert across Line 8, connecting wetland areas north and south of Line 8.

Existing aquatic ecology conditions for the study area were assessed and summarized using background information along with in-field observations made by Aquafor staff. A summary of the existing aquatic ecology conditions is provided below. The extent of the study covers approximately 3.2 km along Line 8 and encompasses the three tributary crossings as illustrated on **Figure 3-7**.

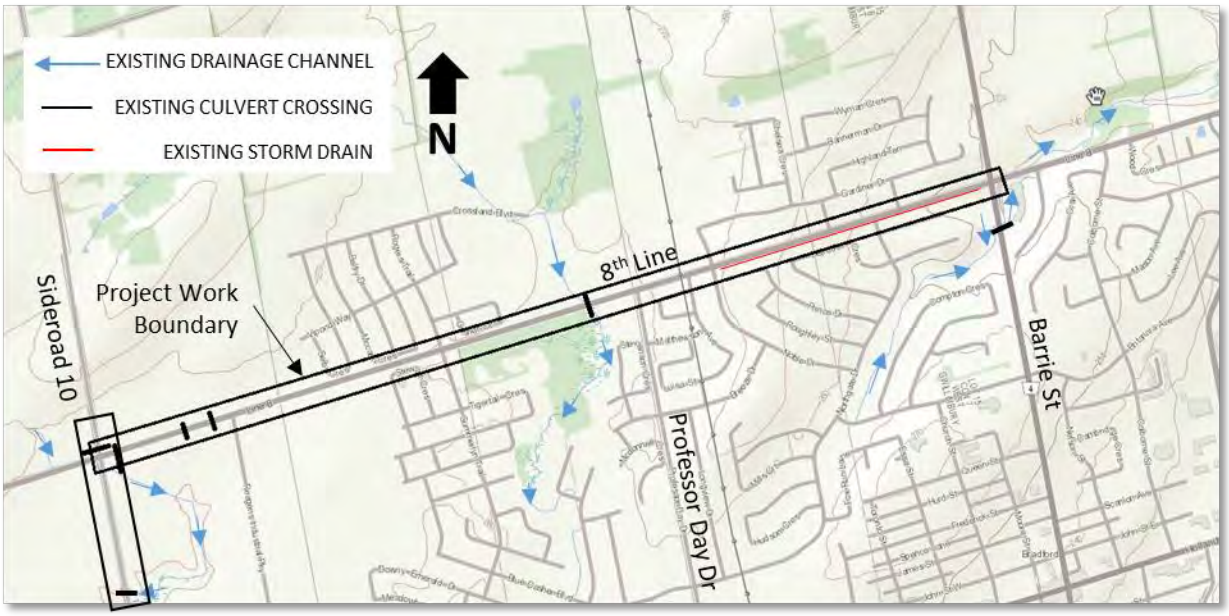



**Figure 3-7: Bradford Line 8 Class EA Study Area**

According to the West Holland River Subwatershed Management Plan, the study area falls within one of the largest subwatersheds in the Lake Simcoe Basin and includes many tributaries that originate within the Oak Ridges Moraine (LSRCA, 2010). Fraser Creek, which the three study area tributaries are online with, is not one of the tributaries influenced by the moraine and therefore differs in thermal regime and aquatic communities from those that originate in the moraine. The Subwatershed Management Plan notes that Fraser Creek generally shows characteristics of impairment typically associated with agricultural-adapted watercourses (LSRCA, 2010).

The area of Fraser Creek within the study area shows influence from adjacent landuse including agriculture, residential developments, and industrial areas, with most of the tributary reaches showing signs of channelization and realignment to accommodate development and stormwater management infrastructure (LSRCA, 2010). This information was confirmed by Aquafor during the May 8, 2019 site visit, during which all tributaries were found to display stormwater influence, hardened and channelized sections, and little riparian cover. Results from benthic macroinvertebrate communities provided by LSRCA support that Fraser Creek is impaired (LSRCA, 2010).

Fish community studies were not available for the study area. However, community results as provided by the LSRCA documented 34 fish species within the West Holland River subwatershed. The Subwatershed Management Plan notes that 98 known barriers exist within the subwatershed, with an emphasis put on Fraser Creek, indicating a lack of connectivity for fish passage. However, the location and extent of these barriers are unknown. Fraser Creek should be considered fish habitat, potentially containing fish or fish habitat at any time during any given year. A list of potential fish species as documented by background resources is displayed below in **Table 3-7**.

**Table 3-7: Fish Species of the West Holland River Subwatershed (LSRCA, 2010)**

| Common Name | Scientific Name |
|---|---|
| Black Crappie^ | *Pomoxis nigromaculatus* |
| Blacknose Dace | *Rhinichthys atratulus* |
| Bluntnose Minnow | *Pimephales notatus* |
| Bowfin | *Amia calva* |
| Brassy Minnow | *Hybognathus hankinsoni* |
| Brook Stickleback | *Culaea inconstans* |
| Brook Trout | *Salvelinus fontinalis* |
| Brown Bullhead | *Ameiurus nebulosus* |
| Central Mudminnow | *Umbra limi* |
| Common Carp* | *Cyprinis carpio* |
| Common Shiner | *Luxilus cornutus* |
| Creek Chub | *Semotilus atromaculatus* |
| Emerald Shiner | *Notropias atherinoides* |
| Fathead Minnow | *Pimephales promelas* |
| Golden Shiner | *Notemigonus crysoleucas* |
| Goldfish* | *Carassius auratus* |
| Greenside Darter | *Etheostoma blennioides* |
| Iowa Darter | *Etheostoma exile* |
| Johnny Darter | *Etheostoma nigrum* |
| Largemouth Bass | *Micropterus salmoides* |
| Longnose Dace | *Rhinichthys cataractae* |
| Mottled Sculpin | *Cottus bairdi* |
| Northern Pike | *Esox lucius* |
| Northern Redbelly Dace | *Phoxinus eos* |
| Pearl Dace | *Margariscus margarita* |
| Pumpkinseed | *Lepomis gibbosus* |
| Rainbow Darter | *Etheostoma caeruleum* |
| Redside Dace~ | *Clinostomus elongatus* |
| Rock Bass | *Ambloplites rupestris* |
| Slimy Sculpin | *Cottus cognatus* |
| Spottail Shiner | *Notropis hudsonius* |
| White Sucker | *Catostomus commersoni* |
| Yellow Bullhead | *Ameiurus natalis* |
| Yellow Perch | *Perca flavescens* |
| *non-native invasive species ~endangered species ^non-native species | |

While Redside Dace (*Clinostomus elongatus*), an aquatic SAR, is listed among the species above, the Department of Fisheries and Oceans Canada (DFO) does not recognize the study area for containing SAR (or having the potential to contain SAR) or containing critical habitat for SAR (Department of Fisheries and Oceans, 2019). Furthermore, the Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) does not report any endangered species within the study area, either presently or historically. While it is unlikely that aquatic SAR are present within the study are based on the aforementioned criteria and Aquafor's observations on the site and habitat conditions, the study area

provides potentially suitable habitat for other fish species and should therefore be considered fish habitat in order to comply with the Federal *Fisheries Act*.

**DFO Regulatory Review:**
The Federal *Fisheries Act* requires that projects avoid causing the death of fish and the harmful alteration, disruption or destruction of fish habitat unless authorized by the Minister of Fisheries and Oceans Canada. This applies to work being conducted in or near waterbodies that support fish at any time during any given year.

For works proposed at a site where fish and fish habitat have the potential to be affected, the works should be cross-referenced with the DFO "Projects Near Water" online service to determine if a request for regulatory review under the federal Fisheries Act is required (Department of Fisheries and Oceans, 2019). Within the service, the Minister details steps for determining if a project requires regulatory review. Steps include "Measures to protect fish and fish habitat" as well as "Waterbodies where review isn't required" (Department of Fisheries and Oceans, 2019). The detailed design package should include a detailed mitigation plan to reduce the potential of causing the death of fish and the harmful alteration, disruption or destruction of fish habitat, including all mitigation measures set forth by the DFO. Should all mitigation measures outlined in this online service be applied to the works, the DFO states that a request for regulatory review is not required. In projects where impacts to fish and fish habitat cannot be fully mitigated using the DFO measures, and the project does not fall within waterbodies where regulatory review isn't required or the scope of the project is not covered under standards and code of practice, proponents are asked to submit a request for review to their region's Fish and Fish Habitat Protection Program office. The proponent is responsible for completely implementing the protection measures in order to comply with the Federal *Fisheries Act*.

# 4 Species At Risk Screening

Aquafor compiled a list of SAR which have previously occurred or could potentially occur in the study area using available background information sources including: the Natural Heritage Information Center (NHIC) online provincial SAR database; community science observation records contained on the iNaturalist and eBird websites; online aquatic SAR mapping maintained by Fisheries and Oceans Canada (DFO); the Ontario Breeding Bird Atlas (OBBA); the Ontario Reptile and Amphibian Atlas (ORAA), and the Ontario Butterfly Atlas (OBA). Prior correspondence with the MNR was also available which indicated the potential for Butternut (Endangered), Snapping Turtle (Special Concern), Northern Myotis (Endangered), Little Brown Myotis (Endangered), and Tri-colored Bat (Endangered) to occur on the subject lands. Additional bat species have also been added to the SAR in Ontario list since the completion of the prior version of this report; the new species have been added to the screening table below.

The resulting list of species (**Table 4-1**) was screened by comparing the habitat requirements of each species to the habitat currently present in the study area. Where no habitat for the indicated species was present in the study area, the species was screened out of further review. Where potential for habitat was present, any recommendations for further study and/or mitigation measures during construction were flagged.

The key points arising from the SAR screening are as follows:

- **Black Ash** was found by Aquafor in ELC Polygons 5 and 7. This species is currently listed as an Endangered species under the Ontario *Endangered Species Act* (ESA), which prohibits the death, harm, or harassment of listed species as well as damage to or destruction of their habitat without

authorization or complying with the requirements of a regulatory exemption. Black Ash habitat is defined as including the area within 30 m from the stem of any Black Ash meeting the criteria laid out in the relevant regulations (i.e., healthy individual with stem height 1.37 m or higher and diameter 8 cm or greater, located in specified municipalities which include the County of Simcoe) – these requirements are part of O. Reg. 6/24 and came into effect in January of 2024. During detailed design, it will be necessary to determine if any of the proposed works encroach into the 30 m habitat area surrounding a Black Ash and whether those individuals are considered healthy for the purposes of confirming protected habitat.

- **Butternut** was not identified during Aquafor's ecological site investigations nor during the previous tree inventory, but habitat conditions in portions of the study area could be suitable for this species. When the area of impact has been finalized during detailed design, it is recommended to complete a sweep for any Butternut individuals that might be present (including seedlings/saplings that might have grown in since prior investigations occurred) as a due diligence measure. If any Butternuts are found, a health assessment should be completed to determine whether they are protected under regulation, and if so, then a habitat area of 25 m should be identified for the purpose of assessing impacts and associated requirements under the ESA.

- **Bank Swallows** were observed in 2017 north of the study area in the gravel pit along 10 Sideroad. They were, however, not observed there in 2023. It is not likely that this species would nest within the road allowance in the study area, but it is possible that large-scale storage of soil/gravel during construction or areas of excavation that create vertical banks, if such is needed, could attract individuals looking to establish nesting habitat. Construction methods should avoid creating vertically excavated surfaces or large soil stockpiles during the nesting season to avoid the potential for conflicts with Bank Swallows.

- **Barn Swallow** nests were not observed during 2023 field investigations but there is potential that Barn Swallows could nest in or on structures in the study area, such as existing box culverts. It is recommended that prior to any construction during the nesting season, a qualified biologist completes a nest check in affected structures to identify any potential for nest conflicts related to this or other species protected under the *Migratory Birds Convention Act*.

- **SAR Bats** could potentially use some of the trees located within the study area as maternity roosting habitat. As the proposed road works are expected to be maintained within the existing ROW, impacts to trees are expected to be minimal. Regardless, once the area of impact has been finalized during detailed design, tree removals should be confirmed and cross-referenced with bat habitat potential to identify any trees which may trigger additional requirements under the ESA.

- **SAR Turtles** that have the potential to inhabit the study area and adjacent lands include Midland Painted Turtle, Snapping Turtle, and Northern Map Turtle. Potentially suitable habitat is present within the study area north of Line 8, east of Gosnel Circle in the SWM pond and wetlands associated with the adjacent creek. As the three identified turtle species are listed as Special Concern, there are no regulatory requirements for them or their habitat under the ESA; regardless, mitigation measures for turtles and turtle habitat are recommended to be incorporated into the construction tender.

- **Yellow-banded Bumble Bee** is a generalist species that can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands and urban areas. Appropriate habitat is present in various locations within the study area (primarily unmown roadsides and meadow patches). Minimal impacts are expected to habitat; regardless, restoration measures are recommended to include a high abundance of native wildflowers to help support this species.

**Table 4-1: Species at Risk Screening Results**

| Species | | ESA Status | SARA Status | S-Rank | Data Source | Habitat Requirements | Recommendations/Discussion |
|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | | | | | | |
| *Plants* | | | | | | | |
| Black Ash | *Fraxinus nigra* | END | END | S4 | Aquafor | A shade-intolerant hardwood tree species that occurs on moist to wet sites such as swamps, bogs and riparian areas; it has been heavily impacted by Emerald Ash Borer in recent years. | **Confirmed present** in the study area. An updated tree inventory should be completed during detailed design to inform the removals plan and identify any requirements under the ESA. Recommended to preserve living Black Ash trees wherever possible. |
| Butternut | *Juglans cinerea* | END | END | S2? | NHIC, MNR | Generally grows in rich, moist, and well-drained soils, and often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows. | Potentially present in the study area based on suitable habitat conditions, but was not identified during surveys within the study area (including a tree inventory that covered up to 35 m from the road allowance). As a due diligence measure, it is recommended to complete an updated tree inventory during detailed design which screens for any Butternut (including seedlings/saplings) within the affected study area. |
| *Birds* | | | | | | | |
| Bank Swallow | *Riparia riparia* | THR | THR | S4B | NHIC, eBird, OBBA | Nests in sand, clay or gravel riverbanks or steep riverbank cliffs, lakeshore bluffs or easily crumbled sand or gravel, gravel pits, road cuts, near grassland or cultivated fields that are close to water. Nesting sites are the limiting factor for species presence. | Previously confirmed present in the vicinity of the study area during the 2017 breeding bird surveys, associated with a gravel pit located on 10 Sideroad a short distance to the north of the project limits. Aquafor staff reviewed this area from the roadside during 2023 field investigations and did not observe any swallows flying in the vicinity; potential habitat for Bank Swallow within the study area was also reviewed, and no areas or features which provided suitable nesting habitat or which were observed to contain past nesting burrow were observed. It is therefore not anticipated that the current proposed works will impact Bank Swallow or its existing habitat. Construction works are recommended to avoid creating vertically-excavated surfaces or soil stockpiles during the nesting season to prevent any conflicts with Bank Swallows seeking nest locations. |
| Barn Swallow | *Hirundo rustica* | SC | SC | S4B | NHIC, eBird, OBBA | Often found foraging in farmland, along lake/river shorelines and wetlands, and in wooded clearings. Barn Swallows construct cup-shaped mud nests inside or outside buildings, under bridges and in road culverts, or on rock faces and caves. | Observed by Aquafor staff foraging over stormwater ponds north of Line 8. There is some potential for nesting habitat for this species to occur in study area culverts or on other structures; it is recommended that a qualified biologist complete a screening for active bird nests on affected structures prior to construction, should construction be occurring during the nesting season, as the *Migratory Birds Convention Act* prohibits the destruction of active nests of most songbirds. |
| Bobolink | *Dolichonyx oryzivorus* | THR | THR | S4B | NHIC, OBBA | Typically nests in open habitats (e.g., crops fields, grasslands, wet prairies, graminoid peatlands, abandoned fields dominated by tall grasses, remnants of uncultivated virgin tallgrass prairie, no-till cropland, small-grain fields, restored surface mining sites, and irrigated fields in arid regions). Requires large tracts of grassland habitat (>50 ha) in order to establish a nesting territory. | Habitat could potentially occur in agricultural lands beyond the existing road ROW, depending on the crops grown and whether fields are allowed to go fallow. However, Bobolink was not observed during field investigations in any year, and would not be expected to be impacted by any works within the existing road ROW. |

| Species | | ESA Status | SARA Status | S-Rank | Data Source | Habitat Requirements | Recommendations/Discussion |
|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | | | | | | |
| Eastern Meadowlark | *Sturnella magna* | THR | THR | S4B | NHIC, OBBA | Typically nests in open grasslands with dense ground cover (hay fields, meadows, fallow fields). It generally requires large tracts of grassland (>10 ha) in order to establish a nesting territory, but has been observed to use mosaics of smaller grassland areas, pastures, and similar. | Habitat could potentially occur in agricultural lands beyond the existing road ROW, depending on the crops grown and whether fields are allowed to go fallow. However, Eastern Meadowlark was not observed during field investigations in any year, and would not be expected to be impacted by any works within the existing road ROW. |
| Eastern Wood-pewee | *Contopus virens* | SC | SC | S4B | OBBA | This species is typically associated with deciduous and mixed forests, in which it prefers areas with little understory vegetation as well as forest clearings and edges. | Not documented in the study area during any year of investigation. However, suitable habitat conditions could potentially be present in forested communities located south of Line 8 between Professor Day Drive and Summerlyn Trail (ELC Polygon 007). Mitigation may be required in association with any tree removal from this area during the nesting season, as the *Migratory Birds Convention Act* prohibits the destruction of active nests of most songbirds. |
| Least Bittern | *Ixobrychus exilis* | THR | THR | S4B | NHIC | Least Bittern nests preferentially in large cattail marshes with a mix of open pools and channels. | Not recorded in the study area, but potentially suitable habitat occurs in the extensive area of cattail marsh located north of Line 8 between Professor Day Drive and Rogers Trail. The proposed road works are not currently expected to encroach into this area. |
| *Mammals* | | | | | | | |
| Eastern Red Bat | *Lasiurus borealis* | END | - | S4 | General Screen | Tend to roost in foliage of trees and occasionally shrubs with a preference to sites with overhead foliage and open flight space below. They are known to use both deciduous and coniferous forests but prefer deciduous. Maternity roosts tend to be tall large diameter trees that extend into or above the canopy. They often forage over water or in large openings (COSEWIC, 2023). | Potential suitable maternity roosting sites (trees with cavities, loose bark, snags, and/or crevices; large maples or oaks; other trees with clusters of dead or dying leaves/branches) may be present in or immediately adjacent to study area, particularly in association with the woodland located south of Line 8 between Summerlyn Trail and Professor Day Drive. Impacts to trees providing potential suitable maternity roosting sites (and any associated regulatory requirements) should be confirmed during detailed design in order to confirm whether there will be any requirements under the ESA. |
| Eastern Small-footed Myotis | *Myotis leibii* | END | - | S2S3 | General Screen | Maternity habitat occurs primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses, and under tree bark. | |
| Hoary Bat | *Lasiurus cinereus* | END | - | S4 | General Screen | Tend to roost in foliage of trees and occasionally shrubs with a preference to sites with overhead foliage and open flight space below. They are known to use both deciduous and coniferous forests but prefer deciduous. Maternity roosts tend to be tall large diameter trees that extend into or above the canopy. They often forage over water or in large openings (COSEWIC, 2023). | |
| Little Brown Myotis | *Myotis lucifugus* | END | END | S3 | MNR | Maternity roosting is associated primarily with forest habitat containing snags (i.e., standing cavity trees and/or trees with loose or peeling bark, cracks, or similar features which would allow roosting), although roosting will also occur in buildings (attics, barns, etc.). | |

| Species | | ESA Status | SARA Status | S-Rank | Data Source | Habitat Requirements | Recommendations/Discussion |
|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | | | | | | |
| Northern Myotis | *Myotis septentrionalis* | END | END | S3 | MNR | Maternity roosting is associated primarily with forest habitat containing snags (i.e., standing cavity trees and/or trees with loose or peeling bark, cracks, or similar features which would allow roosting). Occasionally found in structures (attics, barns, etc.) | |
| Silver-haired Bat | *Lasionycteris noctivagans* | END | - | S4 | General Screen | This species uses similar habitat to Northern Myotis and Little Brown Myotis. It roosts primarily under bark and in cavities of large diameter coniferous and deciduous trees. They often forage over water or in large openings (COSEWIC, 2023). | |
| Tri-colored Bat | *Perimyotis subflavus* | END | END | S3? | MNR | Maternity roosting occurs in trees or dead clusters of leaves or arboreal lichens on trees; oaks and maples preferred, particularly large-diameter specimens. | |
| *Reptiles* | | | | | | | |
| Midland Painted Turtle | *Chrysemys picta marginata* | - | SC | S4 | NHIC, ORAA | Typically inhabits quiet, warm, shallow water with abundant aquatic vegetation such as ponds, large pools, streams, ditches, swamps, marshy meadows. Eggs are laid in sandy places, usually in a bank or hillside, or in fields. Frequently observed basking in groups, particularly near overwintering sites. | Potentially suitable habitat is present within the study area north of Line 8, east of Gosnel Circle in the SWM pond, and in wetlands associated with the adjacent creek. Midland Painted Turtle could reasonably be expected to occur in areas of ponded water through the study area, and could move into adjacent work areas during the active season in search of nest sites. |
| Eastern Milksnake | *Lampropeltis triangulum* | - | SC | S4 | ORAA | Inhabits a wide variety of natural and anthropogenic habitats including prairies, meadows, pastures, hayfields, rocky outcrops, rocky hillsides and forests. Most often found in rural settings. | Potentially suitable habitat is present throughout the study area. Mitigation and monitoring during construction is recommended for this and other wildlife species as a general best practice. |
| Northern Map Turtle | *Graptemys geographica* | SC | SC | S3 | ORAA | This species generally prefers large, permanent waterbodies with emergent rocks or fallen trees to act as basking sites and an abundance of mollusc prey for females. | Potentially suitable habitat is present within the study area in association with large ponds and deeper sections of wetland/watercourse. This species is highly aquatic and typically does not move far from water, so would be less likely than the other flagged turtle species to move into the construction work area during the active season. |
| Snapping Turtle | *Chelydra serpentina* | SC | SC | S4 | NHIC, MNR, ORAA | Generally inhabits shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits. They overwinter in deeper pools that do not freeze to the bottom. | Potentially suitable habitat is present within the study area north of Line 8, east of Gosnel Circle in the SWM pond, and in wetlands associated with the adjacent creek. Snapping Turtle could reasonably be expected to occur in areas of ponded water through the study area, and could move into adjacent work areas during the active season in search of nest sites. |
| *Insects* | | | | | | | |
| Gypsy Cuckoo Bumble Bee | *Bombus bohemicus* | END | END | S1S2 | NHIC | Critical habitat has not been identified within Ontario. In recent years, this species has only been known to occur in Pinery Provincial Park. | Not expected to be present within the study area. |

| Species | | ESA Status | SARA Status | S-Rank | Data Source | Habitat Requirements | Recommendations/Discussion |
|---|---|---|---|---|---|---|---|
| **Common Name** | **Scientific Name** | | | | | | |
| Monarch | *Danaus plexippus* | SC | END | S4B | OBA | Monarchs exist primarily where milkweeds (*Asclepias* spp.), the obligate larval host plant, and other wildflowers grow. It is a ubiquitous species that can use abandoned farmland, roadsides, urban gardens and parks, and other anthropogenic open spaces as easily as high-quality natural meadows. | Expected to be present in the study area at large, though was not observed directly by Aquafor. No meadow communities along the ROW contained a high concentration of milkweeds so significant breeding habitat function is likely absent, but foraging/migratory habitat could still be present. Restoration plans are recommended to include native wildflowers and especially milkweed species. |
| Rusty-patched Bumble Bee | *Bombus affinis* | END | END | S1 | NHIC | Found in open habitat such as mixed farmland, urban settings, savannah, open woods and sand dunes. The only sightings of this bee in Canada since 2002 have been at Pinery Provincial Park. | Not expected to be present within the study area. |
| Yellow-banded Bumble Bee | *Bombus terricola* | SC | SC | S3S5 | NHIC | A generalist species that can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands and urban areas. | Appropriate habitat is present in the study area. Minimal potential for impacts is expected, and restoration plans are recommended to include native wildflowers. |

# 5 Significant Wildlife Habitat Assessment

Wildlife habitat is considered to be significant when it is "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity" of wildlife habitat (MMAH 2024). Specifically, when habitat provides features and functions critical to the survival of an individual, species, or group, it may be considered Significant Wildlife Habitat (SWH); for example, specialized vegetation communities, nest/den sites, overwintering sites, and migratory stopovers with particular characteristics may be limited on the landscape and/or provide habitat function during key life stages of the organism, and would therefore be considered significant.

Aquafor utilized the MNR's Significant Wildlife Habitat (SWH) Criteria Schedules for Ecoregion 6E (2015) to screen for and assess habitat within the current study area. A complete SWH screening and assessment results are provided in **Appendix B**.

In summary, the only category of habitat potentially present within the study area is Bat Maternity Colonies, in the event that the proposed works overlap with any treed areas. Candidate SWH related to bat maternity roosts occurs in forest and swamp vegetation communities with tree cavities and standing snags. Any tree removals from the forest or swamp community identified should consider the potential for SWH associated with bats (which would also be associated with SAR bat habitat as discussed in the previous section).

Outside of the study area (i.e., beyond the road ROW on adjacent lands) there were five SWH categories identified. They are as follows:

- Turtle Wintering Areas – Candidate
- Amphibian Breeding Habitat (Woodland) – Confirmed
- Amphibian Breeding Habitat (Wetlands) – Candidate
- Special Concern and Rare Wildlife Species – Candidate
- Amphibian Movement Corridors – Candidate

The features associated with these habitat types are not expected to be impacted as a part of this project, given the stated intention for construction to be restricted to the existing road ROW. General mitigation is recommended during construction, however, as a best practice measure for limiting indirect or off-site impacts (e.g., sediment and erosion controls to maintain water quality in offsite wetlands and water bodies; timing windows on vegetation removals; awareness/monitoring of wildlife present in the work area during construction).

# 6 Summary of Constraints and Recommendations

Based on the current design, the proposed road works are expected to be contained within the footprint of the existing roadway with minimal requirement for vegetation removal or other habitat impacts given that the ROW has generally been previously cleared or otherwise impacted. There is therefore a low overall potential for impacts expected as a result of the proposed works. With the application of general best-practice mitigation and protection measures and the enaction of a post-construction restoration plan, it is expected that there will be a net result of no negative impact associated with the proposed road works.

Based on Aquafor's investigations in the study area, the constraints present within and adjacent to the area of disturbance, along with the preliminary recommendations for protection and mitigation associated with the same, are as follows:

- Natural vegetation communities, including both wetland and forest – Natural vegetation areas should be protected during construction (e.g., through the installation of site perimeter fencing), and the need for disturbance to these areas should be minimized or eliminated through the detailed design. Any temporary disturbance in or adjacent to these areas during construction should be restored with a planting plan using appropriate native species. Potential impacts to wetlands associated with clearing and grading in adjacent areas (i.e., spillover of deleterious substances) should be mitigated through application of an effective erosion and sediment control plan during construction; stormwater controls should be incorporated into the detailed design such that runoff laden with sediment or other substances is not directly input to wetlands.

- Trees (including SAR trees & SAR bat habitat) – An updated tree inventory and arborist assessment is recommended to be completed during detailed design, once the anticipated disturbance (i.e., removals) area is confirmed. This will serve to generally identify tree impacts resulting from the proposed works and any associated need for restoration planting, but specifically would seek to identify any Black Ash or Butternut in the affected area, plus trees that meet the criteria for roosting habitat for SAR bats. Should species or habitat associated with SAR be identified, there may be additional requirements for the project to ensure compliance with the *Endangered Species Act* (e.g., additional timing restrictions on vegetation removal, and/or need for installation of replacement habitat). Retained trees should be protected using appropriate tree protection measures as may be defined in a Tree Protection Plan prepared by the project arborist.

- Migratory bird nesting habitat - A variety of bird species have been identified in the study area, many of which have the potential to be nesting in or adjacent to the study area. Destruction or damage to active nests of most species is prohibited under the *Migratory Birds Convention Act*. Therefore, to avoid impacts to nesting birds, any and all vegetation removal must occur outside of the typical nesting window which extends from April 1 to September 30. Individual trees or small patches of simple habitat may be possible to remove during this window if they are assessed by a qualified person with experience in the detection of bird nests, and confirmed to be clear of active nesting. However, this practice is not recommended in complex habitats where visibility is obscured and detectability of nests will be low. A review of culverts and other structures in the study area which could potentially support bird nesting is also recommended to occur prior to any construction in the active season, to confirm the absence of nests.

- Turtle and amphibian habitat – Habitat for turtles and amphibians is present directly adjacent to the current road ROW. Measures to protect wetland habitat should be provided as described above. Additional monitoring may be appropriate during construction in areas adjacent to wetlands, to ensure that turtles do not enter the work area in an attempt to find a nesting site (particularly for any areas with broad, sandy/gravelly road shoulders or locations with soil stockpiles).

- Significant Wildlife Habitat - Candidate SWH related to bat maternity roosts occurs in forest and swamp vegetation communities with tree cavities and standing snags. Similar recommendations and requirements apply to this habitat type as were previously discussed for SAR bats.

- Fish and fish habitat - For works proposed at a site where fish and fish habitat have the potential to be affected, the works should be cross-referenced with the DFO “Projects Near Water” online

service to determine if a request for regulatory review under the federal Fisheries Act is required (Department of Fisheries and Oceans, 2019). Within the service, the Minister details steps for determining if a project requires regulatory review. Steps include “Measures to protect fish and fish habitat” as well as “Waterbodies where review isn’t required” (Department of Fisheries and Oceans, 2019). The detailed design package should include a detailed mitigation plan to reduce the potential of causing the death of fish and the harmful alteration, disruption or destruction of fish habitat, including all mitigation measures set forth by the DFO. Should all mitigation measures outlined in this online service be applied to the works, the DFO states that a request for regulatory review is not required. In projects where impacts to fish and fish habitat cannot be fully mitigated using the DFO measures, and the project does not fall within waterbodies where regulatory review isn’t required or the scope of the project is not covered under standards and code of practice, proponents are asked to submit a request for review to their region's Fish and Fish Habitat Protection Program office. The proponent is responsible for completely implementing the protection measures in order to comply with the Federal *Fisheries Act*.

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# Appendix A: Vascular Plant List

| Polygons | | | | | | | | | | | | | | | | | | | | Scientific Name | Common Name | Status and Rarity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 and 001.2 | 002 | 004 | 005 | 006 | 007 | 008 | 009 | 012 | 013.1 and 013.2 | 013.3 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | | | S Rank | COSEWIC | SARA Schedule 1 | SARO | Exotic Status | CC | CW | LSRCA | Native Status |
| | | | | | X | | | | | | | | | | | | | | | *Abies balsamea* | Balsam Fir | S5 | | | | | 5 | -3 | | N |
| | | | X | | | | | | | | | | | | | | | | | *Acer negundo* | Manitoba Maple | S5 | | | | | 0 | 0 | + | N |
| | | | | | | | | | | | | | | | | | | | X | *Acer platanoides* | Norway Maple | SNA | | | | SE5 | | 5 | + | I |
| | | | | | | | | | | | | | | | | X | | | | *Acer rubrum* | Red Maple | S5 | | | | | 4 | 0 | | N |
| X | | X | | | | | | | X | X | | X | | | | X | | | | *Acer saccharinum* | Silver Maple | S5 | | | | | 5 | -3 | | N |
| | | | | | | | | | X | | | | | | | | | | | *Acer saccharum* | Sugar Maple | S5 | | | | | 4 | 3 | | N |
| | | X | | | | X | X | | | | | | | | | | | | | *Acer x freemanii* | (Acer rubrum X Acer saccharinum) | SNA | | | | | 6 | -5 | | N |
| | | | | X | X | X | | | | | | | | | | | X | | | *Achillea millefolium* | Common Yarrow | SNA | | | | SE5 ? | | 3 | + | I |
| | | X | | | | | | | | | | | | | | | | X | | *Agrostis stolonifera* | Creeping Bentgrass | SNA | | | | SE5 | | -3 | + | I |
| | | | | | | | | | | | | | | | | | | | X | *Alliaria petiolata* | Garlic Mustard | SNA | | | | SE5 | | 0 | + | I |
| | | | | | | | | | X | | | | | | | X | | | | *Amelanchier laevis* | Smooth Serviceberry | S5 | | | | | 5 | 5 | | N |
| | | | | | | | | | | | | | | | | X | | | X | *Arctium minus* | Common Burdock | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Arisaema triphyllum ssp. triphyllum* | Jack-in-the-pulpit | S5 | | | | | 5 | -3 | | N |
| | | | | | | | | X | | | | | | | | | | | | *Asclepias incarnata ssp. incarnata* | Swamp Milkweed | S5 | | | | | 6 | -5 | | N |
| | | | | | | X | | | | | | | | | X | | | | | *Asclepias syriaca* | Common Milkweed | S5 | | | | | 0 | 5 | | N |
| | | X | | X | | X | | | | | | | | | | | | | X | *Betula papyrifera* | Paper Birch | S5 | | | | | 2 | 3 | | N |
| | | X | X | | | | | | | | | | | | | | | | | *Bidens beckii* | Water Beggarticks | S5 | | | | | 8 | -5 | W | N |
| | | | | | | | | | | | | | | | | | | | X | *Brassica nigra* | Black Mustard | SNA | | | | SE5 | | 5 | | I |
| X | | | | | X | X | | | X | | | X | | X | X | X | | X | | *Bromus inermis* | Smooth Brome | SNA | | | | SE5 | | 5 | + | I |
| X | | | | | | | | | | | | | | | | | | | | *Caltha palustris* | Yellow Marsh Marigold | S5 | | | | | 5 | -5 | | N |
| X | | | | | | | | | | | | | | | | | | | | *Carex lupulina* | Hop Sedge | S5 | | | | | 6 | -5 | | N |
| | | | | | | X | | | | | | | | | | | | | | *Carex pensylvanica* | Pennsylvania Sedge | S5 | | | | | 5 | 5 | | N |
| | | | | | | X | | | | | | | | | | | | | | *Carex tenera* | Tender Sedge | S5 | | | | | 4 | 0 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Carpinus caroliniana* | Blue-beech | S5 | | | | | 6 | 0 | | |
| | | | | | | | | | | | | X | | | | | | | | *Centaurea stoebe ssp. micranthos* | Spotted Knapweed | SNA | | | | SE5 | | 5 | | I |
| | | | | | | | | | X | | | X | | | | | X | | X | *Cichorium intybus* | Chicory | SNA | | | | SE5 | | 5 | + | I |
| | | X | | | | | | | | | | | | | | | | | | *Cicuta maculata var. maculata* | Spotted Water-hemlock | S5 | | | | | 6 | -5 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Circaea canadensis ssp. canadensis* | Canada Enchanter's Nightshade | S5 | | | | | 2 | 3 | | N |
| | | | | | | | | | X | | | | | | | X | | | X | *Cirsium arvense* | Creeping Thistle | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | X | | | | | | | | | | | X | | | *Cirsium vulgare* | Bull Thistle | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | | | | | | | | | | | | X | *Clematis virginiana* | Virginia Virgin's-bower | S5 | | | | | 3 | 0 | | N |
| X | | | | | | | | | | | | | | | | | | | | *Conium maculatum* | Poison-hemlock | SNA | | | | SE2 ? | | -3 | | I |
| | | | | | X | | | | | | | | | | | | | | | *Cornus alternifolia* | Alternate-leaved Dogwood | S5 | | | | | 6 | 3 | | N |

| Polygons | | | | | | | | | | | | | | | | | | | | Scientific Name | Common Name | Status and Rarity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 and 001.2 | 002 | 004 | 005 | 006 | 007 | 008 | 009 | 012 | 013.1 and 013.2 | 013.3 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | | | S Rank | COSEWIC | SARA Schedule 1 | SARO | Exotic Status | CC | CW | LSRCA | Native Status |
| | | | | | | | X | | X | | | | | | | | | | | *Cornus obliqua* | Pale Dogwood | S5 | | | | | 2 | -3 | | N |
| X | | X | | X | | X | | | X | X | X | | | | X | | | X | X | *Cornus sericea* | Red-osier Dogwood | S5 | | | | | 2 | -3 | | N |
| | | | | X | X | X | | | | | | | | | | | | | | *Crataegus monogyna var. monogyna* | English Hawthorn | SNA | | | | SE4 | | 3 | + | I |
| | | | | | | | | | | | | X | | | | | X | | | *Dactylis glomerata* | Orchard Grass | SNA | | | | SE5 | | 3 | + | I |
| X | | | | | X | X | | | X | X | | X | X | | | X | X | | | *Daucus carota* | Wild Carrot | SNA | | | | SE5 | | 5 | + | I |
| | | | | | | | | | | | | | X | | | | | | X | *Dipsacus fullonum* | Common Teasel | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Dryopteris carthusiana* | Spinulose Wood Fern | S5 | | | | | 5 | -3 | | N |
| | | | | | X | | | | | | | | | | X | | | | | *Equisetum arvense* | Field Horsetail | S5 | | | | | 0 | 0 | | N |
| | | | | | | | | | | | | | | | X | | | | | *Equisetum hyemale ssp. affine* | Common Scouring-rush | S5 | | | | | 2 | 0 | | N |
| X | | X | | | | | | | | | | | | | | | | | | *Equisetum palustre* | Marsh Horsetail | S5 | | | | | 10 | -3 | W | N |
| | | | | | X | | | | X | | | | | | | | | | | *Erigeron annuus* | Annual Fleabane | S5 | | | | | 0 | 3 | | N |
| X | | | | | | | | | X | | | | | | | | | | | *Erigeron philadelphicus var. philadelphicus* | Philadelphia Fleabane | S5 | | | | | 1 | -3 | | N |
| | | | | | | | | | | | | | | | | | | | X | *Erysimum cheiranthoides* | Wormseed Wallflower | S5 | | | | | | 3 | + | I |
| X | X | X | | X | X | X | | | | | | | | | | | | | | *Erythronium americanum ssp. americanum* | Yellow Trout-lily | S5 | | | | | 5 | 5 | | N |
| X | | | | | | | | | X | X | | | | | | | | | | *Euthamia graminifolia* | Grass-leaved Goldenrod | S5 | | | | | 2 | 0 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Eutrochium purpureum var. purpureum* | Purple Joe Pye Weed | S4 | | | | | 8 | 0 | | N |
| | | X | | | | | | | | | | | | | | | | | | *Fragaria vesca ssp. americana* | American Woodland Strawberry | S5 | | | | | 4 | 3 | | N |
| X | | | | X | X | X | | | | | | | | | | | | | | *Fragaria virginiana ssp. virginiana* | Wild Strawberry | S5 | | | | | 2 | 3 | | N |
| | | | X | | X | | | | | | | | | | | | | | | *Fraxinus nigra* | Black Ash | S4 | | THR | END | | 7 | -3 | | N |
| | | | | X | X | X | | | | | | | | | | | | X | | *Fraxinus pennsylvanica* | Green Ash | S4 | | | | | 3 | -3 | | N |
| | | | | | X | X | | | | | | | | | | | | | | *Galium asprellum* | Rough Bedstraw | S5 | | | | | 6 | -5 | | N |
| X | | X | | | | | X | | | | | | | | | | | | | *Galium palustre* | Marsh Bedstraw | S5 | | | | | 5 | -5 | | N |
| | X | | | | | | | | | | | | | | | | | | | *Geranium maculatum* | Spotted Geranium | S5 | | | | | 6 | 3 | W | N |
| | | | | | X | | | | | | | | | | | | | | | *Geranium robertianum* | Herb-Robert | S5 | | | | | 2 | 3 | + | N |
| | | | | | | | | | X | | | | | | | | | | | *Glyceria grandis var. grandis* | Tall Mannagrass | S5 | | | | | 5 | -5 | | N |
| | | | | | | | | | | | | X | | | | X | | | | *Hesperis matronalis* | Dame's Rocket | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Hydrangea aspera* | Rough Hydrangea | | | | | | | | | I |
| X | | | | | | | | | | | | | | | | | X | X | | *Hypericum perforatum ssp. perforatum* | Common St. John's-wort | SNA | | | | SE5 | | 5 | | I |
| | | | | | | X | | | | | | | | | | | | | | *Impatiens capensis* | Spotted Jewelweed | S5 | | | | | 4 | -3 | | N |
| X | | | | | | | | | | | | | | | | | | | | *Inula helenium* | Elecampane | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | X | | | | | | | | | | | | *Iris versicolor* | Harlequin Blue Flag | S5 | | | | | 5 | -5 | | N |
| | | | | | | X | | | | | | | | | | | | | | *Juncus interior* | Inland Rush | S4 | | | | | 8 | 3 | | N |
| | | | | | | | | | | | | | | | | X | | | | *Juniperus virginiana var. virginiana* | Eastern Red Cedar | S5 | | | | | 4 | 3 | | N |

| Polygons | | | | | | | | | | | | | | | | | | | | Scientific Name | Common Name | Status and Rarity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 and 001.2 | 002 | 004 | 005 | 006 | 007 | 008 | 009 | 012 | 013.1 and 013.2 | 013.3 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | | | S Rank | COSEWIC | SARA Schedule 1 | SARO | Exotic Status | CC | CW | LSRCA | Native Status |
| | | | | | | | | | | | | | | | | X | X | | | *Lactuca serriola* | Prickly Lettuce | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | | | | | | | | | | X | | | *Lapsana communis* | Common Nipplewort | SNA | | | | SE5 | | 3 | + | I |
| X | | | | | | | | X | X | | | | | | | | | | | *Larix laricina* | Tamarack | S5 | | | | | 7 | -3 | | N |
| | | | | | X | X | | | X | | | | | | | | | | | *Leucanthemum vulgare* | Oxeye Daisy | SNA | | | | SE5 | | 5 | + | I |
| | | | | X | X | X | | | X | | | X | | | X | | | | X | *Lonicera tatarica* | Tatarian Honeysuckle | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | X | | | X | | | | | | | | | | | *Lotus corniculatus* | Garden Bird's-foot Trefoil | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Lycopsis arvensis* | Small Bugloss | SNA | | | | SE3 | | | + | |
| | | | | | | | | | | X | X | | | | | | | X | | *Lythrum salicaria* | Purple Loosestrife | SNA | | | | SE5 | | -5 | + | I |
| | X | | | | | | | | | | | | | | | | | | | *Maianthemum canadense* | Wild Lily-of-the-valley | S5 | | | | | 5 | 3 | | |
| | | | | | | | | | X | | | X | | | | | | | X | *Malus pumila* | Common Apple | SNA | | | | SE4 | | 5 | + | I |
| | | | | X | | | | | | | | | | | | | | | | *Matteuccia struthiopteris* | Ostrich Fern | S5 | | | | | 5 | 0 | | |
| | | | | | | X | | | X | | | | | | | | | | | *Medicago lupulina* | Black Medic | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | | X | | | | | | | | X | | X | *Melilotus albus* | White Sweet-clover | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | X | | | | | | X | | | | | | | | *Oenothera biennis* | Common Evening-primrose | S5 | | | | | 0 | 3 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Ostrya virginiana* | Eastern Hop-hornbeam | S5 | | | | | 4 | 3 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Oxalis stricta* | Upright Yellow Wood-sorrel | S5 | | | | | 0 | 3 | + | I |
| X | | X | | | X | X | | | X | | | | | | | | | | | *Parthenocissus quinquefolia* | Virginia Creeper | S4? | | | | | 6 | 3 | | N |
| X | | | X | | | X | X | X | X | X | X | | X | | | | | X | | *Phalaris arundinacea* | Reed Canary Grass | S5 | | | | | 0 | -3 | (+) | |
| | | | | | | | | | X | | | | | | | | | | | *Phleum pratense* | Common Timothy | SNA | | | | SE5 | | 3 | + | |
| X | | X | | | | | | | | | X | | | | | | | X | | *Phragmites australis ssp. australis* | European Reed | SNA | | | | SE5 | | -3 | | I |
| | | | | | | | | | X | | | | | | | | | | | *Physocarpus opulifolius* | Eastern Ninebark | S5 | | | | | 5 | -3 | W | N |
| X | X | | | | X | X | | | X | | | | | | | X | | | | *Picea glauca* | White Spruce | S5 | | | | | 6 | 3 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Pilea pumila* | Dwarf Clearweed | S5 | | | | | 5 | -3 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Pilosella aurantiaca* | Orange Hawkweed | SNA | | | | SE5 | | 5 | + | I |
| | | | | X | | X | | | | | | | | | | | | | | *Pilosella piloselloides* | Tall Hawkweed | SNA | | | | SE5 | | 5 | | |
| | X | X | | X | X | X | | | X | | | | | | | X | | | | *Pinus strobus* | Eastern White Pine | S5 | | | | | 4 | 3 | | N |
| | | | | | | | | | | | | | | | | | | | X | *Pinus sylvestris var. sylvestris* | Scots Pine | SNA | | | | SE5 | | 3 | | I |
| | | | | | | | | | | | | | | | | | X | | X | *Plantago lanceolata* | English Plantain | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | | | | | | | | | | X | | | *Plantago major* | Common Plantain | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | | X | | | | | | | | | | | *Poa palustris* | Fowl Bluegrass | S5 | | | | | 5 | -3 | | N |
| | | | | | | X | | | X | | | X | | | X | X | X | X | X | *Poa pratensis ssp. pratensis* | Kentucky Bluegrass | SNA | | | | SE5 | | 3 | + | I |
| | | | | X | X | X | | | | | | | | | | | | | | *Podophyllum peltatum* | May-apple | S5 | | | | | 5 | 3 | | N |
| | | | | | | | | | | | | | | | | | | X | | *Populus balsamifera* | Balsam Poplar | S5 | | | | | 4 | -3 | | N |
| X | | | | X | X | X | | | | | | | | X | | X | | X | | *Populus tremuloides* | Trembling Aspen | S5 | | | | | 2 | 0 | | N |
| | | | | | | | | X | | | | | | | | | | | | *Potamogeton natans* | Floating Pondweed | S5 | | | | | 5 | -5 | | N |

| Polygons | | | | | | | | | | | | | | | | | | | | Scientific Name | Common Name | Status and Rarity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 and 001.2 | 002 | 004 | 005 | 006 | 007 | 008 | 009 | 012 | 013.1 and 013.2 | 013.3 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | | | S Rank | COSEWIC | SARA Schedule 1 | SARO | Exotic Status | CC | CW | LSRCA | Native Status |
| | | | | | | X | | | | | | | | | | | | | | *Potentilla recta* | Sulphur Cinquefoil | SNA | | | | SE5 | | 5 | + | I |
| | | | | | | | | | | | | | | | | | | X | | *Prunella vulgaris* | Self-heal | S5 | | | | | 0 | 0 | (+) | |
| | | X | | | X | | | | | | | | | | | | | | | *Prunus avium* | Sweet Cherry | SNA | | | | SE4 | | 5 | | I |
| | | | | | X | | | | | | | | | | | | | | | *Prunus nigra* | Canada Plum | S4 | | | | | 4 | 3 | | N |
| | | | | | | | | | | | | | | | X | X | | | | *Prunus serotina var. serotina* | Black Cherry | S5 | | | | | 3 | 3 | | N |
| X | X | X | | X | X | X | | | X | | | | | | | | | | X | *Prunus virginiana var. virginiana* | Choke Cherry | S5 | | | | | 2 | 3 | | N |
| | | | | X | X | X | | X | X | | | | | | | | | | | *Quercus macrocarpa* | Bur Oak | S5 | | | | | 5 | 3 | | N |
| | | | | | | | | | | | | | | | | X | | | | *Quercus rubra* | Northern Red Oak | S5 | | | | | 6 | 3 | | N |
| | | X | | X | X | X | | | | | | | | | | | | | | *Ranunculus acris* | Tall Buttercup | SNA | | | | SE5 | | 0 | + | I |
| | | | X | | | | | | | | | | | | | | | | | *Ranunculus flabellaris* | Yellow Water Buttercup | S4 | | | | | 7 | -5 | W | N |
| | | | | | | | | | | | | X | | | | | | | | *Reynoutria japonica var. japonica* | Japanese Knotweed | SNA | | | | SE5 | | 3 | + | I |
| | | X | | | X | | | | | | | | | | | | X | | X | *Rhamnus cathartica* | Common Buckthorn | SNA | | | | SE5 | | 0 | + | I |
| | | | | | | | | | X | | | | | X | | X | | | | *Rhus typhina* | Staghorn Sumac | S5 | | | | | 1 | 3 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Ribes lacustre* | Bristly Black Currant | S5 | | | | | 7 | -3 | W | N |
| | | | | | | | | | | | | | | X | | | | | | *Robinia pseudoacacia* | Black Locust | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Rubus idaeus ssp. strigosus* | Wild Red Raspberry | S5 | | | | | 2 | 3 | + | N |
| | | | | | | | | | | | | | | | | | | | | *Rubus occidentalis* | Black Raspberry | S5 | | | | | 2 | 5 | | N |
| | | | | | | | | | X | | | X | | | | X | | | X | *Rumex crispus* | Curly Dock | SNA | | | | SE5 | | 0 | + | I |
| | | | | | | | | | | | | | | | X | | | | | *Salix alba* | White Willow | SNA | | | | SE4 | | -3 | + | I |
| | | | | | | | | | | X | | | | | X | | | | | *Salix bebbiana* | Bebb's Willow | S5 | | | | | 4 | -3 | | N |
| | | | | | | X | | | | | | | | | | | | | | *Salix discolor* | Pussy Willow | S5 | | | | | 3 | -3 | | N |
| | | | | | X | X | | | | X | | | | | X | | | X | | *Salix eriocephala* | Heart-leaved Willow | S5 | | | | | 4 | -3 | | N |
| | | | | | | | | | | X | | | | | X | | | X | | *Salix interior* | Sandbar Willow | S5 | | | | | 1 | -3 | | N |
| X | | X | X | | | | X | | | | | X | | | | | | | | *Salix x fragilis* | (Salix alba X Salix euxina) | SNA | | | | | | | + | I |
| | | | | | | | | X | X | X | | | | | | | | | | *Schoenoplectus tabernaemontani* | Soft-stemmed Bulrush | S5 | | | | | 5 | -5 | | N |
| | | | | | | | X | X | | | | | | | | | | | | *Scirpus cyperinus* | Cottongrass Bulrush | S5 | | | | | 4 | -5 | | N |
| | | | | | | | | | | | | | | | | | | X | X | *Securigera varia* | Common Crown-vetch | SNA | | | | SE5 | | 5 | | I |
| | | | | X | | | | | | | | | | | | | | | | *Sicyos angulatus* | One-seeded Bur-cucumber | S4S5 | | | | | 2 | -3 | W | N |
| | | | | X | | X | | | | | | | | | | | | | | *Sisyrinchium montanum* | Strict Blue-eyed-grass | S5 | | | | | 4 | 0 | | |
| | | | | | X | X | | | | X | | | | | | | X | | | *Solidago altissima var. altissima* | Eastern Tall Goldenrod | S5 | | | | | 1 | 3 | | N |
| | | | | X | X | X | | | X | | | X | | | X | X | X | | X | *Solidago canadensis var. canadensis* | Canada Goldenrod | S5 | | | | | 1 | 3 | | N |
| | | | | | | X | | | | | | | | | | | | | | *Solidago juncea* | Early Goldenrod | S5 | | | | | 3 | 5 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Sorbus americana* | American Mountain-ash | S5 | | | | | 8 | 0 | | N |
| | | | | | | | | | | X | | | | | | | | | | *Spiraea alba* | White Meadowsweet | S5 | | | | | 3 | -3 | | |

| Polygons | | | | | | | | | | | | | | | | | | | | Scientific Name | Common Name | Status and Rarity | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 and 001.2 | 002 | 004 | 005 | 006 | 007 | 008 | 009 | 012 | 013.1 and 013.2 | 013.3 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | | | S Rank | COSEWIC | SARA Schedule 1 | SARO | Exotic Status | CC | CW | LSRCA | Native Status |
| X | | | | | X | | | | | X | | X | | | X | | X | X | | *Symphyotrichum lanceolatum ssp. lanceolatum* | Panicled Aster | S5 | | | | | 3 | -3 | | |
| | | | | | X | X | | | X | | | | | | | | | | | *Symphyotrichum novae-angliae* | New England Aster | S5 | | | | | 2 | -3 | | N |
| | | | | | X | | | | | | | | | | | | | | | *Symphyotrichum urophyllum* | Arrow-leaved Aster | S4 | | | | | 6 | 5 | W | N |
| | | | | | | | | | | | | | | | | | X | | | *Taraxacum erythrospermum* | Red-seeded Dandelion | SNA | | | | SE5 | | 5 | + | I |
| | | | | | | | | | | | | X | X | | X | X | X | | X | *Taraxacum officinale* | Common Dandelion | SNA | | | | SE5 | | 3 | + | I |
| | X | | | X | X | X | | | X | X | | X | | | | X | | | | *Thuja occidentalis* | Eastern White Cedar | S5 | | | | | 4 | -3 | | N |
| X | | | | | X | X | | | | X | | | | | | | | | | *Tilia americana* | American Basswood | S5 | | | | | 4 | 3 | | N |
| | | | | | | | | | X | | | | | | | | | | | *Tilia cordata* | Little-leaf Linden | SNA | | | | SE1 | | 5 | + | I |
| X | | | | | X | X | | | | | | | | | | | | | | *Toxicodendron radicans var. rydbergii* | Western Poison Ivy | S5 | | | | | 2 | 0 | | N |
| | | | | | | | | | X | | | | | | | X | | | | *Trifolium pratense* | Red Clover | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | | | | | | | | | | X | | | | *Trifolium repens* | White Clover | SNA | | | | SE5 | | 3 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Trillium grandiflorum* | White Trillium | S5 | | | | | 5 | 3 | | N |
| | | | | | | | | | | | | | | | | X | | | | *Tripleurospermum inodorum* | Scentless Chamomile | SNA | | | | SE | | 0 | | I |
| X | X | | | | X | | | | X | X | | | | | X | X | | | | *Tussilago farfara* | Colt's-foot | SNA | | | | SE5 | | 3 | + | I |
| | | | | | | | X | X | X | X | X | | | | | | | | | *Typha angustifolia* | Narrow-leaved Cattail | SNA | | | | SE5 | | -5 | (+) | I |
| X | | | X | | | | X | X | | X | X | | X | | | | | | | *Typha latifolia* | Broad-leaved Cattail | S5 | | | | | 1 | -5 | | N |
| X | X | X | X | X | X | X | X | | | | | | | | | | | X | | *Ulmus americana* | American Elm | S5 | | | | | 3 | -3 | | N |
| X | | | | | X | | | | | | | | | | | | | | | *Valeriana officinalis* | Common Valerian | SNA | | | | SE3 | | 3 | + | I |
| | | | | | | | | | | | | | | | | | | | X | *Verbascum thapsus ssp. thapsus* | Common Mullein | SNA | | | | SE5 | | 5 | | I |
| X | | | | | | | | | | | | | | | | | | | | *Verbena hastata* | Blue Vervain | S5 | | | | | 4 | -3 | | N |
| | | X | | | | | | | | | | | | | | | | | | *Viburnum acerifolium* | Maple-leaved Viburnum | S5 | | | | | 6 | 5 | | N |
| X | X | X | | X | X | X | X | | | X | | | | | | | | | | *Viburnum lentago* | Nannyberry | S5 | | | | | 4 | 0 | | N |
| | | X | | X | | X | X | | | | | | | | | | | | | *Viburnum opulus ssp. opulus* | Cranberry Viburnum | SNA | | | | SE3 ? | | -3 | | I |
| X | | | | X | X | X | | | | | | | | | | | | | | *Viburnum opulus ssp. trilobum var. americanum* | Highbush Cranberry | S5 | | | | | 5 | -3 | | N |
| | | | | | X | X | | | X | | | X | | | | X | | | X | *Vicia cracca* | Tufted Vetch | SNA | | | | SE5 | | 5 | + | I |
| | | | | | X | | | | | | | | | | | | | | | *Vincetoxicum rossicum* | European Swallow-wort | SNA | | | | SE5 | | 5 | + | I |
| | | | | X | | X | | | | | | | | | | | | | | *Viola sororia* | Woolly Blue Violet | S5 | | | | | 4 | 0 | | N |
| | | | | X | X | X | | | X | | | | | | | | | | | *Vitis riparia* | Riverbank Grape | S5 | | | | | 0 | 0 | | N |
| X | | X | | X | | X | | | | | | | | | | | | | | *Carex sp* | | | | | | | | | | |
| | X | | | | X | | | | X | | | | | | | | | | | *Crataegus sp* | | | | | | | | | | |
| | | | | | X | | | | | | | | | | | | | | | *Rosa sp* | | | | | | | | | | |
| | | | | X | | X | X | | | X | | | | | | | | X | | *Salix sp* | | | | | | | | | | |
| | | | | X | | X | X | | | | | | | | | | | | | *Solidago sp* | | | | | | | | | | |

| | | |
|---|---|---|
| Status and Rarity | Native Status | |
| | LSRCA | |
| | CW | |
| | CC | |
| | Exotic Status | |
| | SARO | |
| | SARA Schedule 1 | |
| | COSEWIC | |
| | S Rank | |
| Common Name | | |
| Scientific Name | | *Symphiotricum sp* |
| Polygons | 109 | |
| | 108 | |
| | 107 | |
| | 106 | |
| | 105 | |
| | 104 | |
| | 103 | |
| | 102 | |
| | 101 | |
| | 013.3 | |
| | 013.1 and 013.2 | |
| | 012 | |
| | 009 | X |
| | 008 | |
| | 007 | |
| | 006 | |
| | 005 | |
| | 004 | |
| | 002 | |
| | 001 and 001.2 | X |

**LEGEND**

**Scientific Name and Common Name (NHIC, 2019)**

Based on NHIC's species list for Ontario downloaded on May 29, 2019.

**COSEWIC (NHIC, 2019)**

*Federal Rarity List (does not provide protection under any Act)*

EXT Extinct - A species that no longer exists.

EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.

END Endangered - A species facing imminent extirpation or extinction.

THR Threatened - A species likely to become endangered if limiting factors are not reversed.

SC Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

NAR Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.

DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

**Species on Schedule 1 of Species At Risk Act (SARA) (NHIC, 2019)**

*Federal Rarity List*

EXP Extirpated - a species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

END Endangered - a species that is facing imminent extirpation or extinction.

THR Threatened - a species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Species of Special Concern - a species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

**S-Ranks (NHIC, 2019)**

*Provincial Rarity List (does not provide protection under any Act)*

S1 Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure—Common, widespread, and abundant in the nation or state/province.

S#S# Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SX Apparently extirpated from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites.

SE Exotic; not believed to be a native component of Ontario's flora.

**Species At Risk Ontario (SARO) (NHIC, 2019)**

*Provincial Rarity List (Species protected under ESA 2007 and listed in O reg. 230/08)*

EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.

END Endangered - A species facing imminent extirpation or extinction.

THR Threatened - A species likely to become endangered if limiting factors are not reversed.

SC Special Concern - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

**Exotic Status (NHIC, 2019)**

If an element is known to occur as an exotic in Ontario, the status value assigned to the element is SE. A ? qualifier added to that value indicates uncertainty about whether it is exotic or native. Numeric ranks of 1 through 5 added to the exotic status indicate the element's abundance in Ontario, with 1 indicating the least abundance and 5 the most.

**Coefficient of Conservatism and Coefficient of Wetness (NHIC, 2019)**

CC = Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.

CW = Coefficient of Wetness. -Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories (Oldham et al., 1995).

**Regional Rarity**

*LSRCA (LSRCA, 2003)*

*W: rare in the Lake Simcoe Watershed*
*P: S1-S3 ranked for Ontario*
*+: non-native*
*(+): may be non-native*
*NE: nationally endangered*

**Native Status**

*VASCAN database (Brouillet et al. 2010)*

N Native to Ontario

I Introduced to Ontario

**References**

**Brouillet L, Desmet P, Coursol F, Meades SJ, Favreau M, Anions M, Bélisle P, Gendreau C, Shorthouse D, and contributors (2010+).** Database of Vascular Plants of Canada (VASCAN). Online at http://data.canadensys.net/vascan and http://www.gbif.org/dataset/3f8a1297-3259-4700-91fc-acc4170b27ce, released on 2010-12-10. Version [xx]. GBIF key: 3f8a1297-3259-4700-91fc-acc4170b27ce. Data paper ID: doi: http://doi.org/10.3897/phytokeys.25.3100 [accessed on [07/24/2019]]

**(LSRCA) Lake Simcoe Region Conservation Authority. 2003.** State of the Lake Simcoe Watershed. 116 pp + apps.

**Natural Heritage Information Centre (NHIC) (2019).** All Species. Available at: https://www.ontario.ca/page/get-natural-heritage-information

**Oldham, Michael J. 2017.** List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Carolinian Canada and Ontario Ministry of Natural Resources and Forestry. Peterborough, ON. 132 pp.

# Appendix B: Significant Wildlife Habitat Screening

| Seasonal Concentration Areas of Animals | | | | | |
|---|---|---|---|---|---|
| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| **Waterfowl Stopover and Staging Areas (Terrestrial)**<br><br>**<u>Rationale:</u>** Habitat important to migrating waterfowl. | American Black Duck Wood Duck<br>Green-winged Teal<br>Blue-winged Teal<br>Mallard<br>Northern Pintail Northern Shoveler American Wigeon Gadwall | CUM1 CUT1<br>- Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. | Fields with sheet water during Spring (mid-March to May).<br>• Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl.<br>• Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available<br><br><u>Information Sources</u><br>• Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence.<br>• Reports and other information available from Conservation Authorities<br>• Sites documented through waterfowl planning processes (e.g. EHJV implementation plan)<br>• Field Naturalist Clubs<br>• Ducks Unlimited Canada<br>• Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area | Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• Any mixed species aggregations of 100or more individuals required.<br>• The flooded field ecosite habitat plus a 100-300m radius area, dependent on local site conditions and adjacent land use is the significant wildlife habitat<br>• Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates).<br>• SWHMiST Index #7 provides development effects and mitigation measures. | **Not Present**: Potentially suitable habitat (i.e. fields with sheet water) with target species were not observed during breeding bird surveys. |
| **Waterfowl Stopover and Staging Areas (Aquatic)**<br><br>**<u>Rationale:</u>**<br>Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district. | Canada Goose<br>Cackling Goose<br>Snow Goose<br>American Black Duck<br>Northern Pintail<br>Northern Shoveler<br>American Wigeon<br>Gadwall<br>Green-winged Teal<br>Blue-winged Teal<br>Hooded Merganser<br>Common Merganser<br>Lesser Scaup<br>Greater Scaup<br>Long-tailed Duck<br>Surf Scoter<br>White-winged Scoter<br>Black Scoter<br>Ring-necked duck | MAS1<br>MAS2<br>MAS3<br>SAS1<br>SAM1<br>SAF1<br>SWD1<br>SWD2<br>SWD3<br>SWD4<br>SWD5<br>SWD6<br>SWD7 | • Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.<br>• These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water)<br><u>Information Sources</u><br>• Environment Canada.<br>• Naturalist clubs often are aware of staging/stopover areas.<br>• OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging.<br>• Sites documented through waterfowl planning processes (e.g. EHJV | Studies carried out and verified presence of:<br>• Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days.<br>• Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH<br>• The combined area of the ELC ecosites and a 100m radius area is the SWH<br>• Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for | **Not Present**: Potentially suitable habitat (i.e. marshes and swamps) with concentrations of target species were not observed during breeding bird surveys. |

| Seasonal Concentration Areas of Animals | | | | | |
|---|---|---|---|---|---|
| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | Common Goldeneye<br>Bufflehead<br>Redhead<br>Ruddy Duck<br>Red-breasted Merganser<br>Brant<br>Canvasback<br>Ruddy Duck | | implementation plan)<br>• Ducks Unlimited projects<br>• Element occurrence specification by Nature Serve: http://www.natureserve.org<br>• Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area | Wind Power Projects"<br>• Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded).<br>• SWHMiSTIndex #7 provides development effects and mitigation measures. | |
| **Shorebird Migratory Stopover Area**<br><br>**Rationale:** High quality shorebird stopover habitat is extremely rare and typically has a long history of use. | Greater Yellowlegs<br>Lesser Yellowlegs<br>Marbled Godwit Hudsonian Godwit<br>Black-bellied Plover<br>American Golden-Plover<br>Semipalmated Plover<br>Solitary Sandpiper<br>Spotted Sandpiper<br>Semipalmated Sandpiper<br>Pectoral Sandpiper<br>White-rumped Sandpiper Baird's Sandpiper<br>Least Sandpiper<br>Purple Sandpiper<br>Stilt Sandpiper<br>Short-billed Dowitcher<br>Red-necked Phalarope<br>Whimbrel<br>Ruddy Turnstone<br>Sanderling Dunlin | BBO1<br>BBO2<br>BBS1<br>BBS2<br>BBT1<br>BBT2<br>SDO1<br>SDS2<br>SDT1<br>MAM1<br>MAM2<br>MAM3<br>MAM4<br>MAM5 | • Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats.<br>• Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October.<br>• Sewage treatment ponds and storm water ponds do not qualify as a SWH.<br><br>Information Sources<br>• Western hemisphere shorebird reserve network.<br>• Canadian Wildlife Service (CWS) Ontario Shorebird Survey.<br>• Bird Studies Canada<br>• Ontario Nature<br>• Local birders and naturalist clubs<br>• Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area | Studies confirming:<br>• Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period)<br>• Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant.<br>• The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #8 provides development effects and mitigation measures. | **Not Present**: Potentially suitable habitat (i.e. wetlands with shorelines) are not present within the study area. |
| **Raptor Wintering Area**<br><br>**Rationale:**<br>Sites used by multiple species, a high number of individuals and used annually are most significant | Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl<br><br>**Special Concern:** Short-eared Owl Bald Eagle | Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class;<br>Forest:<br>FOD, FOM, FOC.<br><br>Upland:<br>CUM; CUT; CUS; CUW. | • The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors.<br>• Raptor wintering sites (hawk/owl) need to be > 20 ha with a combination of forest and upland.<br>• Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands | Studies confirm the use of these habitats by:<br>• One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species.<br>• To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. | **Not Present**: Potentially suitable habitat (i.e. forest adjacent to meadow >15 ha) is not present within the study area. |

| Seasonal Concentration Areas of Animals | | | | | |
|---|---|---|---|---|---|
| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | Bald Eagle:<br>Forest community Series: FOD, FOM, FOC, SWD, SWM<br>or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area). | • Field area of the habitat is to be wind swept with limited snow depth or accumulation.<br>• Eagle sites have open water, large trees and snags available for roosting<br><br>Information Sources:<br>• OMNRF Ecologist or Biologist<br>• Field Naturalist Clubs<br>• Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area<br>• Data from Bird Studies Canada<br>• Results of Christmas Bird Counts<br><br>Reports and other information available from Conservation Authorities. | • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #10 and #11 provides development effects and mitigation measures. | |
| **Bat Hibernacula**<br><br>**Rationale;**<br>Bat hibernacula are rare habitats in all Ontario landscapes. | Big Brown Bat<br>Tri-coloured Bat | Bat Hibernacula may be found in these ecosites: CCR1<br>CCR2 CCA1<br>CCA2<br>(Note: buildings are not considered to be SWH) | • Hibernacula may be found in caves, mine shafts, underground foundations and Karsts.<br>• Active mine sites should not be considered as SWH<br>• The locations of bat hibernacula are relatively poorly known.<br><br>Information Sources<br>• OMNRF for possible locations and contact for local experts<br>• Natural Heritage Information Center (NHIC) Bat Hibernaculum<br>• Ministry of Northern Development and Mines for location of mine shafts.<br>Clubs that explore caves (e.g. Sierra Club)<br>• University Biology Departments with bat experts. | • All sites with confirmed hibernating bats are SWH.<br>• The habitat area includes a 200m radius around the entrance of the hibernaculum, for most development types and 1000m for wind farms.<br>• Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #1 provides development effects and mitigation measures. | **Not Present**: Potentially suitable habitat is not present within the study area. |
| **Bat Maternity Colonies**<br><br>**Rationale:** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes. | Big Brown Bat<br>Silver-haired Bat | Maternity colonies considered SWH are found in forested Ecosites.<br><br>All ELC Ecosites in ELC Community Series:<br>FOD FOM<br>SWD SWM | • Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH).<br>• Maternity roosts are not found in caves and mines in Ontario.<br>• Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm DBH) wildlife trees<br>• Female Bats prefer wildlife tree (snags) in | • Maternity Colonies with confirmed use by;<br>  • >10 Big Brown Bats<br>  • >5 Adult Female Silver- haired Bats<br>• The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. | **Candidate**: Potentially suitable bat maternity roosting sites are present within the study area. |

| Seasonal Concentration Areas of Animals | | | | | |
|---|---|---|---|---|---|
| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | early stages of decay, class 1-3 or class 1 or 2.<br>• Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred<br><br><u>Information Sources</u><br>• OMNRF for possible locations and contact for local experts<br>• University Biology Departments with bat experts. | • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #12 provides development effects and mitigation measures. | |
| **Turtle Wintering Areas**<br><br>**<u>Rationale:</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant. | Midland Painted Turtle<br><br>**<u>Special Concern:</u>**<br>Northern Map Turtle<br>Snapping Turtle | Snapping and Midland Painted Turtles;<br>ELC Community Classes<br>SW<br>MA<br>OA<br>SA<br><br>Community Series; FEO BOO<br><br>Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat. | • For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates.<br>• Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen<br>• Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.<br><br><u>Information Sources</u><br>• EIS studies carried out by Conservation Authorities.<br>• Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites.<br>• OMNRF Ecologist or Biologist<br>• Field Naturalist clubs<br>• Natural Heritage Information Center (NHIC) | • Presence of 5 over-wintering Midland Painted Turtles is significant.<br>• One or more Northern Map Turtle or Snapping Turtle over- wintering within a wetland is significant.<br>• The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH.<br>• Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May).<br>• Congregation of turtles is more common where wintering areas are limited and therefore significant.<br>• SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat. | **Candidate outside area of disturbance**: Potentially suitable habitat is present within vegetation polygons 5, 9, and 12. (Vegetation community 14 is a SWM pond and is not considered SWH). Reptile surveys were not completed in support of this report, and no turtles were observed incidentally during field surveys. |
| **Reptile Hibernaculum**<br><br>**<u>Rationale;</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant. | **<u>Snakes:</u>**<br>Eastern Gartersnake<br>Northern Watersnake<br>Northern Red-bellied Snake<br>Northern Brownsnake<br>Smooth Green Snake<br>Northern Ring-necked Snake<br><br>**Special Concern:** | For all snakes, habitat may be found in any ecosite other than very wet ones.<br>Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats.<br>Observations or | • For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH.<br>• Areas of broken and fissured rock are | Studies confirming:<br>• Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp.<br>Congregations of a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. near potential hibernacula (e.g. | **Not Present**: Potentially suitable habitat was not identified within the study area during field surveys. |

| Seasonal Concentration Areas of Animals | | | | | |
|---|---|---|---|---|---|
| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | Milksnake<br>Eastern Ribbonsnake<br><br>**<u>Lizard:</u>**<br>**<u>Special Concern</u>** (Southern Shield population)**:**<br>Five-lined Skink | congregations of snakes on sunny warm days in the spring or fall is a good indicator.<br><br>For Five-lined Skink, ELC Community Series of<br>FOD<br>FOM<br>and Ecosites:<br>FOC1<br>FOC3 | particularly valuable since they provide access to subterranean sites below the frost line.<br>• Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover.<br>• Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.<br><u>Information Sources</u><br>• In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells).<br>• Reports and other information available from Conservation Authorities.<br>• Field Naturalists clubs<br>• University herpetologists<br>• Natural Heritage Information Center (NHIC)<br>• OMNRF ecologist or biologist may be aware of locations of wintering skinks | foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)<br>• <u>Note</u>: If there are Special Concern Species present, then site is SWH<br>• <u>Note</u>: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH<br>• SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula.<br>• Presence of any active hibernaculum for skink is significant.<br>• SWHMiST Index #37 provides development effects and mitigation measures for five- lined skink wintering habitat. | |
| **Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)**<br><br>**<u>Rationale:</u>** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario. | Cliff Swallow<br>Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies) | Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns.<br><br>Habitat found in the following ecosites: CUM1<br>CUT1<br>CUS1<br>BLO1<br>BLS1<br>BLT1<br>CLO1<br>CLS1<br>CLT1 | • Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area.<br>• Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles.<br>• Does not include a licensed/permitted Mineral Aggregate Operation.<br><br><u>Information Sources</u><br>• Reports and other information available from Conservation Authorities.<br>• Ontario Breeding Bird Atlas<br>• Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/bir dmon/ | Studies confirming:<br>• Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough- winged swallow pairs during the breeding season.<br>• A colony identified as SWH will include a 50m radius habitat area from the peripheral nests<br>• Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #4 provides development effects and | **Not Present**: During breeding bird surveys, bank swallows were observed foraging over agricultural fields adjacent to Line 8 and 10 Sideroad. The most likely breeding site for these birds is the aggregate property located on 10 Sideroad, approximately 400-425 m north of Line 8. As indicated by the Habitat Criteria, SWH does not include a licensed/permitted Mineral Aggregate Operation. Target species (cliff and northern rough-winged swallow) not observed during breeding bird surveys. |

| Seasonal Concentration Areas of Animals | | | | | |
|---|---|---|---|---|---|
| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | • Field Naturalist Clubs. | mitigation measures | |
| **Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)**<br><br>**<u>Rationale:</u>**<br>Large colonies are important to local bird population, typically sites are only known colony in area and are used annually. | Great Blue Heron<br>Black-crowned Night-Heron<br>Great Egret<br>Green Heron | SWM2<br>SWM3<br>SWM5<br>SWM6<br>SWD1<br>SWD2<br>SWD3<br>SWD4<br>SWD5<br>SWD6<br>SWD7<br>FET1 | • Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.<br>• Most nests in trees are 11 to 15 m from ground, near the top of the tree.<br><br><u>Information Sources</u><br>Ontario Breeding Bird Atlas, colonial nest records.<br>• Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF).<br>• Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony<br>• Aerial photographs can help identify large heronries.<br>• Reports and other information available from CAs.<br>• MNRF District Offices.<br>• Local naturalist clubs. | Studies confirming:<br>• Presence of 5 or more active nests of Great Blue Heron or other listed species.<br>• The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH<br>• Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells<br>• SWHMiST Index #5 provides development effects and mitigation measures. | **Not Present**: Of target species, only one great blue heron was observed during breeding bird surveys. No heron colony was observed in wetlands within the study area during field surveys. |
| **Colonially - Nesting Bird Breeding Habitat (Ground)**<br><br>**<u>Rationale:</u>** Colonies are important to local bird population, typically sites are only known colony in area and are used annually. | Herring Gull<br>Great Black-backed Gull<br>Little Gull<br>Ring-billed Gull<br>Common Tern<br>Caspian Tern<br>Brewer's Blackbird | Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map).<br><br>Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird)<br><br>MAM1 – 6;<br>MAS1 – 3;<br>CUM<br>CUT<br>CUS | • Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas.<br>• Brewer's Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands.<br><br><u>Information Sources</u><br>• Ontario Breeding Bird Atlas, rare/colonial species records.<br>• Canadian Wildlife Service<br>• Reports and other information available from CAs.<br>• Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area<br>• MNRF District Offices.<br>• Field Naturalist clubs. | Studies confirming:<br>• Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern.<br>• Presence of 5 or more pairs for Brewer's Blackbird.<br>• Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant.<br>• The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #6 provides | **Not Present**: Potentially suitable habitat (i.e. rock islands or peninsulas) is not present within the study area. |

| Seasonal Concentration Areas of Animals | | | | | |
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| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | | development effects and mitigation measures. | |
| **Migratory Butterfly Stopover Areas**<br><br>**<u>Rationale:</u>**<br>Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter. | Painted Lady Red Admiral<br><br><u>Special Concern</u><br>Monarch | Combination of ELC Community Series; need to have present one Community Series from each landclass:<br><br><u>Field</u>:<br>CUM<br>CUT<br>CUS<br><br>Forest:<br>FOC<br>FOD<br>FOM<br>CUP<br><br>Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed. | A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario.<br>• The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south.<br>• The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat.<br>• Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes<br><br>Information Sources<br>• OMNRF (NHIC)<br>Agriculture Canada in Ottawa may have list of butterfly experts.<br>• Field Naturalist Clubs<br>• Toronto Entomologists Association<br>• Conservation Authorities | Studies confirm:<br>• The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur.<br>• Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD.<br>• MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.<br>• SWHMiST Index #16 provides development effects | **Not Present**: The study area is over 5 km from Lake Ontario. |
| **Landbird Migratory Stopover Areas**<br><br>**<u>Rationale:</u>**<br>Sites with a high diversity of species as well as high numbers are most significant. | All migratory songbirds.<br><br>Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1<br><br>All migrant raptors species:<br><br>Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors) | All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD | Woodlots need to be >10 ha in size and within 5 km of Lake Ontario.<br>• If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant<br>• Sites have a variety of habitats; forest, grassland and wetland complexes.<br>• The largest sites are more significant<br>• Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH.<br><br><u>Information Sources</u><br>• Bird Studies Canada | Studies confirm:<br>• Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant.<br>• Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br><br>SWHMiST Index #9 provides development | **Not Present**: Potentially suitable habitat is over 5 km from Lake Ontario. |

| Seasonal Concentration Areas of Animals | | | | | |
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| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | • Ontario Nature<br>• Local birders and naturalist club<br>• Ontario Important Bird Areas (IBA) Program | effects and mitigation measures. | |
| **Deer Yarding Areas**<br><br>**Rationale:** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions.<br>Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range. | White-tailed Deer | Note: OMNRF to determine this habitat.<br><br>ELC Community Series providing a thermal cover component for a deer yard would include;<br>FOM<br>FOC<br>SWM<br>SWC.<br><br>Or these ELC Ecosites;<br>CUP2<br>CUP3<br>FOD3<br>CUT | • Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter.<br>I) The Core of a deer yard (Stratum is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%.<br>• OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual"<br>• Woodlots with high densities of deer due to artificial feeding are not significant. | No Studies Required:<br>• Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH.<br>• Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO).<br>• Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations.<br>• If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.<br>• SWHMiST Index #2 provides development effects and mitigation measures. | **Not Present**: SWH not identified in the study area by MNR data. |
| **Deer Winter Congregation Areas**<br><br>**<u>Rationale:</u>**<br>Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in | White-tailed Deer | All Forested Ecosites with these ELC Community Series;<br>FOC FOM<br>FOD SWC<br>SWM SWD<br><br>Conifer plantations much smaller than 50 ha may also be used. | • Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment.<br>• Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. | Studies confirm:<br>• Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF.<br>• Use of the woodlot by white- tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by | **Not Present**: SWH not identified in the study area by MNR data. |

| Seasonal Concentration Areas of Animals | | | | | |
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| **Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions cxlviii. | | | • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule.<br>• Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha.<br>• Woodlots with high densities of deer due to artificial feeding are not significant.<br><br>Information Sources<br>• MNRF District Offices.<br>• LIO/NRVIS | MNRF<br>• Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey.<br>• If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.<br>• SWHMiST Index #2 provides development effects and mitigation measures. | |

| Rare Vegetation Communities | | | | | |
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| **Rare Vegetation Community** | **CANDIDATE SWH** | | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | **ELC Ecosite Code** | **Habitat Description** | **Detailed Information and Sources** | **Defining Criteria** | |
| **Cliffs and Talus Slopes**<br><br>**<u>Rationale:</u>**<br>Cliffs and Talus Slopes<br>are extremely rare habitats in Ontario. | Any ELC Ecosite within Community Series:<br>TAO<br>TAS<br>TAT<br>CLT<br>CLO<br>CLS | A Cliff is vertical to near vertical bedrock >3m in height.<br><br>A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris | Most cliff and talus slopes occur along the Niagara Escarpment.<br><br><u>Information Sources</u><br>• The Niagara Escarpment Commission has detailed information on location of these habitats.<br>• OMNRF District<br>• Natural Heritage Information Center (NHIC) has location information available on their website<br>• Field Naturalist clubs<br>• Conservation Authorities | • Confirm any ELC Vegetation Type for Cliffs or Talus Slopes<br><br>• SWHMiST Index #21 provides development effects and mitigation measures. | **Not Present**: Rare vegetation communities are not present within the study area. |
| **Sand Barren**<br><br>**<u>Rationale:</u>**<br>Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development<br>and forestry | ELC Ecosites: SBO1<br>SBS1 SBT1<br><br>Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree<br>cover always <u>≤</u> 60%. | Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%. | A sand barren area >0.5ha in size.<br><br><u>Information Sources</u><br>OMNRF Districts.<br>Natural Heritage Information Center (NHIC) has location information available on their website.<br>Field Naturalist clubs<br>Conservation Authorities | • Confirm any ELC Vegetation Type for Sand Barrens<br><br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.).<br><br>• SWHMiST Index #20 provides development effects and mitigation measures. | **Not Present**: Rare vegetation communities are not present within the study area. |
| **Alvar**<br><br>**<u>Rationale;</u>** Alvars are extremely rare habitats in Ecosregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact. | ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2<br><br>**Five Alvar Indicator Species:**<br>1) *Carex crawei*<br>2) *Panicum philadelphicum*<br>3) *Eleocharis compressa*<br>4) *Scutellaria parvula*<br>5) *Trichostema brachiatum*<br><br>These indicator species are very specific to Alvars within Ecoregion 6E | An <u>alvar is typically a level</u>, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover | An Alvar site > 0.5 ha in size<br><br><u>Information Sources</u><br>• Alvars of Ontario (2000), Federation of Ontario Naturalists<br>• Ontario Nature – Conserving Great Lakes Alvars.<br>• Natural Heritage Information Center (NHIC) has location information available on their website<br>• OMNRF Districts<br>• Field Naturalist clubs<br>• Conservation Authorities | • Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant.<br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.).<br>• The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses<br>• SWHMiST Index #17 provides development effects and mitigation measures. | **Not Present**: Rare vegetation communities are not present within the study area. |
| **Old Growth Forest** | Forest Community Series:<br>FOD | Old Growth forests are characterized by heavy mortality or turnover of over- storey trees resulting in a mosaic of gaps | Woodland areas 30 ha or greater in size or with at least 10 ha interior | Field Studies will determine:<br>• If dominant trees species of the | **Not Present**: Rare vegetation |

| Rare Vegetation Communities | | | | | |
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| **Rare Vegetation Community** | **CANDIDATE SWH** | | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | **ELC Ecosite Code** | **Habitat Description** | **Detailed Information and Sources** | **Defining Criteria** | |
| **Rationale;**<br>Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species. | FOC<br>FOM<br>SWD<br>SWC<br>SWM | that encourage development of a multi-layered canopy and an abundance of snags and downedwoody debris. | habitat assuming 100 m buffer at edge of forest .<br><br>Information Sources<br>• OMNRF Forest Resource Inventory mapping<br>• OMNRF Districts.<br>• Field Naturalist clubs<br>• Conservation Authorities Sustainable Forestry License (SFL) companies will possibly know locations through field operations.<br>• Municipal forestry departments | are<br>>140 years old, then the area containing these trees is Significant Wildlife Habitat<br>• The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present)<br>The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH.<br>• Determine ELC vegetation types for the forest forest area containing the old growth characteristics<br>• SWHMiST Index #23 provides development effects and mitigation measures. | communities are not present within the study area. |
| **Savannah**<br><br>**Rationale:**<br>Savannahs are extremely rare habitats in Ontario. | TPS1 TPS2 TPW1<br>TPW2 CUS2 | A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. | No minimum size to site.<br>Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.<br><br>Information Sources<br>• Natural Heritage Information Center (NHIC) has location information available on their website<br>• OMNRF Districts<br>• Feld Naturalist clubs.<br>• Conservation Authorities. | Field studies confirm one or more of the Savannah indicator species listed in<br>cxlix Appendix N should be present.<br>Note: Savannah plant spp. list from Ecoregion 6E should be used.<br><br>• Area of the ELC Ecosite is the SWH.<br>• Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.).<br>• SWHMiST Index #18 provides development effects and mitigation measures. | **Not Present**: Rare vegetation communities are not present within the study area. |
| **Tallgrass Prairie**<br><br>**Rationale:**<br>Tallgrass Prairies are extremely rare | TPO1 TPO2 | A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. | No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered | Field studies confirm one or more of the Prairie indicator species listed in<br>Appendix N should be present. | **Not Present**: Rare vegetation communities are not present within the |

| Rare Vegetation Communities | | | | | |
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| **Rare Vegetation Community** | **CANDIDATE SWH** | | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | **ELC Ecosite Code** | **Habitat Description** | **Detailed Information and Sources** | **Defining Criteria** | |
| habitats in Ontario. | | | to be SWH.<br><br><u>Information Sources</u><br>• Natural Heritage Information Center (NHIC) has location information available on their website<br>• OMNRF Districts<br>• Feld Naturalist clubs.<br>• Conservation Authorities. | Note: Prairie plant spp. list from Ecoregion 6E should be used.<br><br>• Area of the ELC Ecosite is the SWH.<br><br>Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.).<br>• SWHMiST Index #19 provides development effects and mitigation measures. | study area. |
| **Other Rare Vegetation Communities**<br><br>**<u>Rationale:</u>**<br>Plant communities that often contain rare species which depend on the habitat for survival. | Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG.<br>Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH. | Rare Vegetation Communities may include beaches, fens, forest, marsh,<br>barrens, dunes and swamps.<br><br>_____ | ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M<br><br>The OMNRF/NHIC will have up to date listing for rare vegetation communities.<br><br><u>Information Sources</u><br>• Natural Heritage Information Center (NHIC) has location information available on their website<br>• OMNRF Districts<br>• Feld Naturalist clubs.<br>• Conservation Authorities. | Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG.<br><br>• Area of the ELC Vegetation Type polygon is the SWH.<br><br>• SWHMiST Index #37 provides development effects and mitigation measures. | **Not Present**: Rare vegetation communities are not present within the study area. |

| Specialized Habitats of Wildlife Considered SWH | | | | | |
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| **Specialized Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| **Waterfowl Nesting Area**<br><br>**<u>Rationale:</u>** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant. | American Black Duck<br>Northern Pintail<br>Northern Shoveler<br>Gadwall<br>Blue-winged Teal<br>Green-winged Teal<br>Wood Duck<br>Hooded Merganser<br>Mallard | All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH:<br>MAS1 MAS2<br>MAS3 SAS1<br>SAM1 SAF1 MAM1<br>MAM2 MAM3<br>MAM4 MAM5<br>MAM6 SWT1<br>SWT2<br>SWD1 SWD2<br>SWD3 SWD4<br><br>**Note: includes adjacency to Provincially Significant Wetlands** | A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur.<br>• Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests.<br>• Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites.<br><br><u>Information Sources</u><br>• Ducks Unlimited staff may know the locations of particularly productive nesting sites. OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat.<br>• Reports and other information available from Conservation Authorities. | Studies confirmed:<br>• Presence of 3 or more nesting pairs for listed species excluding Mallards, or;<br>• Presence of 10 or more nesting pairs for listed species including Mallards.<br>• Any active nesting site of an American Black Duck is considered significant.<br>• Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest.<br>• SWHMiST Index #25 provides development effects and mitigation measures. | **Not Present**: Of the target species, only mallard ducks were observed during breeding bird surveys and other field surveys; and not at the numbers required for SWH. |
| **Bald Eagle and Osprey Nesting, Foraging and Perching Habitat**<br><br>**<u>Rationale:</u>** Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat. | Osprey<br><br>**Special Concern**<br>Bald Eagle | ELC Forest Community Series:<br>FOD<br>FOM<br>FOC<br>SWD<br>SWM<br>SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands | Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water.<br>• Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.<br>• Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).<br><br><u>Information Sources</u><br>• Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario.<br>• MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat.<br>• Nature Counts, Ontario Nest Records | Studies confirm the use of these nests by:<br>• One or more active Osprey or Bald Eagle nests in an area.<br>• Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH.<br>• For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important<br>• For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the | **Not Present**: Target species were not observed during breeding bird surveys or as incidental observations during other field surveys. |

| Specialized Habitats of Wildlife Considered SWH | | | | | |
|---|---|---|---|---|---|
| **Specialized Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | Scheme data.<br>• OMNRF Districts.<br>• Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented<br>• Reports and other information available from Conservation Authorities.<br>• Field Naturalists clubs | habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat<br>• To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant.<br>• Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMiST Index #26 provides development effects and mitigation measures | |
| **Woodland Raptor Nesting Habitat**<br><br>**<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species. | Northern Goshawk<br>Cooper's Hawk<br>Sharp-shinned Hawk<br>Red-shouldered Hawk<br>Barred Owl<br>Broad-winged Hawk | May be found in all forested ELC Ecosites.<br><br>May also be found in SWC<br>SWM<br>SWD<br>CUP3 | All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat.<br>Interior habitat determined with a 200m buffer<br>• Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.<br><br><u>Information Sources</u><br>• OMNRF Districts.<br>• Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented.<br>• Check data from Bird Studies Canada.<br>• Reports and other information available from Conservation Authorities. | Studies confirm:<br>• Presence of 1 or more active nests from species list is considered significant.<br>• Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) Barred Owl – A 200m radius around the nest is the SWH<br>• Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH.<br>• Sharp-Shinned Hawk – A 50m radius around the nest is the SWH.<br>• Conduct field investigations from mid-March to end of May. The use | **Not Present**: Interior forest habitat is not present within or adjacent to the study area. |

| Specialized Habitats of Wildlife Considered SWH | | | | | |
|---|---|---|---|---|---|
| **Specialized Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | | of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area.<br>• SWHMiST Index #27 provides development effects and mitigation measures. | |
| **Turtle Nesting Areas**<br><br>**<u>Rationale:</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles. | Midland Painted Turtle<br><br><u>Special Concern Species</u><br>Northern Map Turtle<br>Snapping Turtle | Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites:<br>MAS1 MAS2 MAS3<br>SAS1 SAM1 SAF1<br>BOO1 FEO1 | • Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals.<br>• For an area to function as a turtle- nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.<br>• Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.<br><br><u>Information Sources</u><br>• Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels).<br>• Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them.<br>• Natural Heritage Information Center (NHIC)<br>• Field Naturalist Clubs | Studies confirm:<br>• Presence of 5 or more nesting Midland Painted Turtles<br>• One or more Northern Map Turtle or Snapping Turtle nesting is a SWH·<br>The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH.<br>• Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat.<br>• Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method.<br>• SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat. | **Not Present**: Potentially suitable nesting habitat was not identified during field surveys. |
| **Seeps and Springs**<br><br>**<u>Rationale:</u>** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams. | Wild Turkey<br>Ruffed Grouse<br>Spruce Grouse<br>White-tailed Deer<br>Salamander spp. | Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs. | Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system<br>• Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species<br><br><u>Information Sources</u><br>• Topographical Map.<br>• Thermography. | Field Studies confirm:<br>• Presence of a site with 2 or more seeps/springs should be considered SWH.<br>• The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the | **Not Present**: Seeps and springs were not identified during field surveys. |

| Specialized Habitats of Wildlife Considered SWH | | | | | |
|---|---|---|---|---|---|
| **Specialized Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | | | • Hydrological surveys conducted by Conservation Authorities and MOE.<br>• Field Naturalists clubs and landowners.<br>• Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped. | slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat.<br>• SWHMiST Index #30 provides development effects and mitigation measures | |
| **Amphibian Breeding Habitat (Woodland).**<br><br>**<u>Rationale:</u>** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations | Eastern Newt<br>Blue-spotted Salamander<br>Spotted Salamander<br>Gray Treefrog<br>Spring Peeper<br>Western Chorus Frog<br>Wood Frog | All Ecosites associated with these ELC Community Series;<br>FOC FOM FOD<br>SWC SWM SWD<br><br>Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians | • Presence of a wetland, pond woodland pool (including vernal pools) >500m$^2$ (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians.<br>• Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat<br><br><u>Information Sources</u><br>• Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records<br>• Local landowners may also provide assistance as they may hear springtime choruses of amphibians on their property.<br>• OMNRF District.<br>• OMNRF wetland evaluations<br>• Field Naturalist clubs<br>• Canadian Wildlife Service Amphibian Road Call Survey<br>• Ontario Vernal Pool Association: http://www.ontariovernalpools.org | Studies confirm;<br>• Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3.<br>• A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands.<br>• The habitat is the wetland area plus a 230m radius of woodland area.<br>• If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.<br>• SWHMiST Index #14 provides development effects and mitigation measures. | **Confirmed**: Gray Treefrog and Spring Peeper, both indicator species for woodland amphibian SWH, were documented in the study area wetlands during amphibian calling surveys in 2019. The total number of individuals heard on the site meets the minimum criterion for significance in this habitat category (i.e., at least 20 individuals of two or more of the listed frog species). |
| **Amphibian Breeding Habitat (Wetlands)**<br><br>**<u>Rationale:</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes. | Eastern Newt<br>American Toad<br>Spotted Salamander<br>Four-toed Salamander<br>Blue-spotted Salamander<br>Gray Treefrog<br>Western Chorus Frog<br>Northern Leopard Frog<br>Pickerel Frog<br>Green Frog | ELC Community Classes SW<br>MA<br>FE<br>BO<br>OA<br>SA.<br><br>Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly | • Wetlands>500m$^2$ (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats.<br>• Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators.<br>• Bullfrogs require permanent water bodies with | Studies confirm<br>• Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. **or;** Wetland with confirmed breeding | **Candidate outside area of disturbance**: Potentially suitable habitat is present in all wetlands in the study area but outside the area of disturbance. In addition, green frogs (*Rana clamitans*) and spring peepers (*Pseudacris crucifer*) were observed incidentally during vegetation community surveys in May and June. |

| Specialized Habitats of Wildlife Considered SWH | | | | | |
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| **Specialized Wildlife Habitat** | **Wildlife Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite Codes** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| | Mink Frog<br>Bullfrog | aquatic species (e.g. Bull Frog) may be adjacent to woodlands. | abundant emergent vegetation.<br><br><u>Information Sources</u><br>• Ontario Herpetofaunal Summary Atlas (or other similar atlases)<br>• Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count.<br>• OMNRF Districts and wetland evaluations<br>• Reports and other information available from Conservation Authorities. | Bullfrogs are significant.<br>• The ELC ecosite wetland area and the shoreline are the SWH.<br>• A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands.<br>• If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.<br>• SWHMiST Index #15 provides development effects and mitigation measures. | |
| **Woodland Area-Sensitive Bird Breeding Habitat**<br><br>**Rationale:** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds. | Yellow-bellied Sapsucker<br>Red-breasted Nuthatch<br>Veery<br>Blue-headed Vireo<br>Northern Parula<br>Black-throated Green Warbler<br>Blackburnian Warbler<br>Black-throated Blue Warbler<br>Ovenbird<br>Scarlet Tanager<br>Winter Wren<br><br>**Special Concern:**<br>Cerulean Warbler<br>Canada Warbler | All Ecosites associated with these ELC Community Series;<br>FOC FOM FOD<br>SWC SWM SWD | • Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. Interior forest habitat is at least 200 m from forest edge habitat.<br><br><u>Information Sources</u><br>• Local bird clubs.<br>• Canadian Wildlife Service (CWS) for the location of forest bird monitoring.<br>• Bird Studies Canada conducted a 3- year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species<br>• Reports and other information available from Conservation Authorities. | Studies confirm:<br>• Presence of nesting or breeding pairs of 3 or more of the listed wildlife species.<br>• Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH.<br>• Conduct field investigations in spring and early summer when birds are singing and defending their territories.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #34 provides development effects and mitigation measures. | **Not Present**: Interior forest habitat is not present within the study area; and target species were not observed during Breeding Bird Surveys. |

| Habitats of Species of Conservation Concern considered SWH | | | | | |
|---|---|---|---|---|---|
| **Wildlife** | **Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| **Marsh Breeding Bird Habitat <u>Rationale;</u>**<br>Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes. | American Bittern<br>Virginia Rail<br>Sora<br>Common Moorhen<br>American Coot<br>Pied-billed Grebe<br>Marsh Wren<br>Sedge Wren<br>Common Loon<br>Sandhill Crane<br>Green Heron<br>Trumpeter Swan<br><br>**Special Concern:** Black Tern Yellow Rail | MAM1 MAM2<br>MAM3 MAM4<br>MAM5 MAM6<br>SAS1 SAM1<br>SAF1 FEO1<br>BOO1<br><br>For Green Heron: All SW, MA and CUM1 sites. | • Nesting occurs in wetlands.<br>• All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present cxxiv.<br>• For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.<br>Information Sources<br>• OMNRF District and wetland evaluations.<br>• Field Naturalist clubs<br>• Natural Heritage Information Center (NHIC) Records.<br>• Reports and other information available from Conservation Authorities.<br>• Ontario Breeding Bird Atlas. | Studies confirm:<br>• Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or **or** 1 pair of Sandhill Cranes; **or** breeding by any combination of 5 or more of the listed species.<br>• Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH.<br>• Area of the ELC ecosite is the SWH.<br>• Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #35 provides development effects and mitigation measures | **Not Present**: Target species were not observed during Breeding Bird Surveys. |
| **Open Country Bird Breeding Habitat**<br><br>**<u>Rationale:</u>**<br>This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records. | Upland Sandpiper<br>Grasshopper Sparrow<br>Vesper Sparrow<br>Northern Harrier<br>Savannah Sparrow<br><br>**Special Concern**<br>Short-eared Owl | CUM1<br>CUM2 | • Large grassland areas (includes natural and cultural fields and meadows) >30ha<br>• Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years) .<br>• Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older.<br>• The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.<br><br><u>Information Sources</u><br>• Agricultural land classification maps, Ministry of Agriculture.<br>• Local bird clubs.<br>• Ontario Breeding Bird Atlas<br>• Reports and other information available from C0nservation Authorities. | Field Studies confirm:<br>• Presence of nesting or breeding of 2 or more of the listed species. A field with 1 or more breeding Short-eared Owls is to be considered SWH.<br>• The area of SWH is the contiguous ELC ecosite field areas.<br>• Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories.<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #32 provides development effects and mitigation measures | **Not Present**: Target species observed during breeding bird surveys (i.e. savannah sparrow and northern harrier) occurred at different point count (PC) locations in active agricultural fields. Three (3) savannah sparrows were observed at PC 5 while one (1) northern harrier was observed at PC 4. Active agricultural lands are not considered SWH. |

| Habitats of Species of Conservation Concern considered SWH | | | | | |
|---|---|---|---|---|---|
| **Wildlife** | **Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| **Shrub/Early Successional Bird Breeding Habitat**<br><br>**<u>Rationale:</u>**<br>This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records [cxcix]. | <u>Indicator Spp</u>: Brown Thrasher Clay-coloured Sparrow<br><br><u>Common Spp.</u><br>Field Sparrow<br>Black-billed Cuckoo<br>Eastern Towhee Willow Flycatcher<br><br>**Special Concern:**<br>Yellow-breasted Chat<br>Golden-winged Warbler | CUT1 CUT2<br>CUS1 CUS2<br>CUW1 CUW2<br><br>Patches of shrub ecosites can be complexed into a larger habitat for some bird species | • Large field areas succeeding to shrub and thicket habitats>10ha in size.<br>• Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5years).<br>• Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species.<br>• Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.<br><br><u>Information Sources</u><br>• Agricultural land classification maps, Ministry of Agriculture.<br>• Local bird clubs.<br>• Ontario Breeding Bird Atlas<br>• Reports and other information available from Conservation Authorities. | Field Studies confirm:<br>• Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species.<br>• A habitat with breeding Yellow- breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. The area of the SWH is the contiguous ELC ecosite field/thicket area.<br>• Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories<br>• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"<br>• SWHMiST Index #33 provides development effects and mitigation measures. | **Not Present**: Target species were not observed during Breeding Bird Surveys. |
| **Terrestrial Crayfish**<br><br>**<u>Rationale:</u>**<br>Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. | Chimney or Digger Crayfish; (*Fallicambarus fodiens*)<br><br>Devil Crayfish or Meadow Crayfish; (*<u>Cambarus Diogenes</u>*) | MAM1<br>MAM2<br>MAM3<br>MAM4<br>MAM5<br>MAM6<br>MAS1<br>MAS2<br>MAS3<br>SWD<br>SWT<br>SWM<br><br>CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish. | Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish.<br>• Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water.<br>• Both species are a semi- terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed.<br>Information Sources "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998 | Studies Confirm:<br>• Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites<br>• Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH.<br>Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult<br>• SWHMiST Index #36 provides development effects and mitigation measures. | **Not Present**: Evidence of terrestrial crayfish (i.e. crayfish chimneys) were not observed during field surveys. |
| **Special Concern and Rare Wildlife Species**<br><br>**<u>Rationale:</u>**<br>These species are quite rare or have experienced | All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural | All plant and animal element occurrences (EO) within a 1 or 10km grid.<br><br>Older element occurrences were recorded prior to GPS | When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites | Studies Confirm:<br>• Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. | **Candidate outside area of disturbance**: Potentially suitable foraging habitat is available within the study area for **snapping turtle** (SC; S3). |

| Habitats of Species of Conservation Concern considered SWH | | | | | |
|---|---|---|---|---|---|
| **Wildlife** | **Species** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Ecosite** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| significant population declines in Ontario. | Heritage Information Centre. | being available, therefore location information may lack accuracy | Information Sources<br>• Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data.<br>• NHIC Website "Get Information": http://nhic.mnr.gov.on.ca<br>• Ontario Breeding Bird Atlas<br>• Expert advice should be sought as many of the rare spp. have little information available about their requirements. | • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat.<br>• SWHMiST Index #37 provides development effects and mitigation measures. | |

| Animal Movement Corridors | | | | | |
|---|---|---|---|---|---|
| **Habitat** | **SPECIES** | **CANDIDATE SWH** | | **CONFIRMED SWH** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **ELC Eco-sites** | **Habitat Criteria and Information Sources** | **Defining Criteria** | |
| **Amphibian Movement Corridors**<br><br>**<u>Rationale:</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations. | Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog | Corridors may be found in all ecosites associated with water.<br>• Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1 | Movement corridors between breeding habitat and summer habitat.<br>Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (**Amphibian Breeding Habitat – Wetland)** of this Schedule.<br><br><u>Information Sources</u><br>• MNRF District Office.<br>• Natural Heritage Information Center (NHIC).<br>• Reports and other information available from Conservation Authorities.<br>• Field Naturalist Clubs. | • Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites.<br>Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant<br>• Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m.<br>• Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat.<br>• SWHMiST Index #40 provides development effects and mitigation measures | **Candidate outside area of disturbance**: Likely amphibian movement corridors within and adjacent to the study area includes the natural watercourse riparian area on the south side of Line 8, and on the north side of Line 8 leading to the woodland at the east end of Crossland Blvd. Line 8 is a barrier to amphibian movement and should not be considered a movement corridor between wetlands on the south and north sides of Line 8. |
| **Deer Movement Corridors**<br><br>**<u>Rationale:</u>** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling. | White-tailed Deer | Corridors may be found in all forested ecosites.<br><br>A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors. | Movement corridor must be determined when **Deer Wintering Habitat** is confirmed as SWH from Table 1.1 of this schedule.<br><br>• A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion<br>• Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges).<br><br><u>Information Sources</u><br>• MNRF District Office.<br>• Natural Heritage Information Center (NHIC).<br>• Reports and other information available from Conservation Authorities.<br>• Field Naturalist Clubs. | • Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas.<br>• Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas.<br>• Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway . Shorter corridors are more significant than longer corridors.<br>SWHMiST Index #39 provides development effects and mitigation measures | **Not Present**: As deer wintering habitat is not present within the study area, potentially suitable deer movement corridors are also not present within the study area. |

| Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E | | | | | | |
|---|---|---|---|---|---|---|
| **EcoDistrict** | **Wildlife Habitat and Species** | **Candidate SWH** | | | **Confirmed SWH Defining Criteria** | **Potential for Candidate and/or Confirmed SWH in Study Area** |
| | | **Ecosites** | **Habitat Description** | **Habitat Criteria and Information** | | |
| **6E-14**<br><br>**Rationale:** The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears. | **Mast Producing Areas**<br><br>Black Bear | All Forested habitat represented by ELC Community Series:<br><br>FOM<br>FOD | • Black bears require forested habitat that provides cover, winter hibernation sites, and mast- producing tree species.<br><br>• Forested habitats need to be large enough to provide cover and protection for black bears. | Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech),<br><br><u>Information Sources</u><br>Important forest habitat for black bears may be identified by OMNRF. | • All woodlands > 30 ha with a 50% composition of these ELC Vegetation Types are considered significant:<br>FOM1-1 FOD4-1<br>FOM2-1 FOD5-2<br>FOM3-1 FOD5-3<br>FOD1-1 FOD5-7<br>FOD1-2 FOD6-5<br>FOD2-1<br>FOD2-2<br>FOD2-3<br>FOD2-4<br><br>SWHMiST Index #3 provides development effects and mitigation measures. | **Not Present**: Potentially suitable habitat (i.e. mast producing species are not in abundance within the study area) is not present within the study area. Additionally, the target vegetation community types are not in the study area. |
| **6E- 17**<br><br>**Rationale:** Sharp-tailed grouse only occur on Manitoulin Island in Eco- region 6E, Leks are an important habitat to maintain their population | **Lek**<br><br>**Sharp-tailed Grouse** | CUM CUS CUT | • The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography.<br>• Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated. | Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland.<br>• Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying)<br>• Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree Planting<br><br><u>Information Sources</u><br>• OMNRF district office<br>• Bird watching clubs<br>• Local landowners<br>Ontario Breeding Bird Atlas | Studies confirming lek habitat are to be completed from late March to June.<br>• Any site confirmed with sharp-tailed grouse courtship activities is considered significant<br>• The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat<br>SWHMiST Index #32 provides development effects and mitigation measures | **Not Present**: Sharp-tailed grouse are not found locally. |