BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix C

Natural Environment Report

Sheridan Park Drive Extension Municipal Class EA

Natural Environment Report

City of Mississauga

R.J. Burnside & Associates Limited
6990 Creditview Road, Unit 2
Mississauga ON L5N 8R9 CANADA

November 2017
300039474.0000

Distribution List

No. of Hard Copies	PDF	Email	Organization Name
0	Yes	Yes	City of Mississauga

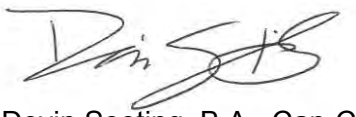
Record of Revisions

Revision	Date	Description
0	September 8, 2017	Draft Submission to City
1	November 13, 2017	Final Submission to City

R.J. Burnside & Associates Limited

Report Prepared By:

Peter De Carvalho, B.Sc. (Bio), Rest Cert, B.Eng. (Env), EIT
Terrestrial Ecologist
PD:sr/js



Devin Soeting, B.A., Can-CISEC
Environmental Technologist
DS:sr/js

Hannah Maciver, B.E.S.
Terrestrial Ecologist
HM:sr/js

Report Reviewed By:

Nicholle Smith, B.A., EMPD
Senior Terrestrial Ecologist
NS:sr/js

Executive Summary

As part of the Sheridan Park Drive Extension Environmental Assessment (EA) study, this report has been prepared to document the assessment of the natural environment within the Study Area that may be affected, directly or indirectly, by the proposed extension.

Detailed field surveys were undertaken to characterize terrestrial and aquatic habitats within 120 m of the proposed road extension (the Study Area). Field investigations included the delineation of vegetation communities, breeding bird surveys, the identification of bat maternity and roosting habitat, and an aquatic habitat classification and fish presence survey.

Lands within the Study Area Vicinity, defined as lands within 500 m of the proposed road extension, were also evaluated based on a desktop review of background reports, aerial photography, natural heritage databases, and agency consultation. The major findings of this study are divided into vegetation communities, significant natural heritage features, Species at Risk, and aquatic habitats.

Vegetation Communities

Vegetation communities were characterized using the Ecological Land Classification system at the ecosite level for the Study Area using protocols outlined in Lee *et al*. (1998). Three vegetation community types were identified in the Study Area, split between eight distinct vegetation community polygons. The communities identified were:

- Fresh-Moist Oak-Sugar Maple Deciduous Forest / Fresh-Moist Shagbark Hickory Deciduous Forest (FOD9-1 / FOD9-4);
- Cultural Thicket (CUT); and
- Cultural Meadow (CUM).

Significant Natural Heritage Features

Significant Woodland was identified within the Study Area and confirmed during field studies to extend into the City owned right-of-way (ROW) based on the size criteria, as described in Section 5.1.3. The extent of the Significant Woodland within the ROW is 0.44 ha. The definition of Significant Woodland was taken from the City of Mississauga Official Plan, which was guided by the Provincial Policy Statement.

There were no significant wetlands, valleylands, or areas of natural and scientific interest (ANSI) identified during this study.

Ten candidate and two confirmed Significant Wildlife Habitats, as defined by the Ministry of Natural Resources and Forestry, were identified in the Study Area:

- Candidate Waterfowl Stopover and Staging Areas (Terrestrial);
- Candidate Raptor Wintering Area;
- Candidate Bat Maternity Colonies;
- Candidate Reptile Hibernaculum;
- Candidate Monarch Butterfly Stopover Areas;
- Candidate Landbird Migratory Stopover Areas;
- Candidate Old Growth Forest;
- Candidate Amphibian Breeding Habitat (Woodland);
- Candidate Shrub / Early Successional Bird Breeding Habitat;
- Confirmed Special Concern and Rare Wildlife Species;
  - Eastern Wood-pewee;
  - Wood Thrush;
  - Monarch; and
- Candidate Amphibian Movement Corridors.

Additionally, two candidate Significant Wildlife Habitats, as defined by the Region of Peel, were identified in the Study Area:

- Candidate Migratory Land Bird Stopover (Successional, Natural); and
- Candidate Foraging Areas with Abundant Mass.

Several considerations were made when determining anticipated impacts to Significant Wildlife Habitats (SWH) identified within the Study Area. The areas of encroachment anticipated from proposed road developments are relatively small edge habitat zones which have been heavily degraded by anthropogenic pressures and the encroachment of invasive species. These edge habitats have been assessed as having low ecological integrity and value. As such, the removal of these areas is not anticipated to represent a significant detrimental impact on the ecological functionality of any SWH that may be present in the adjacent Study Area.

Species at Risk

No Species at Risk (SAR) were identified during site specific field studies conducted as part of the EA. Candidate habitat exists on the Study Area for Eastern Meadowlark (Threatened), Little Brown Myotis (Endangered), Northern Myotis (Endangered), Tri-colored Bat (Endangered), and Butternut (Endangered). In the Study Area Vicinity there is also potential habitat for Barn Swallow (Threatened) and Chimney Swift (Threatened).

The most effective way to minimize impacts to these candidate habitats is to reduce the footprint of road works as much as possible. In the event that tree removal will be required, trees to be removed must be assessed on a case-by-case basis to determine whether they may be suitable as Bat Maternity Habitat (BMH). If a BMH tree must be

removed, permitting may be required from the MNRF to remove SAR habitat and compensatory offsetting may be required.

Although no Butternut trees were identified in the areas predicted to be impacted by the road, trees to be removed should be confirmed to the species level during the detailed design phase of the project to avoid the incidental removal of Butternut. No impacts to candidate habitat for Eastern Meadowlark are anticipated.

Aquatic Habitat

The aquatic environment in the Study Area comprised of two watercourses and three headwater features of Sheridan Creek. All watercourses flow generally from northwest to southeast through the Study Area.

Watercourse 1

Watercourse 1 was assessed as likely intermittent. The segment of this watercourse within the Study Area features significant riparian vegetation that would provide shade and contribute to potential habitat to resident fish. Streambanks were identified as slightly unstable; undercutting was observed along limited sections of the banks. Small amounts of Watercress were observed along the eastern bank of the channel, which can be a potential indication of groundwater contribution.

Watercourse 2

Watercourse 2 was located southwest of Watercourse 1 and originated upstream of the paved trail. This watercourse likely receives its water from overland sheet flow contributed by surrounding lands. Downstream of the paved trail, the watercourse becomes ponded by a footpath, which indicated a barrier to potential fish migration. This watercourse was assessed as appearing to be incapable of providing direct fish habitat; it was noted, however, that this watercourse does likely contribute to water quality and quantity to Sheridan Creek during the spring freshet and in periods of extended precipitation.

Fish Habitat

No fish were observed during the site visit and subject aquatic features appear to provide little to no potential to support direct fish habitat. Fish populations have also been identified as being likely limited in the upstream reaches of Sheridan Creek and its tributaries. These factors, intermittent or ephemeral flows, low water quantity, in-stream barriers, and potentially degraded water quality contribute to the conclusion that there is likely no direct fish habitat within the Study Area. No records of aquatic SAR were identified as potentially inhabiting the watercourse within the Study Area itself, or within the Sheridan Creek Watershed.

Conclusions

The footprint of the proposed road extension alignment was selected in an effort to both avoid and minimize the potential for adverse effects to the natural heritage features and functions associated with the Study Area. The shoulder grading on the planned right-of-way for Sheridan Drive has been modified with the intention of mitigating area disturbance and removal of habitat adjacent to the proposed road extension.

The proposed extension will require minor intrusion into adjacent Candidate and Confirmed SWH, edge removals of some trees and vegetation, and encroachment into identified Headwater Drainage Areas. However, direct and indirect impacts as a result of the proposed extension is expected to have no net impact overall to the existing natural environment. Additionally, the proposed road extension is not anticipated to impact the form and function of vegetation, wildlife habitat and headwater drainage features. Direct and indirect impacts on the natural environment located outside of the proposed road right-of-way can be managed through appropriate mitigation measures and monitoring activities, as detailed in this Report.

Table of Contents

Tables

Figures

Appendices

Disclaimer

Other than by the addressee, copying or distribution of this document, in whole or in part, is not permitted without the express written consent of R.J. Burnside & Associates Limited.

In the preparation of the various instruments of service contained herein, R.J. Burnside & Associates Limited was required to use and rely upon various sources of information (including but not limited to: reports, data, drawings, observations) produced by parties other than R.J. Burnside & Associates Limited. For its part R.J. Burnside & Associates Limited has proceeded based on the belief that the third party/parties in question produced this documentation using accepted industry standards and best practices and that all information was therefore accurate, correct and free of errors at the time of consultation. As such, the comments, recommendations and materials presented in this instrument of service reflect our best judgment in light of the information available at the time of preparation. R.J. Burnside & Associates Limited, its employees, affiliates and subcontractors accept no liability for inaccuracies or errors in the instruments of service provided to the client, arising from deficiencies in the aforementioned third party materials and documents.

R.J. Burnside & Associates Limited makes no warranties, either express or implied, of merchantability and fitness of the documents and other instruments of service for any purpose other than that specified by the contract.

Glossary of Terms and Acronyms

ANSI:	Significant Areas of Natural and Scientific Interest
BMH:	Bat Maternity Habitat
Burnside:	R.J. Burnside & Associates Limited
COSEWIC:	Committee on the Status of Endangered Wildlife in Canada
COSSARO:	Committee on the Status of Species at Risk in Ontario
CRA Fishery:	Commercial, Recreational, or Aboriginal Fishery
CVC:	Credit Valley Conservation Authority
DBH:	Diameter at Breast Height
DFO:	Fisheries and Oceans Canada
ECCC:	Environment and Climate Change Canada
ELC:	Ecological Land Classification
ESA	*Endangered Species Act*
LIO:	Land Information Ontario
NHIC:	Natural Heritage Information Centre
NHRM:	Natural Heritage Reference Manual
NHS:	Natural Heritage System
MMAH:	Ministry of Municipal Affairs and Housing
MNRF:	Ministry of Natural Resources and Forestry
MBCA:	*Migratory Birds Convention Act*
MBR:	Migratory Birds Regulations
MOECC:	Ministry of the Environment and Climate Change
MOP:	City of Mississauga Official Plan
OBBA:	Ontario Breeding Bird Atlas
ORAA:	Ontario Reptile and Amphibian Atlas
OPSS:	Ontario Provincial Standard Specifications
ORAA:	Ontario Reptile and Amphibian Atlas
PPS:	Provincial Policy Statement 2014 - the statement of the government's policies on land use planning.
RPOP:	Region of Peel Official Plan
SAR:	Species at Risk
SARA:	Federal *Species at Risk Act*
SARO:	Species at Risk in Ontario List
SCC:	Species of Conservation Concern
SWH:	Significant Wildlife Habitat
SWHTG:	Significant Wildlife Habitat Technical Guide

1.0 Introduction

The City of Mississauga (City) has undertaken a Municipal Class Environmental Assessment (EA) to investigate the proposed extension of Sheridan Park Drive between Homelands Drive and Speakman Drive in the southwestern area of Mississauga. R.J. Burnside & Associates Limited (Burnside) has facilitated the EA on behalf of the City.

The Study has followed a comprehensive planning and design process in order to explore the opportunity to connect the east and west sections of Sheridan Park Drive, improve the road network connectivity in the residential neighborhood and business area, create options for alternative routes and improve multi-modal network connectivity. The Study has been completed in accordance with the requirements of a Schedule B Undertaking as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment Document (October 2000, as amended 2007, 2011 & 2015), which is an approved process under the *Ontario Environmental Assessment Act.*

As part of the EA Study, Burnside has completed a Natural Environment Report (NER) to identify the potential impacts and constraints that may arise as a result of proposed developments within the Study Area and Vicinity and any potential mitigation measures.

1.1 Study Area

The Study Area is generally bordered by a utility corridor to the north, Winston Churchill Boulevard to the west, Speakman Drive / Homelands Drive to the east and naturalized private lands to the south. The Study Area is illustrated on Figure 1. The proposed extension of Sheridan Park Drive falls within the existing City of Mississauga owned right-of-way (ROW), which runs through the centre part of the Study Area.

The Study Area includes a unique combination of uses including the Sheridan Park Corporate Centre (Sheridan Park), a utility corridor that includes a multi-use trail and the Sheridan Homelands residential neighborhood.

Sheridan Park is a 340 acre corporate centre, which is primarily designated Business Development in the City of Mississauga's Official Plan (MOP) (City of Mississauga, 2017). The majority of Sheridan Park is occupied by private industries and businesses, which include in their landholdings significant natural areas on the north side of corporate centre, within the Study Area. These naturalized areas include two wooded areas that are identified as Significant Natural Areas in the City's Natural Areas Survey (2016 Update). Sheridan Park is also identified as one of the City's cultural landscape due to its scenic and distinct visual qualities.

The City maintains a paved multi-use trail through the utility corridor from Winston Churchill Boulevard to Homelands Drive / Speakman Drive. The trail then continues

east along the south side of Sheridan Park Drive to Erin Mills Parkway. To the west of Winston Churchill Boulevard, the trail continues through the hydro corridor in Oakville. The trail provides recreational opportunities to the local residents and commuter cyclists.

Figure 1: Study Area

For the purposes of this Report, the Study Area is defined as the area within approximately 120 m of the proposed road extension. Lands within the Study Area Vicinity, defined as lands within approximately 500 m of the proposed road extension, were also evaluated based on a desktop review of background reports, aerial photography, natural heritage databases, and agency consultation.

1.2 Study Purpose

The purpose of this study is to assess the natural environment within the Study Area and Study Area Vicinity that may be affected, directly or indirectly, by the proposed road extension. Provincial and local significance of natural features will be evaluated, as well an assessment on the presence of species and habitats protected by Ontario legislature and guiding documentation.

1.3 Study Organization

This study discusses pertinent legislature and other documentation, assessment of background information and natural site history, methodology of data collection, analysis of results, and interpretation of implications from a natural environment perspective. The logical flow of these concepts follows the general steps as outlined below:

- Identification of Planning and Environmental Policy Considerations;
- Background Records Review;
- Site Investigation:
  - Methodologies;
  - Results;
  - Analyses;
- Identification of Features of Provincial Significance ; and
- Identification of Features of Local Significance.

2.0 Planning and Environmental Policy Considerations

The following policies, Acts and regulations apply to features present in the Study Area and Study Area Vicinity.

2.1 *Federal Fisheries Act*, 1985

The *Fisheries Act*, *1985* is administered by Fisheries and Oceans Canada (DFO) (DFO, 1985). On June 29, 2012, amendments to the Federal *Fisheries Act* were approved. The changes are focused on protecting the productivity of commercial, recreational and Aboriginal fisheries (CRA fishery). On November 25, 2013, amended fish and fish habitat and pollution prevention provisions came into effect. The federal government is now focusing protection rules on significant threats to the fisheries and the habitat that supports them, while setting clear standards and guidelines for routine projects. The amended *Fisheries Act* requires that any development project avoid causing serious harm to fish unless authorized by DFO. This applies to any works being undertaken in or near waterbodies that support fish that are part of, or that support a CRA fishery.

Any waterbody or watercourse that could be potentially impacted that contains fish during any time of the year, and/or contributes to a CRA fishery as described in the

Fisheries Act is protected. Documented waterbodies and watercourses that are part of, or contribute to a CRA fishery are discussed herein and shown on accompanying Figures. *Fisheries Act* compliance is required as part of the proposed works.

2.2 *Species at Risk Act*, 2002

As per the Species at Risk Public Registry, the Act is a key federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides for the legal protection of wildlife species and the conservation of their biological diversity (Government of Canada 2017).

The purposes of the Act are to prevent Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and encourage the management of other species to prevent them from becoming at risk.

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

To ensure the protection of Species at Risk, SARA contains prohibitions that make it an offence to:

- Kill, harm, harass, capture, or take an individual of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated;
- Possess, collect, buy, sell or trade an individual of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated; and
- Damage or destroy the residence (e.g. nest or den) of one or more individuals of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated, if a recovery strategy has recommended the reintroduction of that extirpated species.

These prohibitions apply on all federal lands in a province and all federal lands in a territory under the authority of the Minister of the Environment or the Parks Canada Agency (Government of Canada 2017).

2.3 *Migratory Birds Convention Act*, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) and the Migratory Bird Regulations (MBR) are federal legislative requirements that are binding on members of the public and all levels of government, including federal and provincial governments (ECCC,

1994; ECCC, 2013). The legislation protects certain species[1], controls the harvest of others, and prohibits commercial sale of all species.

One key responsibility under the MBCA is described in Section 6 of the associated MBR:

> *"Subject to subsection 5(9), no person shall disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under authority of a permit therefor."*

The "incidental take" of migratory birds and the disturbance, destruction or taking of the nest of a migratory bird is prohibited. "Incidental take" is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds.

No permit can be issued for the incidental take of migratory birds or their nest or eggs as a result of economic activities. These prohibitions apply throughout the year. Environment Canada and the Canadian Wildlife Service have compiled nesting calendars that show the variation in nesting intensity, by habitat type and nesting zone, within broad geographical areas distributed across Canada. While this does not mean nesting birds will not nest outside of these periods, the calendars can be used to greatly reduce the risk of encountering a nest. Environment Canada advises avoidance as the best approach.

2.4 Provincial Policy Statement, 2014

The Provincial Policy Statement (PPS) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario (MMAH, 2014). The PPS, dated 2005, was updated in 2014 and includes some changes to the policies for Natural Heritage, Wetlands and Water. This report will address Section 2.1 of the PPS (Natural Heritage).

Eight types of natural heritage features are identified in Sections 2.1.4 and 2.1.5 of the PPS where development and site alteration are not permitted unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

1. *Significant Wetlands in Ecoregions 5E, 6E and 7E;*

---

[1] *Bird species not regulated under the Act include: Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's ESA or the federal SARA, additional restrictions may apply.*

2. *Significant Coastal Wetlands;*
3. *Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;*
4. *Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);*
5. *Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Mary's River);*
6. *Significant Wildlife Habitat (SWH);*
7. *Significant Areas of Natural and Scientific Interest (ANSIs); and*
8. *Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b).*

Sections 2.1.6, 2.1.7, and 2.1.8 identify three additional development and site alteration prohibitions and exemptions, as follows:

1. *Fish habitat except in accordance with provincial and federal requirements;*
2. *Habitat of endangered species and threatened species, except in accordance with provincial and federal requirements; and*
3. *On adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*

The presence, or potential presence, of these features as well as the policy and planning implications of these features for development are discussed in detail in this Report.

2.5 Provincial *Endangered Species Act*, 2007

The *Endangered Species Act, 2007* (ESA) provides protection for Species at Risk (SAR) and their habitat (MNRF, 2007). The ESA is administered by the Ministry of Natural Resources and Forestry (MNRF) and provides policies for the protection of extirpated, endangered and threatened species, as well as species of special concern. These four categories of species form the Species at Risk in Ontario (SARO) List, which are classified by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is also responsible for maintaining criteria for assessing and classifying SAR (MNRF, 2017b).

The ESA helps protect species (Section 9) and their habitat (Section 10).
Section 9(1)(a) of the ESA (2007) states "*no person shall kill, harm, harass, capture or take a living member of a species that is listed on the SARO list as extirpated, endangered or threatened*". Section 10(1) (a) of the ESA, 2007 states "*no person shall damage or destroy the habitat of a species that is listed on the SARO list as an endangered or threatened species*".

The ESA includes a general habitat regulation as well as species-specific habitat regulations. Species uplisted to endangered or threatened automatically receive general habitat protection under the ESA. The province is then required to prepare a species recovery strategy and establish a habitat regulation according to requirements of the ESA.

The SARO List is constantly being updated. It is therefore the proponent's responsibility to practice due diligence in order to ensure that the ESA and its regulations are not violated.

2.6 Credit Valley Conservation Authority

Portions of the subject lands are located within the Credit Valley Conservation Authority (CVC) Regulation limit (CVC, 2017). CVC administers Ontario Regulation (O. Reg.) 160/06, *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* (MNRF, 2013). Through this regulation, CVC has the ability to:

- Prohibit, regulate or require the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland; and
- Prohibit, regulate or require the permission of the authority for development, if in the opinion of the authority, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected by the development.

The proposed development would require a permit application under O. Reg. 160/06. CVC will assess the application in order to determine if the proposed works will be affected by the above, in accordance with their programs and policies.

2.7 Region of Peel Official Plan

The Region of Peel Official Plan (RPOP), adopted in 1996 and consolidated December 2016, defines and guides the implementation of land use policies for all communities within the Region of Peel (Region of Peel, 2016). It incorporates the GGH, the Oak Ridges Moraine, and the Niagara Escarpment into its Greenlands System; the system's overarching philosophy is to protect natural areas through maintaining linkages, where ecologically appropriate, into a network of natural core areas and corridors.

The Greenlands System is divided into Core Areas, Natural Areas and Corridors, and Potential Natural Areas and Corridors. Core Areas are identified landscapes that contain ecological features, forms and/or functions that represent uninterrupted natural system and the highest potential for biodiversity (Region of Peel, 2016). Natural Areas and Corridors are lands identified as containing important ecological features, forms and/or functions that can also support the integrity of the Greenlands System within the

Region. Potential Natural Areas and Corridors are similar to Natural Areas and Corridors though their status and significance within the Greenlands System may require additional study and evaluation.

2.8 City of Mississauga Official Plan

The City of Mississauga Official Plan (MOP) consolidation of March, 2017 is the guiding document for development and growth within the City (City of Mississauga, 2017). It reflects Mississauga's strategic goals:

- Lead and encourage environmentally responsible approaches;
- Conserve, enhance and connect natural environments; and
- Promote a green culture.

The MOP incorporates aspects of the PPS, the Greenbelt Plan, and the RPOP into its policies. From an environmental perspective, the plan incorporates significant natural and hazard areas into its Greenland system. Development is restricted in Greenland space to protect people and property from damage, as well as to provide protection, enhancement, and restoration of the Natural Heritage System (City of Mississauga, 2017).

2.9 The City of Mississauga Urban Forest Management Plan

The Natural Heritage and Urban Forest Strategy, along with the Urban Forest Management Plan (UFMP) 2014-2033 (January 2014), guides the management of Mississauga's Natural Heritage System and Urban Forest to ensure they are protected, enhanced, restored and expanded for future generations . The UFMP was completed in 2014 as the City's response to the challenges facing the City's Urban Forest. A key part of the UFMP is to monitor the status of the urban forest through analysis of the urban canopy.

General Objectives of the UFMP include the following to provide integrated direction and a holistic approach to managing parks and natural areas within the urban setting of the City through the establishment of city-wide plans for both public and private forested lands:

- *Increase … awareness of the value and need to protect enhance, expand and restore the Natural Heritage System (NHS) and the Urban Forest (UF).*
- *Expand the NHS and the UF by pursuing opportunities through the development application process, infilling and redevelopment of public and private lands, and public acquisition.*
- *Build on existing, and develop new, public and private sector partnerships to help pursue and implement the vision and targets for the NHS and UF.*

- *Undertake regular monitoring of the NHS and UF to evaluate performance and identify trends or changes that may require a shift in management approaches or practices.*

Implementation, guidance documents and plans will feed back into the MOP.

3.0 Background Records Review

3.1 Methodology

The background records review took into account the proposed development envelope and surrounding lands. The total project area was determined to be approximately 37 ha. The Study Area encompassed an approximate radius of 120 m from the proposed road works, while the Study Area Vicinity encompassed all natural areas within 500 m of the proposed road extension (Figure 1). All lands within the Study Area were studied as part of the high level desktop review to identify significant natural heritage features located within the Study Area and Study Area Vicinity that have the potential to be impacted by the proposed works. Some background sources provided a broader scope of search area that extended up to 10 km from the Study Area (i.e., Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas).

An aquatic assessment was also required based on the proximity of the potential works to several watercourses and potential fish habitat, as well as the implications of O. Reg. 160/06, *Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation,* administered by CVC (MNRF, 2013). A comprehensive desktop review of background information was completed to compile and review existing information of the local aquatic environment available for the Study Area and Vicinity.

Information acquired through this desktop assessment was used to help guide field studies and evaluate the significance of on-site observations. Information was reviewed from the data sources identified in Table 3.1. In addition to background documents, relevant agencies were also contacted to provide additional records as identified in Table 3.2. The results of the background review are contained in Appendix A.

Table 3.1: Background Review Data Sources

Database	Website / Source
Species, Habitat Natural Area Records	
Natural Heritage Information Centre (NHIC) Natural Heritage Viewer NHIC 1x1 km^2 Squares 17PJ0819, 17PJ0719.	http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
Land Information Ontario (LIO)	Geographic Information Systems (GIS)
MNRF Interactive Map of SAR by County/Region	http://www.ontario.ca/environment-and-energy/find-species-risk-your-area
Ontario Breeding Bird Atlas (OBBA 2001-2005) OBBA 10x10 km^2 Square 17PJ01	http://www.birdsontario.org/atlas/datasummaries.jsp?lang=en
Conservation Authority/Fisheries and Oceans Canada (DFO) Aquatic Species at Risk mapping	http://www.conservation-ontario.on.ca/projects/DFO.html
Ontario Reptile and Amphibian Atlas (ORAA) ORAA 10x10 km^2 Square 17PJ01	http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php
Publications	
Sheridan Creek Watershed Study and Impact Monitoring Characterization Report	http://www.creditvalleyca.ca/wp-content/uploads/2015/05/Sheridan-Watershed-March-2011_Phase1.pdf
Credit River Fisheries Management Plan	http://www.creditvalleyca.ca/watershed-science/our-watershed/credit-river-fisheries-management-plan/
Credit Valley Source Protection Area Assessment Report	www.ctcswp.ca/the-science/credit-valley-spa-assessment-report/

Database	Website / Source
Landscape Imagery	
Natural Resources Canada National Air Photo Library	http://www.nrcan.gc.ca/earth-sciences/geomatics/satellite-imagery-air-photos/9265
Ministry of Agriculture, Food, and Rural Affairs Mapping (2015)	http://www.omafra.gov.on.ca/english/landuse/gis/portal.htm
CA Regulations	
Credit Valley Conservation Authority (CVC)	http://www.creditvalleyca.ca/regmap-files/CVC_ScreeningTool_20160111_final.html
Official Plans	
Region of Peel Official Plan (RPOP)	https://www.peelregion.ca/planning/officialplan/
City of Mississauga Official Plan (MOP)	http://www.mississauga.ca/portal/residents/mississaugaofficialplan

Table 3.2: Agencies Contacted for Site-specific Records

Agency	Contact
Ministry of Natural Resources and Forestry (MNRF), Aurora District	Mr. Bohdan Kowalyk District Planner (Acting) 50 Bloomington Rd Aurora ON L4G 0L8
Credit Valley Conservation Authority	Mr. Iftekhar Ahmad Planning Technician 1255 Old Derry Road Mississauga ON L5N 6R4

Records of agency correspondence are found in Appendix B.

3.2 Summary of the Background Records Review

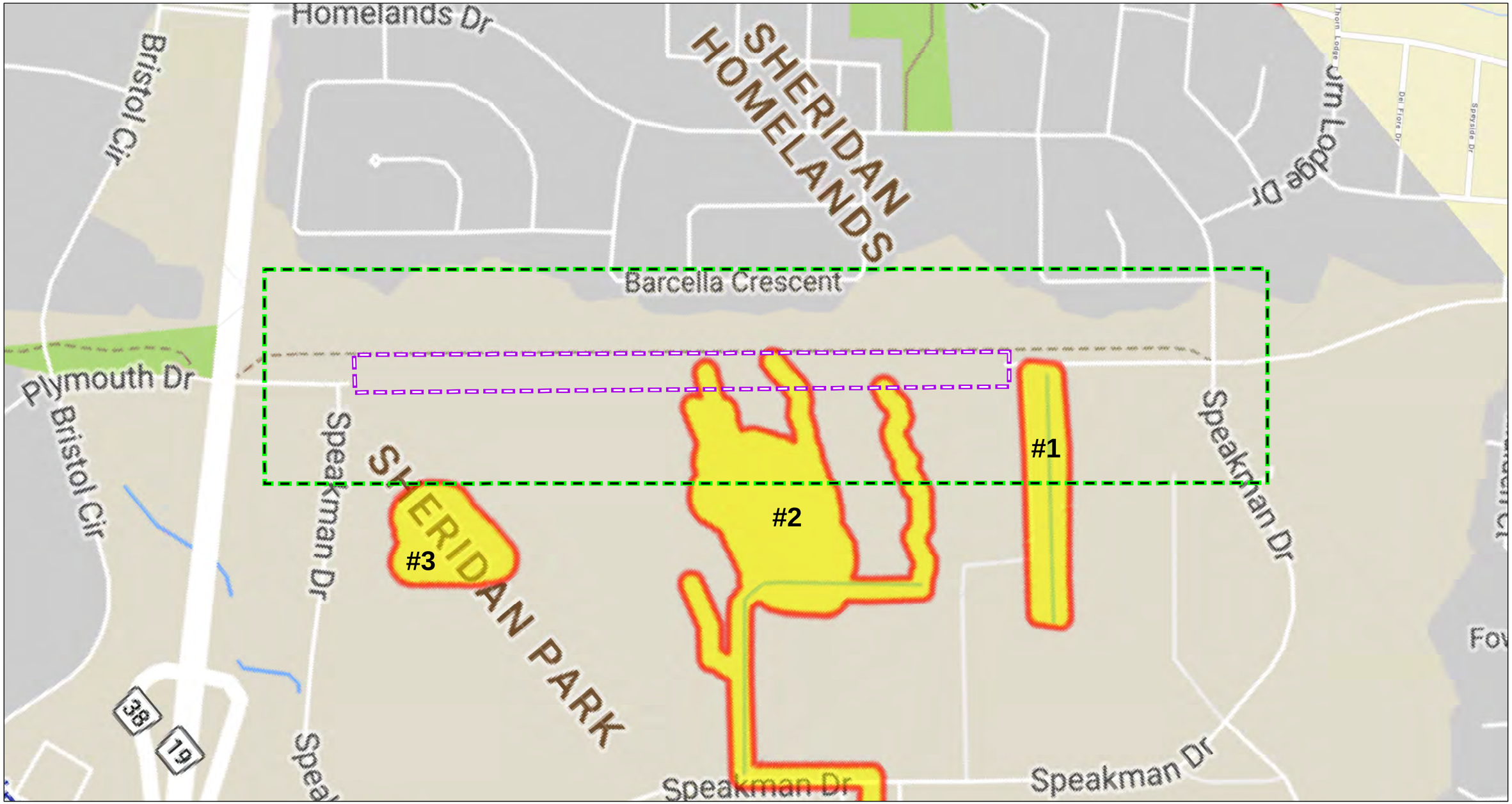
3.2.1 Identification of Regulated Natural Areas

3.2.1.1 Credit Valley Conservation Authority Regulated Areas

Portions of the Study Area are located within the CVC Regulation Limits (CVC, 2017). A southeastern running drainage swale at the southwestern limit of Sheridan Park Drive (#1), several headwater drainage features in the central portion of the project area (#2), and a small lowland area in the southwestern end of the Study Area (#3) have all been identified as falling within CVC regulations, as numbered on Figure 2. The headwater drainage features at #1 are discussed in Sections 4.3.5 and 5.1.7. The lowland areas at #3 appear to be the current location of a commercial building (2855 Speakman Drive). The proposed road extension is not anticipated to impact this area.

3.2.1.2 Region of Peel Official Plan Regulated Areas

The RPOP designates the headwater drainage features, watercourses (tributaries of Sheridan Creek) and surrounding lowlands as being part of the regional Greenlands System (Region of Peel, 2016). Development and site alterations within the Region's Core Greenland Areas are permitted; the prohibitions placed on development in these areas do not apply to essential infrastructure that is authorized under an environmental assessment process.



Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Rotation: -51.2	Scale Factor: 0.99960

True North

0 100 200 300 400

Metres

StudyArea

Sheridan Park Drive Right-of-Way

CVC Generic Regulation Limit

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Data Source: CVC Regulation Mapping

BURNSIDE

Client

CITY OF MISSISSAUGA

Figure Title

SHERIDAN PARK DRIVE EXTENSION

CVC REGULATION LIMIT

Drawn	Checked	Date	Figure No.
HN	PD	2017/09/06	2
Scale		Project No.	
H 1:5,000		300039474	

File Path: E:\Project\300\039474 (Sheridan Park Drive)\Map\039474 CVC Regulation Limit.mxd Print Date: 2017/09/06 Time: 02:01 PM

3.2.1.3 City of Mississauga Official Plan Regulated Areas

Most of the natural areas adjacent to the proposed extension of Sheridan Park Drive are included in the City of Mississauga's Greenland system (City of Mississauga, 2017). Developments within Greenland areas of the City of Mississauga are restricted. According to Section 19.18.5 of the MOP, the following applies when evaluating development adjacent to Greenland areas:

> *Development adjacent to Greenland areas is subject to the delineation of natural hazards, natural areas, buffers and setbacks by the City in consultation with the appropriate conservation authority.*

The planning and development of any extensions to Sheridan Park Drive adjacent to Greenland areas will require consultation with City officials and CVC biologists during the detailed design phase of the project.

3.2.2 Identification of Provincially Significant Natural Features

Provincially significant natural features are natural areas that have been identified by the PPS or the MNRF as being valuable. Some of these areas are determined by established ranking systems, and others are determined by the wildlife they support. Section 5.0 details the provincially significant natural features that were identified through the review of existing records and field data analysis carried out for the Study Area and Study Area Vicinity.

Significant wetlands and Areas of Natural and Scientific Interest (ANSI) are identified through the MNRF and reflected on municipal official plans, while significant valleylands are identified by the local conservation authority. Significant Wildlife Habitat (SWH) is to be assessed using the Significant Wildlife Habitat Criteria Schedules (SWHCS) (MNRF, 2015).

3.2.3 Identification of Provincially Significant Species

Species of Conservation Concern

The term "Species of Conservation Concern" (SCC) is defined under the Natural Heritage Reference Manual (NHRM) as follows:

- Species that are rare or are substantially declining, or have a high percentage of their global population in Ontario;
- Special concern species identified on the SARO List that were formally referred to as "vulnerable" in the Significant Wildlife Habitat Technical Guide (SWHTG; MNR, 2000); and/or
- Species identified as nationally endangered or threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which are not protected in regulation under Ontario's ESA (MNRF, 2005).

The definition for SCC excludes habitats of endangered and threatened species covered under the PPS (MMAH, 2014), specifically, Policy 2.1.3(a). These are discussed separately in Section 5.1.5 of this Report.

Species at Risk

Species designated as endangered are defined under the PPS as "a species that is listed or categorized as an 'endangered species' on the MNRF's official Species at Risk list, as updated and amended from time to time" (MMAH, 2014).

Species designated as threatened are defined under the PPS (MMAH, 2014) as "a species that is listed or categorized as a 'threatened species' on the MNRF's official Species at Risk list, as updated and amended from time to time".

According to the NHRM (MNR, 2005), the definition of "significant" as it pertains to the habitat of endangered or threatened species has two basic characteristics that habitat must exhibit to meet the definition. The habitat must be:

- Necessary for the maintenance, survival and/or recovery of naturally occurring or reintroduced populations; and
- Occupied or habitually occupied by the species during all or any part(s) of its life cycle.

The potential for habitat of rare and endangered species can be assessed using sighting records as found in sources such as the Natural Heritage Information Centre (NHIC), Ontario Bird Breeding Atlas (OBBA), Ontario Reptile and Amphibian Atlas (ORAA), as well as through communication with MNRF area biologists familiar with the lands around the project area.

Summary

Species that are listed as SCC or SAR that were recorded from Burnside's background records review and field studies are discussed in Sections 4.0 and 5.0 and included in the detailed Screening Table in Appendix A. The results of the background review of features and species that may be present in the Study Area and Study Area Vicinity were guided by field investigations that were conducted in spring and summer of 2017 and are discussed in Section 4.0 of this Report.

3.2.4 Aquatic Environment Background Review

The Study Area is located in the upper section of the Sheridan Creek drainage basin within the Lake Ontario Shoreline West Subwatershed within the Credit River Watershed. The Sheridan Creek drainage basin is a relatively highly urbanized watershed whose watercourses are generally highly influenced for anthropogenic purposes, most notably storm water management infrastructure. General hydrologic

symptoms of this influence are hardened and straightened channels, poor water quality, rapid stream flow response to rain/precipitation events, and low quality fish habitat.

The northernmost / upper section of the mainstem of Sheridan Creek originates from a small network of naturalized headwater drainage features and residential storm water management infrastructure, generally flowing southeast through a mix of industrial, commercial, and residential land uses prior to flowing into Lake Ontario via the Rattray Marsh. Reviewed background material from the Sheridan Creek Watershed Study and Impact Monitoring Characterization Report (Aquafor Beech Ltd., 2011) indicated that there are a small number of headwater channels remaining in the Sheridan Creek watershed, which has limited the supply of sediment to the reaches in the upstream portion of the watershed and has resulted in bank erosion and down-cutting within these reaches. Most watercourse reaches downstream of Speakman Drive have been straightened, confined, and hardened in some way. The confinement of these channels within narrow corridors with limited sediment supply from upstream reaches has resulted in down-cutting and increased separation of the channel and its floodplain. In addition to the direct modifications of the channel during development of the watershed, the urbanization of the watershed has also changed the character of the flow in the channel.

The Approved Updated Credit Valley Source Protection Area Assessment Report (2015) indicated that the water quality in the lower more urbanized section of Sheridan Creek, upstream of the Rattray Marsh, contains elevated concentrations above the respective regulatory standards for chlorine, aluminum, and E.coli. However, the upper section is generally not as impacted as the downstream sections.

The Sheridan Creek Watershed Study and Impact Monitoring Characterization Report (Aquafor Beech Ltd., 2011) also identified that potential fish habitat exists in the Rattray Marsh, Sheridan Creek, and its tributaries. The average Index of Biological Integrity calculated for Sheridan Creek was 0.87/5, a poor health rating typical of an urban stream. The report discusses several other aspects of physical habitat conditions in the Sheridan Creek subwatershed relevant to the Study Area, including:

- Zero-order swales have been hardened or piped to prevent flooding and erosion;
- Good shade provided by a treed corridor, although limited in-stream woody cover is present within the mainstem of Sheridan Creek;
- Substrates of the mainstem of Sheridan Creek, as well as downstream in Rattray Marsh appear ideal for fish habitat; and
- Instream barriers are the primary factor in limiting upstream movement of fish, with no fish being found upstream of Clarkson Road.

4.0 Characterization of Existing Natural Environment

4.1 Physiography and Topography (Desktop)

The Study Area is located within the broad, low-lying area known as the Iroquois Plain physiographic region of southern Ontario. This physiographic region was formed by the lacustrine deposits of the historic Lake Iroquois, a waterbody that existed in the late Pleistocene Era. The Iroquois Plain extends around the western portion of Lake Ontario, from the Niagara River to the Trent River (Chapman and Putnam, 1984). As could be anticipated, conditions along this extensive region vary greatly depending on the location. The historic Lake Iroquois shorelines include bars, beaches, boulder and cliff pavements (Chapman and Putnam, 1984), while old sand and gravel bars are considered to be good aquifers and sources of aggregate material. The physiography in the vicinity of the Study Area is characterized by shale plains and is located north and west of two historic beaches and a shore cliff formed by Lake Iroquois. The reviewed surficial geology mapping in the region of the Study Area indicates that the Study Area is underlain by glaciolacustrine deposits of clay to silt till and Paleozoic bedrock (Ontario Geological Survey, 2010). Ministry of Environment and Climate Change (MOECC) water well records in the area of the Study Area indicate that the Site is generally underlain by till and shale formations (red or grey in colour), the latter of which typically contained the water table.

4.2 Natural Heritage Features and Functions Methodology

The purpose of the site investigations was to verify information collected through the background records review, further characterize known features and identify any additional features not previously recorded. The site investigations included:

- Classification of vegetation communities using the Ecological Land Classification (ELC) for Southern Ontario protocol (Lee et al., 1998);
- Avifauna surveys;
- Amphibian breeding call surveys;
- An assessment of aquatic habitat (including a fish presence survey); and
- A review of cultural (originating from, or maintained by, anthropogenic influences and culturally based disturbances) features with the potential to provide significant habitats.

The survey methodologies used are summarized and described below.

4.2.1 Vegetation Communities and Species Inventory

Vegetation communities were characterized using methodologies as presented by Lee *et al*. (1998) in the Ecological Land Classification (ELC) System for Ontario (First Approximation). During these studies, information on the plant species encountered at the Study Area was also compiled into a plant inventory. Field surveys were conducted

on June 7, 2017. The timing of this survey was based on provincially accepted guidelines and the timing of the 2017 spring leaf out. The start of June date was intended to capture both spring ephemerals and the longer-living dominant plant species cover in the vegetation communities. This system involves gathering data on topography, soil moisture regime and effective texture, as well as density and composition of plant species. These data are then used to arrive at specific ecosites that best represent each distinct ecological unit.

4.2.2 Avifauna

Breeding bird surveys were completed for this project on June 1 and 13, 2017 by an Avian Biologist. Breeding bird surveys were completed following the general principles outlined in the *Ontario Breeding Bird Atlas (OBBA) Guide for Participants* (OBBA, 2001), tailored to the needs of this project. The survey methodology is summarized below and in Table 4.1.

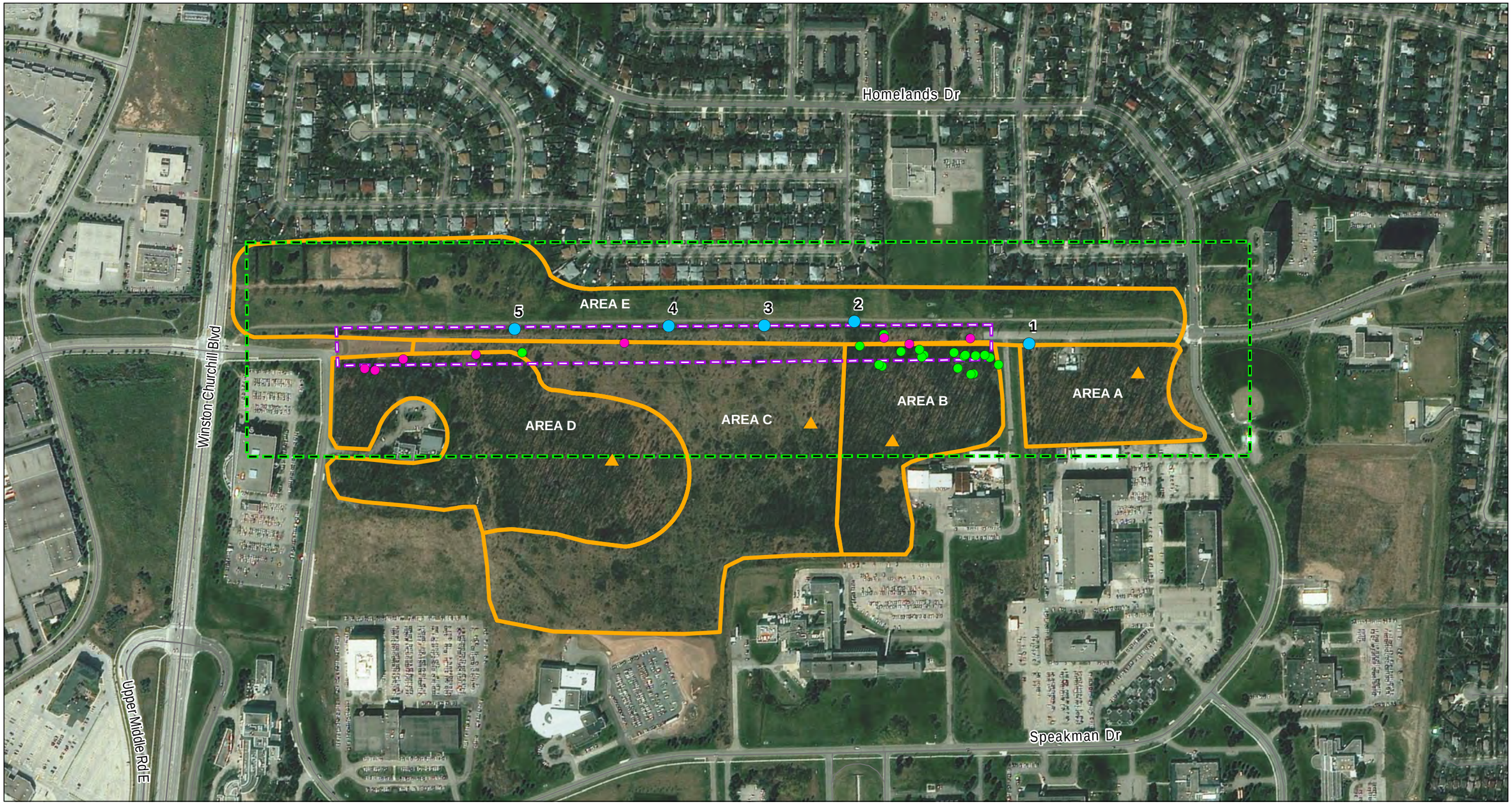
- Surveys were conducted between June 1 and June 13, 2017, which falls within the peak breeding window for the majority of bird species in Southern Ontario;
- The OBBA Guide states that breeding bird surveys conform to the following weather conditions requirements: counts should not be done if it is raining, there is thick fog, or if winds are greater than 19 km per hour (i.e., >3 on the Beaufort scale); Generally, weather conditions were conducive for auditory and visual surveys, with winds less than 19 km per hour, and no precipitation;
- Surveys within the Study Area were conducted by walking transects through each of the vegetation habitats present (refer to Figure 3); and
- All birds observed and heard were recorded, including level of breeding evidence (refer to Section 4.3.2 and Appendix C).

Table 4.1: Summary of Breeding Bird Surveys Conducted by Burnside Staff

June 1, 2017	**Breeding Bird Survey #1**
Time (24 h): 0610-0845	Air Temp (°C): 10-13
Sky Code[1]: 0	Wind Scale[2]: 1-3
June 13, 2017	**Breeding Bird Survey #2**
Time (24 h): 0625-0900	Air Temp (°C): 23
Sky Code[1]: 2	Wind Scale[2]: 0

[1] NAAMP / Beaufort Sky Codes: 0=clear (no cloud cover); 1=partly cloudy (scattered or broken) or variable; 2=cloudy or overcast; 3=sandstorm, dust storm or blowing snow; 4=fog, smoke, thick dust, or haze; 5=drizzle or light rain; 6=rain; 7=snow or snow / rain mix; 8=showers; 9=thunderstorms.

[2] Beaufort Wind Scale: 0=calm, smoke rises vertically (0-2 km/hr); 1=light air movement, smoke drifts (3-5 km/h); 2=slight breeze, wind felt on face; leaves rustle (6-11 km/h); 3=gentle breeze, leaves & twigs in constant motion (12-19 km/h); 4=moderate breeze, small branches moving, raises dust & loose paper (20-30 km/h); 5=fresh breeze, small trees begin to sway (31-39 km/h); 6=strong breeze, large branches in motion (40-50 km/h).



Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Rotation: -51.2	Scale Factor: 0.99960

True North

0 100 200 300 400

Metres

- Candidate Bat Maternity Habitat Tree (Leaf-On)
- Candidate Bat Maternity Habitat Tree (Leaf-Off)
- Amphibian Monitoring Location
- EAWP Location
- Sheridan Park Drive Right-of-Way
- Breeding Bird Survey Location
- Study Area

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

BURNSIDE

Client

CITY OF MISSISSAUGA

Figure Title

SHERIDAN PARK DRIVE EXTENSION

ECOLOGICAL SURVEYS

Drawn	Checked	Date	Figure No.
HN	PD	2017/09/06	3
Scale		Project No.	
H 1:5,000		300039474	

File Path: E:\Project\300\0039474 (Sheridan Park Drive)\Map\039474 Ecological Surveys.mxd Print Date: 2017/09/06 Time: 02:07 PM

4.2.3 Herpetofauna

A review of aerial photographs and mapping identified the potential presence of several small wetted features including two watercourses as well as the potential for localized seasonal ponding within the Study Area. When weather permitted, amphibian breeding call surveys were conducted throughout the Study Area during the first two weeks of April, May, and June, 2016, respectively to determine the presence of breeding amphibians within 120 m of the Study Area. Refer to Figure 3 for survey locations.

Survey protocols were based on the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (BSC, 2009). Surveys for frog and toad species are conducted three times per year during the peak breeding times for individual species. The survey guidelines divide the province of Ontario into three main regions (south, central and north). As a general rule, sites located in southern Ontario would typically be surveyed earlier each month compared to sites located further north in central or northern Ontario (i.e., first survey between April 1-15) due to the earlier onset of breeding in southern Ontario. According to the definition provided in the handbook, the Study Area is located in central Ontario (between the 43rd and 47th parallels); therefore, surveys were conducted over the first two weeks of each respective month.

Surveys were completed during appropriate weather conditions in order to maximize calling activity and provide the best chance of call capture (Table 4.2). Night temperatures for the April survey were above 5°C, above 10°C for the May survey, and above 17°C for the June survey. Due to the relatively loud background noise from the surrounding urban environment, survey lengths were extended to 10 minutes per station.

Table 4.2: Details of Amphibian Breeding Call Surveys Conducted by Burnside Staff

April 11, 2017	**Amphibian Breeding Call Survey #1**
Time (24h): 20:30	Air Temp (°C): 6
Sky Code[1]: 1	Wind Scale[2]: 2
May 16, 2017	**Amphibian Breeding Call Survey #2**
Time (24h):20:55	Air Temp (°C): 13
Sky Code[1]: 1	Wind Scale[2]: 2
June 13, 2017	**Amphibian Breeding Call Survey #3**
Time (24h): 21:30	Air Temp (°C): 21
Sky Code[1]: 1	Wind Scale[2]: 1

[1] NAAMP / Beaufort Sky Codes: 0=clear (no cloud cover); 1=partly cloudy (scattered or broken) or variable; 2=cloudy or overcast; 3=sandstorm, dust storm or blowing snow; 4=fog, smoke, thick dust, or haze; 5=drizzle or light rain; 6=rain; 7=snow or snow / rain mix; 8=showers; 9=thunderstorms.

[2] Beaufort Wind Scale: 0=calm, smoke rises vertically (0-2 km/hr); 1=light air movement, smoke drifts (3-5 km/h); 2=slight breeze, wind felt on face; leaves rustle (6-11 km/h); 3=gentle breeze, leaves & twigs in constant motion (12-19 km/h); 4=moderate breeze, small branches moving, raises dust & loose paper (20-30 km/h); 5=fresh breeze, small trees begin to sway (31-39 km/h); 6=strong breeze, large branches in motion (40-50 km/h).

Three call level codes are used for amphibians (Code 1, Code 2, and Code 3). Table 4.3 below shows the descriptions for each of these codes (taken from BSC, 2009). The results of the amphibian breeding call surveys are provided in Section 4.3.3 of this Report.

Table 4.3: Amphibian Breeding Call Level Codes

Call Code	Code Description
1	Calls not simultaneous, number of individuals can be accurately counted.
2	Some calls simultaneous, number of individuals can be reliably estimated.
3	Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated.

4.2.4 Bats

In April 2017, MNRF Guelph District released the *Survey Protocol for Species at Risk Bats within Treed Habitats* for three of Ontario's four Endangered bat species (Little Brown Myotis – *Myotis lucifugus*; Northern Myotis – *Myotis septontrionalis*; Tri-colored Bat – *Perimyotis subflavus*) (MNRF, 2017c). These three species, along with Eastern Small-footed Myotis (*Myotis leibii*) were designated as Endangered on SARA in 2014 after observations of dramatic population declines of these species throughout eastern North America (ECCC, 2015).

The protocol is separated into two sub-protocols, a "leaf-off" and a "leaf-on" survey which each target different species.

Leaf-off Survey

Leaf-off surveys of treed habitat for maternity / roosting colonies focus on Little Brown Myotis and Northern Myotis. These species roost in tree cavities or under loose bark. Leaf-off surveys were completed on April 11, 2017.

The initial step of the protocol is identifying treed areas that are facing potential disturbance, to be confirmed during field reconnaissance. With small areas (under 10 ha), a comprehensive walk-through of an area is conducted to look for snag trees, as opposed to larger sites where sub-samples and snag density surveys are more appropriate.

The quality of roosting habitat is dependent on 10 factors, which can be used to determine which snag trees from a survey are most suitable as bat maternity habitat. These factors are listed below in order of descending importance:

1. Tallest snag trees;
2. Snag exhibits cavities or crevices often originating as cracks, scars, knot holes or woodpecker cavities;

3. Snag has the largest diameter breast height (DBH) (>25 cm);
4. Snag is within the highest density of other snags;
5. Snag has the highest amount of loose, peeling bark (naturally occurring / due to decay);
6. Cavity or crevice is high on the tree (>10 m) or is chimney-like with a low entrance;
7. Tree is a species known to be rot-resistant (such as Black Cherry, Black Locust);
8. Tree species typically provides good cavity habitat (e.g., White Pine, Maple, Aspen, Ash, Oak);
9. Snag is located within an area where the canopy is more open; and
10. Snag exhibits early stages of decay (Decay Class 1-3).

With these factors in mind, we surveyed all treed habitat within the study area for traits that indicate potential BMH for Little Brown and Northern Myotis. We recorded for each candidate tree: species, DBH, canopy height class, approximate height, cavity type, the presence of other nearby snags, and decay class. These trees were each recorded with a GPS waypoint and photo records. Identified BMH tree listings can be found in Appendix E.

Leaf-on Survey

Tri-colored Bat show strong preference to roosting in the foliage of oak and maple trees, especially those that feature dead or dying clusters of leaves. This survey protocol targets these genera specifically. The following trees were documented:

- Oaks ≥ 10 cm DBH;
- Maples ≥ 10 cm DBH **IF** the tree includes dead or dying leaf clusters; and
- Maples ≥ 25 cm DBH.

Areas with oak and maple trees were identified during the leaf-off phase of the BMH survey protocol. As such, survey efforts focused on the mixed and deciduous forest communities.

The protocol for bat habitat surveys was determined through consultation with MNRF. Records of agency correspondence are found in Appendix B.

4.2.5 Aquatic Habitat Assessment

A site investigation was undertaken to verify the findings of the background information review and to identify additional features. Off-site property access constrained some observations; however, where sightlines allowed, watercourses were assessed both on-site and downstream of the Sheridan Drive corridor. Planned site investigations included walking surveys throughout the corridor to visually observe and assess the

watercourses. Information was collected using a combination of the Ministry of Transportation (MTO) / DFO / MNRF Fisheries Protocol (2009), and the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA, 2013). Burnside conducted a site visit on April 11, 2017 to verify and assess the existing conditions of the watercourses and drainage features within the Study Area.

4.2.6 Incidental Wildlife Sightings

Incidental wildlife sightings were limited to the Study Area and were documented during all field investigations in order to provide a general characterization of the habitat functions of the Study Area. Incidental observations were those recorded during targeted surveys for other aquatic or terrestrial investigations. Examples include tracks, carcasses, live sightings, etc. A list of incidental wildlife observations are noted below in Section 4.3.6 of this Report.

4.2.7 Anthropogenic Features

A review of background sources revealed that a number of SCC or SAR that are known to utilize anthropogenic features may be present in the Study Area or vicinity. These include Barn Swallow (*Hirundo rustica*), Chimney Swift (*Chaetura pelagica*), and bat species. Any man-made features which could provide a habitat function and may require targeted surveys were identified. This included an assessment of whether any uncapped chimneys, buildings with open roof / trusses, barn structures, rock piles or rock fences extending into the ground, and landfill spoil piles are present in the Study Area.

The presence of anthropogenic features in the Study Area is discussed in Section 4.3.7 of this Report.

4.3 Findings of the Site Investigations

4.3.1 Vegetation Communities and Species Inventory

The natural areas southeast of the proposed Sheridan Drive extension were assessed using the First Approximations ELC system (Lee *et al.* 1998). The system resulted in eight ecosites in three ecosite types, as described below:

4.3.1.1 FOD9-1/FOD9-4 – Fresh-Moist Oak-Sugar Maple Deciduous Forest/Fresh-Moist Shagbark Hickory Deciduous Forest

FOD9 ecosites are characterized by tree cover greater than 60% of predominantly deciduous species. Red Oak (*Quercus rubra*), White Oak (*Quercus alba*), Bur Oak (*Quercus macrocarpa*), Sugar Maple (*Acer saccharum*) Red Maple (*Acer rubrum*), Shagbark Hickory (*Carya ovata*) and Bitternut Hickory (*Cary cordiformis*) can dominate separately or in variable mixtures within these ecosites. Ontario's FOD9 forests are

characterized by hydrophilic and hydro-tolerant species (Trilliums, Violets, Jack-in-the-pulpit, Wild Geranium, Marsh Fern, Sensitive Fern, Spotted Jewelweed, etc.) and are considered to represent an interface between upland and swamp plant communities.

Four FOD9-1 / FOD9-4 ecosites were identified on the Study Area and represent all of the forest communities along the corridor (polygons #1, #2, #4, and #6 on Figure 4. The species composition in these ecosites was found to be consistent with the Lee *et al*. (1998) definition of FOD9; Canopy dominance varied between Sugar Maple, Red Oak, and Shagbark Hickory, with Wild Geranium, Jewelweed, Jack-in-the-Pulpit, Enchanter's Nightshade, Fly Honeysuckle, Virginia Creeper, and Choke Cherry common in understory and groundcover layers. Species lists for each ecosite can be found in Appendix D. Specific notes for each FOD9-1 / FOD9-4 ecosite are provided below.

FOD9-1 / FOD9-4 Polygon #1

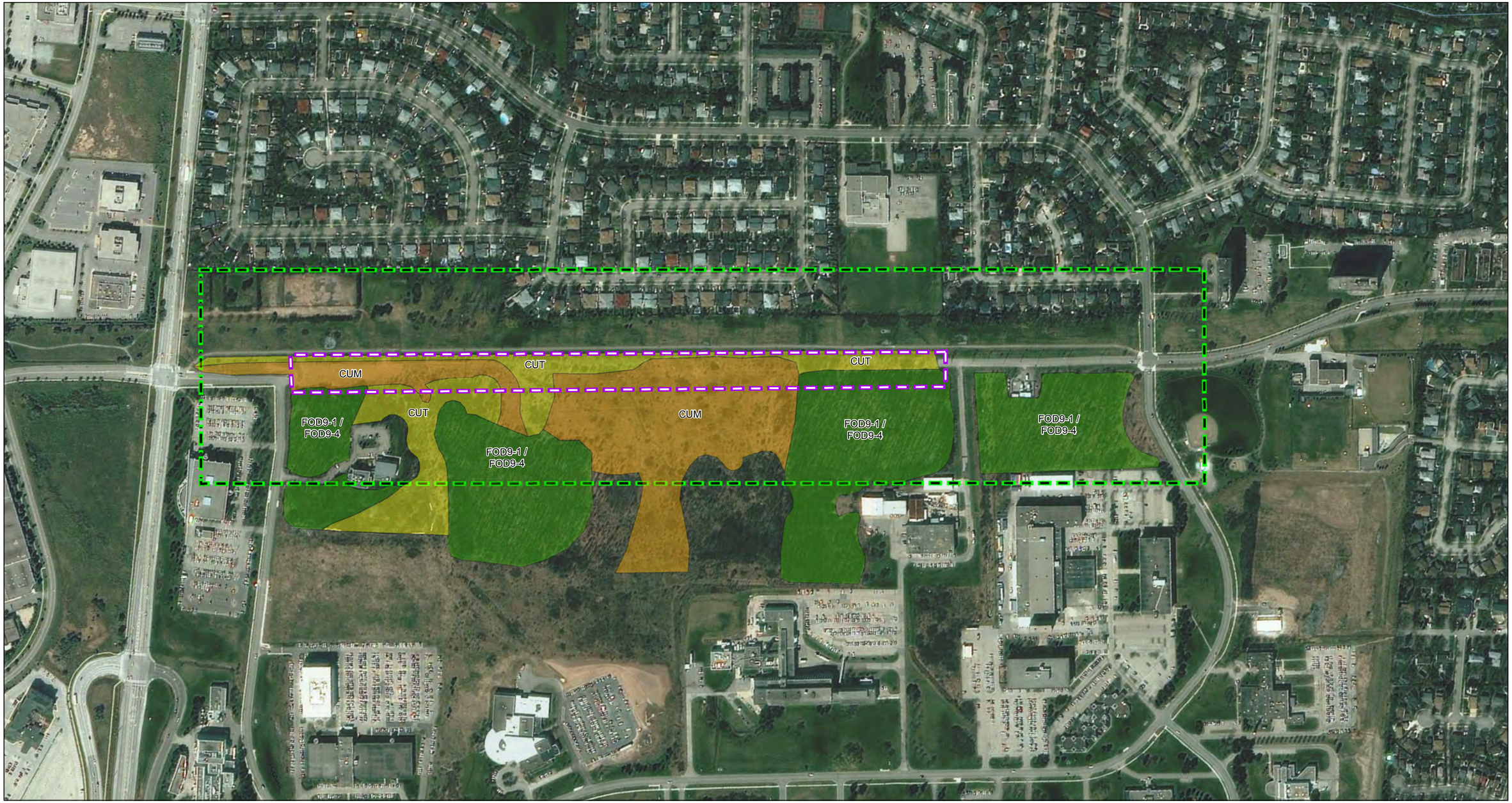
This forest featured canopy and sub-canopy, both dominated by Sugar Maple, with Shagbark Hickory approaching co-dominance in the sub-canopy layer. Red Oak and Shagbark Hickory were also common constituents of the canopy layer, while Ironwood (*Ostraya virginiana*) was the most common understory tree species. A robust edge of European Buckthorn (*Rhamnus cathartica*) was prevalent around the entire forest, but thinned out substantially in the understory. Choke Cherry and Gray Dogwood dominated the thin shrub layer, though small-scale areas dominated with Virginia creeper were not uncommon.

Soil sampling indicated that this area is underlain with imperfectly draining silty clay, resulting in a moist soil moisture regime. Mottles were identified at 35 cm or less in all samples.

Disturbance was readily apparent to this area. The presence of invasive species (European Buckthorn and Garlic Mustard – *Alliaria petiolata* being the most prevalent), compacted walking trails and litter indicated that these areas commonly see recreational usage.

FOD9-1 / FOD9-4 Polygon #2

This site was similar to polygon #1, but with Shagbark Hickory edging out Sugar Maple to be the most dominant canopy species. These two species shared co-dominance of the sub-canopy. Buckthorn and American Beech (*Fagus grandifolia*) were the most common woody understory species. It also featured a dense shrub margin composed of European Buckthorn and *Crataegus sp*. A small drainage swale inclusion was also identified on the southern edge of the ecosite. This area was dominated by Green Ash (*Fraxinus pennsylvanica*), European Buckthorn, and Kentucky Bluegrass (*Poa pratensis*), along with a large volume of invasive *Phragmites australis*.



Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Rotation: -51.2	Scale Factor: 0.99960

True North

0 100 200 300 400

Metres

Vegetation Community Classification

- CUM - Cultural Meadow
- CUT - Cultural Thicket
- FOD9-1 / FOD9-4 - Fresh Moist Oak-Sugar Maple Deciduous Forest / Fresh-Moist Shagbark Hickory Deciduous Forest
- Sheridan Park Drive Right-of-Way
- Study Area

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

BURNSIDE

Client

CITY OF MISSISSAUGA

Figure Title

SHERIDAN PARK DRIVE EXTENSION

ECOLOGICAL LAND CLASSIFICATION

Drawn	Checked	Date	Figure No.
HN	PD	2017/09/06	4
Scale		Project No.	
H 1:5,000		300039474	

File Path: E:\Project\300\039474 (Sheridan Park Drive)\Map\039474 ELC (Tabloid).mxd Print Date: 2017/09/06 Time: 02:10 PM

Soil samples at this ecosite were almost identical to polygon #1, and revealed the same imperfectly-draining silty clay and a moist soil moisture regime. Areas of this ecosite were inundated as well, presumably from the recent spring freshet.

Disturbance was also similar to that in polygon #1, though more pronounced. Invasive species such as Garlic Mustard and Wild Buckwheat (*Fallopia convulvus*) were found throughout the forest interior. Bare-earth walking trails threaded through much of this ecosite, while litter and refuse were common in much higher volumes and included larger items such as shopping carts and broken chairs. Some areas had trees defaced with graffiti. Several recently-used fire pits were also found in this ecosite, as well as one wide area with charred leaves indicating a previous small-scale uncontrolled burn.

FOD9-1 / FOD9-4 Polygon #4

The ecosite at polygon #4 featured a Red Oak-dominated canopy and subcanopy, with Shagbark Hickory, Sugar Maple, Ironwood, and Basswood (*Tilia americana*) being other common canopy species. Hawthorn species and European Buckthorn were the most common shrub-layer constituents, though Gray Dogwood and Choke Cherry were relatively common as well.

Soil sampling indicated similar findings here as in previous wooded areas; clay loam with mottles at approximately 30 cm yielded an imperfectly-drained moist soil regime. There were fewer areas of inundation present, but similar hydrophytic plant species were present here as in previous forested areas (Jewelweed, Jack-in-the-pulpit).

Disturbance in this forest was less obvious than in polygons #1 and #2. Fewer walking trails were present here, and those that were seemed less commonly utilized. Less refuse was found here as well.

FOD9-1 / FOD9-4 Polygon #6

From a woody-species perspective, this ecosite was functionally similar to the others surveyed in the study area. Red Oak dominated the upper canopy, while Ironwood was the dominant sub-canopy species. Sugar Maple and Green Ash were also common, with Beech and Trembling Aspen (*Populus tremuloides*) being found occasionally.

This forest ecosite appeared to be the driest of the four present within the Study Area. It lacked some of the moisture tolerant groundcover that the other forest communities had such as Jewelweed. However, soil sampling indicated a clay loam effective texture with mottling at 28 cm. The ecosite at polygon #6 therefore exhibited imperfect drainage resulting in a moist soil moisture regime, which is functionally identical to the other three forest ecosites from a soil hydrology perspective.

This area showed the fewest signs of disturbance out of the forest ecosites. Some minor litter was found, but no trail system was identified here. This may be partially due

to the fact that this ecosite is fenced on the northwestern edge.

CUM1 – Mineral Cultural Meadow Ecosite

Cultural meadows are anthropogenically influenced ecosites dominated by herbaceous plant species with low cover of woody species (<25% tree cover, <25% shrub cover). Two CUM1 ecosites were identified within the study area (polygons #3, and #7 as shown on Figure 4). These areas were similar in terms of plant species composition and soil composition. Species lists for these ecosites can be found in Appendix D.

CUM1 Polygons #3 and #7

The cultural meadow within the Study Area included a large open area dominated by graminoid species. It was bisected by a shrubby thicket, but soil and plant species composition were consistent throughout. The most common woody species were European Buckthorn and Gray Dogwood. Groves of Black Locust (*Robinia pseudocacacia*) bordered much of the southeastern extent of this polygon. Ground cover was dominated with Kentucky Bluegrass, though Smooth Brome, American Vetch, *Solidago sp.*, Yarrow, and Common Speedwell were also abundant.

Soil in this area was similar to samples taken in the surrounding forest communities. The area was found to be underlain with clay loam soils, resulting in an imperfectly draining moist soil moisture regime. The soil regime at polygon #3 indicates a broad homogeneity of soil composition and moisture regime across the entire study area. Plants tolerant to wetter conditions were most abundant within the headwater drainage areas and included Red-osier Dogwood, Green Ash, and *Carex* species, though they and others (Amur Maple, Silver Maple, Grey Dogwood) can be found sporadically through the entire ecosite.

Evidence of disturbance was commonplace. Walking and biking trails were present here, as were copious amounts of litter and dumping. Invasive species were also encountered frequently, including Teasel, Dandelion, Canada Thistle, Bull Thistle, Common Plantain, and Rhubarb.

CUT1 – Mineral Cultural Thicket Ecosite

Cultural thickets have low cover of tree species (<25%) and high cover of shrub species (<25%) underlain by mineral soil. Cultural ecosites are defined as having conditions and substrate types resulting from, or maintained by, cultural or anthropogenic-based disturbances. Given the immediate adjacency of deciduous forest to CUT1 ecosites in the Study Area, it is assumed that CUT1 units are the result of tree-clearing and the introduction of invasive shrubs such as European Buckthorn.

Two CUT1 polygons were identified within the project area (polygons #5 and #8).

CUT1 #5

The ecosite at polygon #5 was a European Buckthorn-dominated thicket. Tree cover was found to account for less than 5% of total canopy cover, with White Oak, Red Oak, and Green Ash being the most common species encountered. European Buckthorn was the most dominant tall shrub species, growing dense enough in some areas to restrict the underlying ground cover to little more than bare earth, detritus, and wind-blown litter. Areas that included a low shrub layer were dominated by Gray Dogwood, Blackberry, and Virginia Creeper.

Soils here were similar in composition and moisture regime to the surrounding areas. Fine-grained silty clay indicated imperfect drainage, and mottles encountered at under 30 cm indicated a soil moisture regime of moist.

One well-used trail was evident here, as well as further evidence of fire pits and dumping. Large tarps encountered also suggested evidence of previous (or current) occupation by squatters. Exotic plant species were commonplace here as well, and included Garlic Mustard, Canada Thistle, Dandelion, Tall Tumble Mustard (*Sisymbrium altissimum*), Common Buckwheat, and Teasel.

CUT1 #8

The ecosite at polygon #8 represents a cultural hedgerow that extends along the entire southeastern border of the existing municipal walking trail that connects Sheridan Park Drive to Plymouth Drive. Trees here were mostly isolated, and no continuous canopy was identified. Buckthorn and Gray Dogwood are the most common shrub species here, though numerous escaped horticultural species were noted along the entire hedgerow.

No soil samples were taken along this hedgerow, but it was assumed that underlying soils likely consistent with those identified in other areas of the Study Area (fine silty clay or clay loam, imperfect drainage, and a moist soil moisture regime).

This area had the highest levels of human disturbance of any ecosite on the Study Area. It was degraded by trails, dumping, and invasive species. Likely due to illegal dumping of yard waste, a large diversity of horticultural shrub and herbaceous species were evident throughout the entire ecosite.

4.3.2 Avifauna

At total of 29 summer resident bird species exhibiting some level of breeding evidence were observed in the Study Area during the breeding bird surveys conducted in 2017. A complete list of species observed, along with the highest recorded breeding evidence, is found in Appendix C of this Report.

Four other species were observed in the Study Area during the breeding bird surveys but no breeding evidence (i.e., suitable breeding habitat or breeding behavior) was recorded in the Study Area limits: Ring-billed Gull (*Larus delawarensis*), Rock Pigeon (*Columba livia*), Canada Goose (*Branta canadensis*), and Barn Swallow. All four of these were flyover observations only. The single Barn Swallow was observed aerial foraging over the Study Area. Some of the anthropogenic features in vicinity to the Study Area may offer suitable nesting habitat for this species in the form of overhangs and eves of buildings. Burnside did not have access to these buildings to search for potential nests. Barn Swallow is an aerial insectivore, and forages over open areas of the landscape where insects are abundant (i.e., open water, wetlands, fields).

According to MNRF's Significant Wildlife Habitat Technical Guide (MNRF, 2000), some species require large areas of suitable habitat for long term population survival. Fragmentation of essential habitats can result in overall declines in populations. Two "area-sensitive" bird species, as defined by the MNRF, were observed in the Study Area during the breeding bird surveys: White-breasted Nuthatch (*Sitta carolinensis*) and Sharp-shinned Hawk (*Accipiter striatus*). White-breasted Nuthatch is most abundant in woodland habitats where natural cavities in hardwood trees are greater than 30 cm DBH are present. They typically require at least 10 ha of continuous forest, although are often found in smaller habitat patches in parts of Southern Ontario where forests have been highly fragmented due to agricultural practices and urban development (Cadman *et al*. 2007). Sharp-shinned Hawk is most abundant in dense mixed or deciduous forests, requiring at least 4 ha of dense canopy closure for nesting; forests that are greater than 30 ha are preferred. It uses open areas like forest edges and forest clearings for hunting (2000). This species was observed being mobbed by American Crow (*Corvus brachyrhynchos*) in the vicinity of a possible nest site for the crows. Given the small size of the woodland habitats present in the Study Area, it is likely that the Study Area is being used for foraging, but that breeding habitat is present outside the Study Area limits.

Two bird species listed as either provincially and/or federally significant were observed in the Study Area during the breeding bird surveys: Eastern Wood-pewee (*Contopus virens*) (Special Concern) and Barn Swallow (Threatened). Suitable nesting habitat is present for Eastern Wood-pewee in the FOD9-1 / FOD9-4 ecosites of the Study Area (Figure 4).

As mentioned above, Barn Swallow was observed foraging over the Study Area, but suitable nesting habitat is not present in the Study Area. Based on a background review of the Study Area, other avian SAR may be present in the vicinity of the Study Area but were not observed during field investigations. A Screening Table for SAR for the Study Area is included in Appendix A of this Report.

4.3.3 Herpetofauna

Amphibian Breeding Call Survey

The amphibian survey was conducted at five sites along the paved walking trail. Site A was located the furthest east, on Sheridan Park Drive. The remaining four sites (B, C, D and E) were arranged northeast to southwest along the paved walking trail through the Study Area. The location coordinates (UTM Zone 17T) are listed in Table 4.4 and the locations are shown on Figure 3.

The first amphibian survey was conducted on April 11, 2017. A rain event occurred the day before and some rainfall occurred in the afternoon the day of the survey. Night temperatures were relatively cold leading up to the survey, but were above the required temperature of 5°C the night of the first amphibian breeding call survey with relatively little wind. Burnside staff visited the five noted amphibian monitoring stations and no amphibians were heard calling at any location.

The second amphibian survey was conducted on May 16, 2017. No precipitation occurred during the survey; however a small amount of precipitation was noted earlier in the day. The air temperature at the time of the second amphibian survey was 13°C with some wind noted. Burnside conducted the survey at the five amphibian monitoring stations and no amphibians were heard calling at any of the locations.

The third amphibian survey was conducted from on June 13, 2017. No precipitation occurred during the survey although a relatively minor rain event was noted earlier in the day. The air temperature at the time of the third amphibian survey was 21°C with very light wind. Burnside staff again visited the five amphibian monitoring stations and no amphibians were heard calling at any location.

Table 4.4: Amphibian Breeding Call Survey Summary (UTM Zone 17T)

Station ID	Easting	Northing	Calls Heard at Any Time
A	607985	4819795	No
B	607819	4819635	No
C	607749	4819540	No
D	607671	4819442	No
E	607548	4819282	No

No amphibians were heard calling during any of the monitoring events and no significant amphibian breeding habitat was identified within the Study Area.

4.3.4 Bats

Leaf-off surveys for BMH identified 19 candidate habitat trees for Northern Myotis and Little Brown Myotis, and leaf-on surveys found 8 suitable habitat trees for Tri-colored Bat within the corridor of anticipated road impacts. Locations of identified trees can be found

on Figure 3. Roost selection in bat species involves more than just individual trees. BMH trees identified during surveys can be found in Appendix E. At the stand scale, selection may be a function of canopy gaps, local snag density, tree density, proximity of water for invertebrate forage, etc. (ECCC, 2015). On the landscape scale, forest age and composition are factored into roost selection as well.

The Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*), published by Environment and Climate Change Canada, provides guidelines that are to be followed when assessing potential impacts to bat / myotis individuals and habitats (ECCC, 2015). One of the focal points of the strategy is to ensure that sufficient suitable habitat exists and persists to support these species.

Summer roosting habitat is an essential life-cycle component for these species. Roosts provide shelter from the elements, aid in thermoregulation, allow congregation for social interaction, and reduce the risk of predation (ECCC, 2015). The spread of WNS has increased the relative significance of habitat loss across North America. Because roost selection is difficult to predict with accuracy, any snag trees within forest habitat should be considered significant. All reasonable measures should be taken to avoid impacts to identified snag trees, and appropriate mitigation measures should be taken in the event that potential BMH are removed.

Ontario's fourth Endangered bat species, the Eastern Small-footed Myotis, is the rarest bat in the province. Elsewhere in its range, the Eastern Small-footed Myotis is known to make summer roosts in open, rocky habitats as well as occasionally in anthropogenic structures. Its presence along the Sheridan Park Drive corridor is not anticipated.

4.3.5 Aquatic Habitat

Within the Study Area there are two watercourses (herein referred to as Watercourse 1 and 2, respectively) and three headwater drainage features (herein referred to as HDF 1, HDF 2, and HDF 3, respectively) that are all considered to be tributaries to Sheridan Creek. All watercourses and headwater drainage features generally flow from northwest to southeast through the Study Area. Watercourse 1 and 2 were evaluated as per the Ministry of Transportation (MTO) Environmental Guide for Fish and Fish Habitat (MTO, 2009), while the HDF's were evaluated as per the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA, 2013).

4.3.5.1 Watercourse 1

Watercourse 1 flows from a subterranean storm water management network that discharges through a grated concrete storm water management (SWM) outlet, approximately 1.2 m in diameter. The culvert was outfitted with a debris cage at its outlet that was slightly obstructed with refuse and debris. The land use surrounding this watercourse consists of industrial, residential and parklands. The watercourse was

observed to be slowly flowing southeast (<0.04 m/s) through a linear man-made channelized drain that was slightly incised and displayed evidence of bed and bank degradation. The watercourse appeared to primarily convey the flow of local municipal storm water drainage, as well as the surface runoff of nearby low-lying areas that drain towards the channel and a likely small input of localized shallow groundwater. Due to the nature and age of the storm water infrastructure, it is likely that the storm water network also conveys the flow of a local groundwater input that has leaked into the system. Watercourse 1 is likely intermittent during periods of low precipitation.

Watercourse 1 features significant riparian vegetation that provides shade and contributes to potential habitat for resident fish. The riparian vegetation community primarily consisted of shrubs and trees including red osier dogwood and Manitoba maple. Some of the riparian vegetation roots were observed to be exposed and along the channel supporting the stream bank. Streambanks were identified as slightly unstable, with undercutting being located along limited sections of the watercourse. Algae was present throughout the entire watercourse, which is typical of storm water influenced watercourses due to water quality. A minor amount of watercress was observed along the eastern bank of the watercourse indicating the potential presence of a groundwater contribution to the watercourse.

The watercourse morphology within the observable length was primarily comprised of a flat with the exception of a small riffled section. Water depth was limited at the time of the investigation and no potential fish refuge habitat was observed within the observable length of the reach. Substrate in Watercourse 1 was comprised of cobble, gravel, and sand with some shale bedrock exposed along the banks of the watercourse. Overall, Watercourse 1 appeared considerably impacted by the upstream urban environment and is likely only capable of providing marginal fish habitat to tolerant species (i.e.,brook stickleback).

4.3.5.2 Watercourse 2

Watercourse 2 is located southwest of Watercourse 1, and originates upstream of the paved trail way within a shallow basin that is surrounded by manicured lawn. The watercourse likely obtains its water from overland sheet flow from the surrounding lands, as well as a potential shallow groundwater input. The watercourse within this section was not flowing at the time of the site visit but is connected downstream through a small corrugated steel pipe culvert beneath the paved trail way. Downstream of the trail, the watercourse becomes ponded by a footpath that is aligned in an east-west direction. The footpath has formed a barrier to potential fish migration as it disconnects the upstream and downstream reaches of this watercourse within the Study Area. The gradient in the area of the upstream basin and ponded area is relatively flat, but becomes steeper downstream. This downstream reach was characterized as a relatively deep, naturalized channel that meanders through the woodlot.

At the time of the site visit this reach was observed to be flowing interstitially and contained small, intermittent pooled areas with a maximum depth of 0.08 m. Based on these observations, the watercourse is likely ephemeral or intermittent in nature and did not appear to be viable fish habitat. Overall, the upstream reaches of Watercourse 2 appeared to be impacted by anthropogenic activities, and due to the minimal amount of water within the watercourse downstream of the ponded area, appeared incapable of providing direct fish habitat. However, the watercourse does potentially contribute to water quantity and water quality of the downstream reaches of Sheridan Creek during the spring freshet and periods of extended precipitation.

4.3.5.2.1 Headwater Drainage Feature 1

HDF 1 appears to originate towards the southern extent of the Study Area from a relatively broad and shallow depression consisting of wetland-type vegetation (i.e., cattails). This feature is located within a meadow and scrubland with very little mature vegetation. Some watercress was observed at the source of the feature indicating a likely groundwater contribution. At the time of the site visit the depression contained standing water and was not observed to be flowing, however a gently-sloped drainage swale could be discerned, providing an outlet downstream during storm events and the spring freshet. The swale was observed to be conveying interstitial flow downstream of the depression. No channel or a respective bed and banks were present, and the entire swale was vegetated with species of grasses and forbs. This feature was classified as ephemeral in nature and is not capable of providing direct fish habitat. However, during the spring freshet and storm events, it is possible that this feature contributes a minimal amount of water quantity and quality downstream, to reaches of Sheridan Creek which may provide direct fish habitat.

4.3.5.2.2 Headwater Drainage Feature 2

Similar to HDF 1, HDF 2 originates from a shallow depression near the southern extent of the Study Area. Its origin is located approximately 4 m south of the paved trail way within a very shallow-graded scrubland and meadow valley that contained some woody vegetation as well as grasses and forbs. Some watercress was observed at the source of the feature indicating a potential groundwater input. This feature drains through a very broad, shallow swale that is gently graded. Further downstream, the swale becomes significantly more pronounced with the flow path becoming easily discernible. This deeper, conspicuous swale is likely a remnant feature, formed by previous upstream drainage occurring prior to the construction of the residential development located north of the Study Area.

At the time of the site visit, the feature was not observed to be flowing within the pooled depression, but was observed to be slowly flowing interstitially downstream. This feature was identified as being ephemeral in nature and likely flows slightly more substantially during the initial spring freshet and periods of extensive precipitation. The entirety of the

observable feature was vegetated and does not convey enough water quantity to possibly support direct fish habitat. However, during the spring freshet and storm events, it is possible that this feature contributes a minimal amount of water quantity and quality downstream, to reaches of Sheridan Creek which may provide direct fish habitat.

4.3.5.2.3 Headwater Drainage Feature 3

HDF 3 is a smaller feature than the other HDFs but also originates from a shallow depression near the southern extent of the Study Area. Similar to the other HDFs, the feature is characterized as a broad, shallow swale downstream of the standing water. HDF 3 is surrounded by a mix of thicket and meadow and the entirety of the swale was vegetated with grasses and some forbs.

At the time of the site visit, the feature was not observed to be flowing within the pooled depression, but was observed to be slowly flowing interstitially downstream between intermittent pockets of standing water. This feature was identified as being ephemeral in nature and likely flows slightly more substantially during the initial spring freshet and periods of extensive precipitation. Similar to the other HDFs, the entirety of the observable feature likely does not convey enough water quantity to potentially support direct fish habitat. However, during the spring freshet and storm events, it is possible that this feature contributes a minimal amount of water quantity and quality downstream, to reaches of Sheridan Creek which may provide direct fish habitat.

Fish Habitat

As mentioned above, the Sheridan Creek Watershed Study and Impact Monitoring Characterization Report (Aquafor Beech Ltd., 2011) noted that no fish are found within the mainstem of Sheridan Creek upstream of the Clarkson Road GO Station, nor are any found in the middle and upper portions of the watershed. However, fish species identified in MNRF Aquatic Area Resource mapping as potentially inhabiting Sheridan Creek and Rattray Marsh, downstream of Clarkson Road are shown below in Table 4.5.

Table 4.5: Fish species found in Sheridan Creek and Rattray Marsh, downstream of Clarkson Road

Common Name	Scientific Name	Provincial S-Rank	Preferred Thermal Regime
Common shiner	*Notropis cornutus*	S-5	Cool
Longnose dace	*Rhinichthys cataractae*	S-5	Cool
White sucker	*Catostomus commersoni*	S-5	Cool
Fathead minnow	*Pimephales promelas*	S-5	Warm
Creek chub	*Semotilus atromaculatus*	S-5	Cool
Blacknose dace	*Rhinichthys atratulus*	S-5	Cool
Common carp	*Cyprinus carpio*	SNA	Warm
Gizzard shad	*Dorosoma cepedianum*	S-4	Cool

Common Name	Scientific Name	Provincial S-Rank	Preferred Thermal Regime
Lake chub	*Couesius plumbeus*	S-5	Cold
Round goby	*Apollonia melanostomus*	SNA	Cool
Emerald shiner	*Notropus atherinoides*	S-5	Cool

There were no fish observed during the site visit and the subject aquatic features appeared to provide little to no potential to support direct fish habitat. The watercourses and headwater drainage features potentially transport allocthonous materials, such as sediment, detritus and insects, to downstream reaches of Sheridan Creek that contain fish. Field observations within the Study Area concur with the Sheridan Creek Subwatershed Report in that fish populations are likely limited within upstream reaches of Sheridan Creek and its tributaries (Aquafor Beech Ltd., 2011). Intermittent or ephemeral flows, low water quantity, in-stream barriers, and potential poor water quality all likely contribute to the lack of direct fish habitat within the Study Area.

No fish SAR were identified as potentially inhabiting the watercourses within the Study Area itself, or within the Sheridan Creek subwatershed.

4.3.6 Incidental Wildlife Sightings

Several incidental observations of mammals, reptiles, and insects were documented during the field investigations. According to the MNRFs provincial ranks (i.e., S1 to S5) that are used to set protection priorities for rare species and natural communities, none of these species are listed as provincially and/or federally significant and are listed as 'secure' in Southern Ontario (in other words, they are ranked as S5, which is defined by the MNRF as species that are common, widespread and abundant in the province), with the exception of Monarch (*Danaus plexippus*) which is ranked as S2N/S2B ("Imperiled Non-breeding" population/"Apparently Secure Breeding" population). These sightings included: Eastern Cottontail (*Sylvilagus floridanus*), Eastern Garter Snake (*Thamnophis sirtalis sirtalis*) and Eastern Gray Squirrel (*Sciurus carolinensis*).

4.3.7 Anthropogenic Features

A search for cultural / man-made habitat features was limited to the Study Area. A barbed-wire fence and fence posts ran parallel to the asphalt path, presumably to keep pedestrians on the manicured side of the area. This area is also coincident with a hydro-corridor and regularly-spaced hydro poles. The poles and fence posts would likely provide perching habitat for raptors.

Three commercial buildings and associated driveway / parking areas were also identified. These buildings were respectively located adjacent to polygons #1, #2, and #6 on Figure 4. No access was obtained to determine potential for wildlife to utilize the anthropogenic features on these commercial areas.

5.0 Identification of Provincially Significant Features

Provincially significant natural features include those listed in the PPS (2014), NHRM (MNRF, 2005), SWHTG (MNRF, 2000) and SWH Criteria Schedules (MNRF, 2015). The findings of the site investigation were cross-referenced with criteria provided in these documents in order to identify the presence or potential presence of Provincially Significant natural features.

5.1.1 Provincially Significant Wetlands

The PPS (MMAH, 2014) Section 6.0 defines significant wetlands as "an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time."

No PSW were identified within the Study Area or on any adjacent lands from NHIC records. There are three headwater drainage features and tributaries located central to the natural portions of the Study Area. These areas were not identified as wetlands during ELC surveys. It should be noted that soil samples in the Study Area were consistently found to indicate imperfectly drained, moist regime substrates. These fine-grained soils would be retentive in rainy conditions and during the spring freshet; there is a high probability of ephemeral flooding across all-natural areas surveyed during the spring freshet and storm events. Seasonally flooded areas, not exhibiting wetland plant growth are not eligible to be evaluated as PSW under the PPS and have therefore not been discussed within this document as wetland features. However, it is noted that these features may have both hydrologic and biological functions within the local environment.

A constructed linear drainage swale was also identified on the south-western edge of polygon #1 (see Figure 4). This swale did have the presence of obligate wetland species such as Narrow-leaved Cattail (*Typha angustifolia*). This system was determined to be a constructed SWM feature, and as such has no potential to be evaluated as a PSW.

5.1.2 Significant Valleylands

Criteria for evaluating Significant Valleylands are defined in the Natural Heritage Reference Manual (MNRF, 2005). No Significant Valleyland features have been identified in this area from MNRF or CVC mapping.

It was determined based on aerial photo interpretation and background information, and confirmed during site visits, that no valleylands are present within the Study Area.

5.1.3 Significant Woodlands

Criteria for Significant Woodlands are determined by the local municipality. The PPS (MMAH, 2014) guides municipalities on the development of these criteria. According to the PPS, Significant Woodlands are defined as:

> *"an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history."*

The MOP defines Significant Woodlands as any woodlands, excluding cultural savannahs, greater than or equal to four hectares (City of Mississauga, 2017), as follows:

Significant woodlands *are those that meet one or more of the following criteria:*

- *Woodlands, excluding cultural savannahs, greater than or equal to four hectares;*
- *Woodlands, excluding cultural woodlands and cultural savannahs, greater than or equal to two hectares and less than four hectares;*
- *Any woodland greater than 0.5 hectares that:*
    - *Supports old growth trees (greater than or equal to 100 years old);*
    - *Supports a significant linkage function as determined through an Environmental Impact Study approved by the City in consultation with the appropriate conservation authority;*
    - *Is located within 100 m of another Significant Natural Area supporting a significant ecological relationship between the two features;*
    - *Is located within 30 m of a watercourse or significant wetland; or*
    - *Supports significant species or communities.*

The Region of Peel incorporates a number of significant woodland criteria into their OP, including the Oak Ridges Moraine Conservation Plan, the Niagara Escarpment Plan, the Greenbelt Plan and The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental, Dougan and Associates and Sorensen Gravely Lowes, June 2009). The guidance documents indicate that a number of criteria are recommended to determine the significance of a woodland feature, including:

- Size;
- Location (above or below the Niagara Escarpment);
- Linkages;
- Proximity to other significant features;
- Proximity to watercourse, surface water feature or wetland; and
- Support of SAR, rare species or specified forest communities.

Significant Woodland was identified within the Study Area (MOP) and confirmed during field studies to extend into the City owned right-of-way (ROW), including in the Deciduous Forested area (FOD) (Figure 4) based on the size criteria, as described below. According to this definition, the FOD9-1 / FOD9-4 polygon #2 (~4.5 ha) meets the definition of Significant Woodlands (see Figure 4). The extent of the Significant Woodland within the ROW is 0.44 hectares. In addition, forested areas on and adjacent to the ROW have been calculated to cover approximately 11 hectares, in total, and include both FOD and wooded features (unclassified by ELC[2]).

The EA process is tasked with identifying the best development alternative with respect to growth, infrastructure development, and the environment. It is anticipated that any impacts to the forest at polygon #2 will be minor. City biologists should be notified of the possibility that proposed road extension may result in a small decrease in area of this Significant Woodland area.

5.1.4 Significant Areas of Natural and Scientific Interest

The PPS (MMAH, 2014), Section 6.0 defines areas of natural and scientific interest (ANSIs) as:

> *"areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education."*

According to the NHRM (MNRF, 2005), provincially significant ANSI's include some of the most significant and best examples of these features in the province, and only include ANSIs identified as provincially significant.

No ANSI's were identified through the background information review for the Study Area or Study Area Vicinity.

[2] Areas outside of the landowner holdings for which permission to enter had not been granted and therefore, fieldwork was not completed in these areas.

5.1.5 Significant Wildlife Habitat

Determination of SWH is broadly categorized and described in the NHRM (MNRF, 2005). Additionally, the SWHTG (MNRF, 2000) and SWH Criteria Schedule for Ecoregion 7E (MNRF, 2015) are additional supplemental documents intended to assist in identifying SWH. The four categories of SWH are identified as:

1. Habitats of seasonal concentrations of animals;
2. Rare vegetation communities or specialized habitat for wildlife;
3. Habitat of Species of Conservation Concern; and
4. Animal movement corridors.

Appendix F includes a screening of the various categories of SWH both for the Study Area and Study Area Vicinity based on background records review, the findings of the field investigations in 2017, agency records, and aerial photo interpretation.

Table 5.1 summarizes Confirmed and Candidate SWH in the Study Area. It also lists Candidate SWH assessed as having moderate or high potential to be present in the Study Area Vicinity.

Table 5.1: Confirmed and Candidate SWH in the Study Area and Study Area Vicinity

Study Area (within 120 m of proposed project area)	Study Area Vicinity (within 500 m of proposed project area)
Seasonal Concentration Areas of Animals	
• Candidate Waterfowl Stopover and Staging Areas (Terrestrial) • Candidate Raptor Wintering Area • Candidate Bat Maternity Colonies • Candidate Reptile Hibernaculum • Candidate Monarch Butterfly Stopover Areas • Candidate Landbird Migratory Stopover Areas	• Candidate Waterfowl Stopover and Staging Areas (Terrestrial) • Candidate Raptor Wintering Area • Candidate Bat Maternity Colonies • Candidate Reptile Hibernaculum • Candidate Monarch Butterfly Stopover Areas • Candidate Landbird Migratory Stopover Areas
Rare Vegetation Communities or Specialized Habitat for Wildlife	
• Candidate Old Growth Forest • Candidate Amphibian Breeding Habitat (Woodland)	• Candidate Old Growth Forest • Candidate Amphibian Breeding Habitat (Woodland)
Habitat of Species of Conservation Concern	
• Candidate Shrub / Early Successional Bird Breeding Habitat	• Candidate Shrub / Early Successional Bird Breeding Habitat

Study Area (within 120 m of proposed project area)	Study Area Vicinity (within 500 m of proposed project area)
• Confirmed Special Concern and Rare Wildlife Species - Eastern Wood-pewee - Monarch	• Confirmed Special Concern and Rare Wildlife Species - Eastern Wood-pewee - Monarch
Animal Movement Corridors	
• Candidate Amphibian Movement Corridors	• Candidate Amphibian Movement Corridors

In addition, CVC has provided mapping for candidate SWH based on the *Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study* (North-South Environmental Inc. *et al.*, 2009). City mapping showed the presence of three candidate SWH in the Study Area Vicinity (Migratory Land Bird Stopover Successional, Migratory Land Bird Stopover Natural, Foraging Areas with Abundant Mast) (see Figure 5). These SWH will also be discussed in Section 5.1.5.2.

5.1.5.1 Confirmed Significant Wildlife Habitat in the Study Area and Vicinity

Two SWH were confirmed within the Study Area, both considered Habitat for Species of Conservation Concern. These SWH are described below.

Confirmed Special Concern and Rare Wildlife Species

Monarch

The open areas of the Study Area were noted as confirmed habitat for Monarch butterflies. Monarch is listed as Special Concern under the ESA and was confirmed present in the Study Area during field investigations in June 2017. Adults were observed feeding on wildflowers. Milkweed is present in the cultural meadow communities of the Study Area; therefore, the Study Area is also suitable for supporting the larval stage of this species.

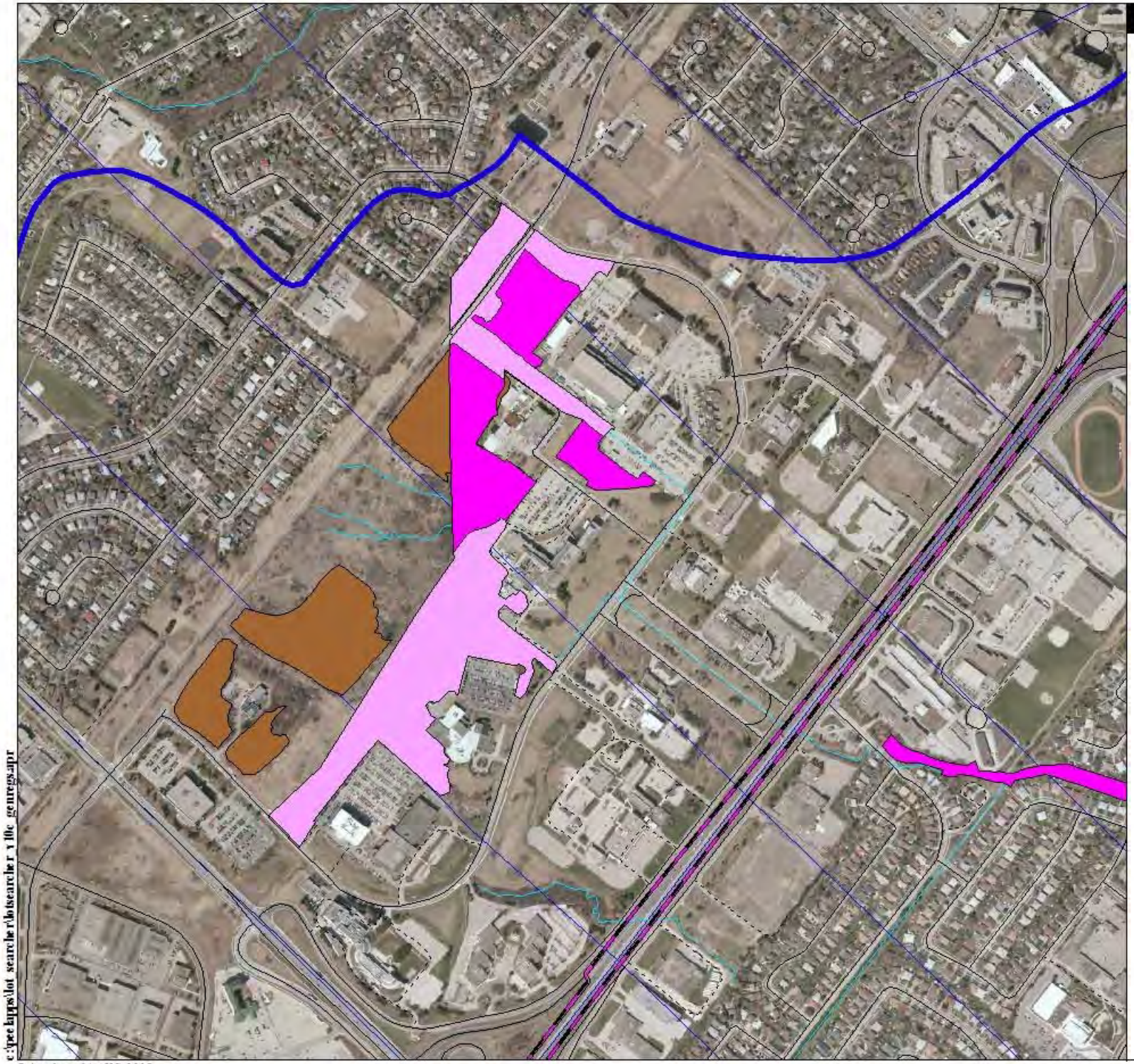
Eastern Wood-pewee

As noted in Section 4.3.2, Eastern Wood-pewee was identified during breeding bird surveys. Eastern Wood-pewee is listed as Special Concern in the ESA (MNRF, 2007). This species is common in mature deciduous forests as well as on forest edges.

Implications

Under the PPS (MMAH, 2014), Section 2.1 states that “development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.”

Under the ESA, species listed as special concern are not afforded species or habitat protection. However, according to the MNRF, species listed as special concern are "not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats." Nesting migratory birds are afforded protection under the federal *Migratory Birds Convention Act*, 1994 (ECCC, 1994).



CREDIT VALLEY CONSERVATION

SWH Figure No. 5

Sheridan Business Park

- Migratory Land Bird Stopover Successional
- Migratory Land Bird Stopover Natural
- Foraging Area with Abundant Mast

Transportation Network

- Abandoned railroad
- Accessway
- Existing railroad
- Highway
- Street

Lot Annotation

Rivers and Streams

0 100 200 300 Meters

1 / 10000

CVC

N

Information presented on this map is property of Credit Valley Conservation. Responsibility for appropriate use of the information lies with the user.

c:\petehipps\lot searcher\lotsearcher v10c genregs.apr

Printed on: 24 AUG 2017

5.1.5.2 Candidate Significant Wildlife Habitat in the Study Area and Vicinity

5.1.5.2.1 Provincial Criteria Schedule

Unless stated otherwise, potential impacts to candidate SWH habitat from road construction are not expected to result in a measurable impact to the natural heritage features or their functions either within the Study Area or the Study Area Vicinity. The majority of the ecosites identified will not be impacted by the proposed roadway; areas to be impacted are mostly within the heavily disturbed outer edge of the cultural thicket at polygon #8 adjacent to the existing pathway (see Figure 4).

Seasonal Concentration Areas of Animals

Candidate Waterfowl Stopover and Staging Areas (Terrestrial)

Terrestrial waterfowl stopover and staging areas (WSSA-T) are important habitat for migrating waterfowl. Any combination of cultural meadow or cultural thicket that includes evidence of annual spring flooding from melt water or run-off has the potential to serve as WSSA-T. The complex of Ecosites #3, #5, #7, and #8 (see Figure 4) combined with the imperfectly draining soil encountered across the Study Area and Vicinity indicates a high likelihood that these areas exhibit seasonal flooding in the spring, and serve as potential WSSA-T as a result.

Candidate Raptor Wintering Area

Wintering raptors require a mix of open and forested ecosites to allow for roosting, foraging, and nesting habitat. Candidate Raptor Wintering Areas (RWA) are combinations of forest and cultural upland at least 20 ha in size. The combination of FOD polygons (#2, #4, and #6) adjacent to CUT and CUM polygons (#3, #5, #7, and #8) on Figure 4 indicates that this complex does represent candidate RWA.

Candidate Bat Maternity Colonies

Any forested ecosite in Ontario has the potential to contain suitable habitat for Bat Maternity Colonies (BMC). There are eight species of bat in the province, four of which are Endangered. Habitats of Endangered species are protected from harm by the ESA, but all bat habitat is protected as SWH by the PPS (MMAH, 2014). BMC are typically older, larger deciduous trees that have cavities, crevices, sloughing bark, cracks, or other openings that bats can use as shelter from the elements and from predators. Bats use these micro-habitats to congregate and to raise their young. Potential exists for BMH in all of the FOD9-1 / FOD9-4 ecosites identified in the Study Area and Vicinity (see Figure 4).

Candidate Reptile Hibernaculum

Any habitats, other than those that are very wet, may be suitable as Reptile Hibernacula. Snake hibernation occurs below the frost line in burrows, rock crevices, and other natural or naturalized areas. There exists potential for Reptile Hibernacula at any natural area in the Study Area and Vicinity.

Candidate Migratory Butterfly Stopover Areas

Migratory Butterfly Stopover Areas (MBSA) require a mix of field and forest ecosites and are only located within 5 km of Lake Erie and Lake Ontario. The Study Area and Vicinity is approximately 5 km from Lake Ontario and features a mosaic of CUM, CUT, and FOD ecosites. Additionally, nectar plants, including Milkweed, the larval foodplant for Monarch, is present in the CUM ecosites. Therefore, the Study Area may be used as a migratory butterfly stopover area.

Candidate Landbird Migratory Stopover Areas

Similar to MBSA, Landbird Migratory Stopover Areas (LMSA) can only be considered SWH if found within 5 km of Lake Erie or Lake Ontario. LMSA are woodlot or treed swamp complexes greater than 5 ha, though if treed areas are rare on the landscape scale (as is the case in downtown Mississauga), woodlot fragments of 2-5 ha may be considered. The most valuable sites will have a mix of habitats including forest, grassland, and wetland complexes.

The Study Area and Vicinity features four small forested ecosites that may be candidate LMSA, given the site is approximately 5 km from Lake Ontario.

Rare Vegetation Communities

Candidate Old Growth Forest

Old Growth Forest (OGF) habitats are characterized as having heavy mortality by overstorey trees, resulting in canopy gaps which allow sunlight to reach the forest floor. The result is a complex, multi-layered canopy and abundance of downed woody material and standing snags. Any treed ecosite could be considered an OGFt. Confirmation requires the dominant tree species in a forest to be greater than 140 years old. Trees were not cored to determine age, so no data on forest maturity is available to confirm whether or not the stands in the Study Area and Vicinity would be considered OGF. However the conditions in the forested communities within the Study Area do not indicate the presence of OGF characteristics or functions.

Specialized Habitats of Wildlife

Candidate Amphibian Breeding Habitat (Woodland)

All ecosites associated with forest or treed-swamp communities have the potential to support Woodland Amphibian Breeding Habitats (ABH-W). The criteria for candidate ABH-W is the presence of wetlands, ponds or vernal pools greater than 500 m^2 within or adjacent to woodland. The fact that the soil on the Study Area was found to be fine-grained, imperfectly draining substrate gives high likelihood that sections of these ecosites experience vernal pooling in the spring. However, during breeding amphibian surveys, no species were documented within the Study Area and 2017 conditions includes elevated rainfall for this area.

Habitats of Species of Conservation Concern

Candidate Shrub / Early Successional Bird Breeding Habitat

The Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (SWHCS) defines Confirmed Shrub / Early Successional Bird Breeding Habitat as being large field areas succeeding to shrub and thicket (MNRF, 2015). Candidate habitat will be cultural thicket, cultural savannah, or cultural woodlot ecosites of greater than 10 ha in size. The polygons identified at CUM were approaching 25% cover in shrub, so it is assumed that the open areas within the Study Area and Vicinity represent areas in the process of succeeding to shrub thicket. Confirmation of this SWH requires the nesting or breeding evidence of one listed indicator species and at least two common species. Breeding evidence was observed for one indicator species (Brown Thrasher) and one common species (Willow Flycatcher).

5.1.5.2.2 Region of Peel Criteria Schedule

Migratory Land Bird Stopover (Successional; Natural)

CVC mapping indicated the presence of Migratory Land Bird Stopover (MLBS-SN) areas along the southern edge of the Study Area and Vicinity (see Figure 5). The natural areas in the Study Area and Vicinity meet the guidelines as MLBS-SN as they are within 5 km of Lake Ontario and either in a river or creek valley or within 500 m of a river valley. The headwater drainage features and nearby Sheridan Creek would allow these areas to meet the Peel-Caledon definition of MLBS-SN.

It should be noted that some areas designated as MLBS-SN on Figure 5 are not natural areas. There is a manicured corridor between polygons #1 and #2 as seen on Figure 4 which would not qualify as a natural area. The same can be said for the SWH area north of Sheridan Park Drive. These areas are maintained and have little ecological value to migrating land birds.

No impacts are anticipated on the region-defined MLBS-SN, as none of the areas identified are located within the proposed Sheridan Park Drive extension right-of-way.

Foraging Area with Abundant Mass

Peel-Caledon SWH definitions list all FOD9 ecosites as potential Foraging Area with Abundant Mass (FAAM). These are forests that produce high-quality forage of nuts, acorns, and fruit-bearing shrubs. The regional definition agrees with findings from ELC surveys. It is assumed that polygons #1 and #2 on Figure 4 would also be considered both a MLBS-SN and a FAAM on figures provided by the CVC.

Minor impacts to the FOD9 forests are anticipated along the edges adjacent to the proposed roadway alignment. As discussed in Section 4.3.1, the edge habitats of these forests are heavily degraded through dumping and the establishment of invasive species such as European Buckthorn. These removals are not expected to have significant impacts on the overall functionality or integrity of these habitats.

5.1.6 Habitat of Endangered and Threatened Species

Burnside's background review and correspondence with MNRF area biologists revealed the potential for SAR in the Study Area and Vicinity. All findings can be found in the SCC and SAR screening table in Appendix A of this report. Table 5.2 summarizes confirmed and candidate habitat for endangered and threatened species in the Study Area and Vicinity.

Table 5.2: Confirmed and Candidate Habitat for Endangered and Threatened Species in Study Area and Vicinity

	Study Area (within 120 m of proposed project area)	Study Area Vicinity (within 500 m of proposed project area)
Confirmed Habitat Present	None	None
Candidate Habitat Present	• Little Brown Myotis (END) • Northern Myotis (END) • Tri-colored Bat (END) • Eastern Meadowlark (THR) • Butternut (END)	• Little Brown Myotis (END) • Northern Myotis (END) • Tri-colored Bat (END) • Barn Swallow (THR) • Eastern Meadowlark (THR) • Chimney Swift (THR) • Butternut (END)

5.1.6.1 Confirmed Habitat for Endangered or Threatened Species in the Study Area

No species designated as Endangered or Threatened were confirmed to be utilizing the Study Area as habitat during 2017 field investigations. One Threatened species (Barn Swallow) was observed foraging over the Study Area. Suitable nesting habitat for Barn Swallow is not present in the Study Area. As described in Section 4.3.2, habitat for Barn Swallow is not regulated under the ESA 2007; however, foraging habitat is included as Category 3 under the General Habitat Description for the Barn Swallow (MNRF, 2016). Habitat under Category 3 is defined as "the area between 5 m and 200 m of the nest." Category 3 habitat has the highest tolerance to disturbance.

5.1.6.2 Candidate Habitat for Endangered or Threatened Species in the Study Area

Little Brown Myotis, Northern Myotis and Tri-colored Bat

As discussed in Section 4.3.4, Candidate Bat Maternity Habitat (BMH) for three bat species (Little Brown Myotis, Northern Myotis, and Tri-colored Bat) may be present within the Study Area. These species are listed as Endangered under the ESA (MNRF, 2007) and the federal *Species at Risk Act* (ECCC, 2002).

All three species receive general habitat protection under the ESA as per subsection 9(1) and 10(1). All FOD9 communities located in the Study Area include trees that have suitable cavities for bat maternity and roosting habitats (Figure 4). Isolated trees outside of forest communities may offer marginal habitat for bat roosting, but are not considered in the MNRF Bat Maternity Habitat Methodology used to guide survey efforts in this study (MNRF, 2017c).

The locations of identified BMH trees can be found on Figure 3. In order to avoid direct impacts to these species and their habitat, direct removal of trees within forested ecosites should be avoided. If avoidance is not possible, the MNRF may grant permits or other authorizations for activities that would otherwise not be allowed, with conditions that are aimed at protecting and recovering SAR. These are dealt with on a case-by-case basis.

Eastern Meadowlark

Eastern Meadowlark is listed as Threatened under the ESA (MNRF, 2007). Candidate habitat for Eastern Meadowlark includes grassy pastures, meadows, and hay fields. Bobolink is also closely associated with these vegetative features; however, it should be noted that suitable habitat for Bobolink is not present in the Study Area or Vicinity. Bobolink have a low tolerance to shrub encroachment and the presence of patches of bare ground. They are also sensitive to vegetation structure and composition and are

positively associated with high grass-to-forb ratios (McCracken *et al.* 2013). The Study Area and Vicinity lack the suitable nesting conditions to support this species.

No breeding evidence for Eastern Meadowlark was identified during breeding bird surveys, though the large Cultural Meadow ecosite at polygon #3 may be considered marginal habitat (Figure 4). Eastern Meadowlark receives general habitat protection under the ESA. Ecological functionality of the open areas that would provide habitat for these species are not anticipated to be impacted by proposed roadway installation.

Butternut

Butternut (*Juglans cinerea*) is a medium-sized tree of the walnut family. The species is listed as Endangered in the ESA (MNRF, 2007) due to the introduction and proliferation of a microscopic fungus (*Sirococcus clavigignenti-juglandacearum*). This fungus is the causative agent of a fatal disease known as Butternut canker.

Butternut will grow in moist, fertile soils of lower slopes, riverbanks, and floodplains, although they are also known to occur on dry, rocky limestone soils. They are most commonly found as constituents in deciduous forests associated with Basswood, Sugar Maple, Red Oak, White Oak, Beech, and Black Cherry.

Records of Butternut exist in the Project Area and Vicinity. The identified FOD9 forest communities would meet the habitat requirements of these species (Figure 4). Only a narrow band of disturbance is anticipated on ecosites directly adjacent to the proposed road extension right-of-way. A tree inventory was completed for these areas where tree removal is anticipated, and no Butternut individuals were identified. In the event that a Butternut is identified on site, the MNRF should be notified of its presence and location immediately.

5.1.6.3 Habitat for Endangered or Threatened Species in the Study Area Vicinity

Two SAR were identified as being potentially present in the Study Area Vicinity but not within the Study Area itself. These species are Barn Swallow (THR) and Chimney Swift (THR).

Barn Swallow

Barn Swallow is an aerial insectivore, and is frequently observed foraging over open areas of the landscape where insects are abundant. This species will typically build mud nests on ledges or landings on or in barns, bridges, buildings or other anthropogenic structures. Barn Swallows are gregarious, and will often nest in small colonies with other insectivores.

While no nesting habitat for this species was found to be present within the Study Area, foraging presence indicates that it is likely that suitable nesting habitat exists in the Study Area Vicinity.

Chimney Swift

Chimney Swifts are aerial insectivores that most commonly nest in anthropogenic structures like uncapped chimneys, though historically they have nested / roosted in deciduous and coniferous wet forests with a well-developed, dense shrub layer. This species is listed as Threatened under the ESA (MNRF, 2007) and has been recorded as present within the Study Area Vicinity.

While no breeding habitat exists within the Study Area, there may be anthropogenic structures suitable for nesting habitat within the Study Area Vicinity.

5.1.7 Aquatic Habitat

The Toronto and Region Conservation Authority (TRCA) has produced a guide for the evaluation, classification and management of HDFs (TRCA, 2013). This guide is used to provide direction for assessing and managing features that are not clearly covered by policy and legislation as being important eco-hydrological features, but may contribute to the overall health of a watershed. When considering alteration regarding a headwater drainage feature, consideration must be made for its functions and attributes. The framework from the TRCA guide was used in the assessment and evaluation of the subject headwater tributaries to Sheridan Creek.

The three HDFs located on site were all classified as having limited hydrologic functions as they provide ephemeral flow or water storage functions during, and for a short-time after, spring freshet and large rain events. They are usually dry or surface-damp by mid-May. There was no substrate found in the three HDFs, as well as little or no channel formation within the Study Area itself.

Each respective HDF were assessed as having Riparian Classification B, Valued Functions. The riparian corridor (0-30 m on either side of a HDF) at the three HDFs consisted of mostly meadows with some scrubland within the riparian zone. There were no forests or thickets present within the accessible riparian corridor of the three HDFs.

The assessment of the fish and fish habitat classification determined that there are contributing functions present within each of the respective HDFs as they could potentially flow to a downstream watercourse (Sheridan Creek) which contains direct fish habitat. No fish were identified within any of the three HDFs and they do not provide any suitable habitat for feeding, cover, refuge or migration.

The assessment of the terrestrial habitat classification determined that there are limited functions present within the subject HDFs. The three HDFs were classified as swales

with standing water present at the time of field visit (April 11, 2017), and they did not function as a link to any features upstream and downstream that could be used by higher mobility species (turtles, frogs, etc.).

Following the above described evaluation of the HDFs, the management recommendation as described in Table 8 in the “Evaluation, Classification and Management of Headwater Drainage Features Guidelines” (TRCA, 2013) for each of the respective HDFs is “mitigation”. Examples of mitigation measures that could be completed as part of the development in order to mitigate potential impacts to the HDFs include: replicating or enhancing functions through lot level conveyance measures, such as well vegetated swales that mimic online wet vegetation pockets, connected to the natural heritage system through existing feature functions as feasible, and/or Low Impact Development (LID) stormwater options (TRCA, 2013).

Table 5.3: Headwater Drainage Feature Classification Assessment

Headwater Drainage Feature Classification Assessment						
Watercourse ID	Hydrology Classification	Riparian Classification	Fish and Fish Habitat Classification	Terrestrial Habitat Classification	Management Recommendation	Mitigation Examples
HDF 1	C – Contributing Functions – Ephemeral	B – Valued Functions	C – Contributing Functions – Potentially transports allocthonous materials (insects, detritus, water quantity) to downstream reaches potentially containing fish	Limited Function	Mitigation	Replicate or enhance functions through lot level conveyance measures, such as well-vegetated swales to mimic online wet vegetation pockets, connected to the natural heritage system through existing feature functions as feasible, and/or Low Impact Development (LID) stormwater options
HDF 2	C – Contributing Functions – Ephemeral	B – Valued Functions	C – Contributing Functions – Potentially transports allocthonous materials (insects, detritus, water quantity) to downstream reaches potentially containing fish	Limited Function	Mitigation	
HDF 3	C – Contributing Functions – Ephemeral	B – Valued Functions	C – Contributing Functions – Potentially transports allocthonous materials (insects, detritus, water quantity) to downstream reaches potentially containing fish	Limited Function	Mitigation	

6.0 Impact Assessment and Mitigation

Detailed field surveys were undertaken to characterize terrestrial and aquatic habitats within 120 m of the proposed expansion of Sheridan Park Drive (the Study Area) to verify information collected through background records review, to further characterize known features, and to identify any additional features not previously recorded. Field investigations included delineation of vegetation communities through the use of Ecological Land Classification (ELC), tree inventory, breeding bird surveys, bat maternity habitat surveys, anuran call count surveys, aquatic habitat classification, and fish presence surveying. These surveys included targeted Species at Risk (SAR), surveys for Tri-colored Bat, Northern Myotis, and Little Brown Myotis, Bat Maternity Habitat (BMH), as well as breeding evidence surveys for Eastern Wood-pewee.

Lands within the Study Area Vicinity (within 500 m of proposed road extension works) were also evaluated based on a desktop review of background reports, aerial photography, natural heritage databases, and agency consultation.

Based on the results of these studies, the footprint of the proposed road extension alignment was selected in an effort to both avoid and minimize the potential for adverse effects to the natural heritage features and functions associated with the Study Area. The shoulder grading on the planned right-of-way for Sheridan Drive has been modified with the intention of mitigating area disturbance and removal of habitat adjacent to the proposed road extension.

The following is a summary of Provincially Significant Features present in the Study Area where direct or indirect impacts are anticipated given the construction, operations, and/or maintenance of the preliminary Conceptual Design.

6.1 Direct Impacts

Direct impacts to Significant Wildlife Habitat and to candidate SAR habitat during the construction, operations, or maintenance phase of the project include:

- Removal of snag trees suitable as BMH on the edge of forests directly adjacent to proposed road extension;
- Removal of Significant Wildlife Habitat (SWH) including;
  - Candidate Waterfowl Stopover and Staging Areas (Terrestrial);
  - Candidate Raptor Wintering Areas;
  - Candidate Bat Maternity Colonies (Non-SAR);
  - Candidate Reptile Hibernacula;
  - Candidate Foraging Areas with Abundant Mass (Peel-Caledon);
  - Candidate Old Growth Forest;

  - Confirmed Special Concern and Rare Wildlife Species;
    - Eastern Wood-pewee (Special Concern);
    - Monarch (Special Concern); and
- Encroachment into identified Headwater Drainage Areas.

6.2 Indirect Impacts

Indirect impacts to Significant Wildlife Habitat and to candidate SAR habitat during the construction, operations, or maintenance phase of the project must also be considered.

- Degradation in quality of Significant Wildlife Habitat (SWH) including;
  - Candidate Monarch Butterfly Stopover Areas;
  - Candidate Land Bird Migratory Stopover Areas (Provincial);
  - Candidate Land Bird Migratory Stopover Areas (Peel-Caledon);
  - Candidate Amphibian Breeding Habitat (Woodland);
  - Candidate Amphibian Movement Corridors; and
- Contamination of watercourses potentially containing fish downstream of on-site watercourses and Headwater Drainage Features from road works, utilization, and maintenance.

Impacts from road usage and maintenance have the potential to adversely affect natural features and their ecological functions in the Study Area. Impacts with farther-reaching implications include noise and vibration disturbance, surface-water runoff, increased siltation, contaminants from road presence (road salts, volatile organic compounds (VOCs), etc.), and light pollution.

In summary, both the direct and indirect impacts will have no net impact overall to the existing natural environment. The proposed road extension is not anticipated to impact the form and function of vegetation, wildlife habitat and headwater drainage features.

Impacts and mitigations are discussed with more detail in Table 6.1.

Table 6.1: Impact and Management Measures

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Surface and Ground Water	Surface Water	Potential for erosion and sedimentation impacts.	The City is required to comply with the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 with respect to the quality of water discharging into natural receivers. The footprint of disturbed areas shall be minimized to the extent possible. For example, vegetated buffers shall be left in place adjacent to natural vegetation features (forested areas) to the maximum extent possible. A Soil Management Plan (SMP) will be prepared by a Qualified Professional as defined in O.Reg. 160/06 for managing soil materials on-site (includes excavation, location of stockpiles, reuse and off-site disposal). An Erosion and Sediment Control (ESC) Plan will be developed during detailed design in consultation with CVC and will conform to industry best management practices and recognized standard specifications such as Ontario Provincial Standards Specification (OPSS). Any in-water work will be conducted in isolation of flowing water. All work zones will be clearly marked on detailed design drawings and the ESC Plan to indicate that no work should occur outside the work zone. ESC measures shall be installed and maintained during the construction phase and until all areas of the construction site have been stabilized. ESC measures shall be inspected daily to confirm they are functioning and maintained as required. If ESC measures are not functioning properly, no further work in the affected areas will occur until the sediment and/or erosion problem is resolved. All disturbed areas of the construction site will be stabilized and re-vegetated as soon as conditions allow. Wet weather restrictions shall be applied during site preparation and excavation. Any construction works within CVC regulated areas will require a permit under O. Reg. 160/06.	A qualified Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC are being followed. A qualified Environmental Inspector shall inspect, suggest and confirm the repair of ESC measures as needed.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Surface and Ground Water	N/A	Potential for localized surface water or groundwater impacts as a result of spills, discharge or dumping of materials, fluids and other wastes during construction of proposed road extension and associated surface water facilities (e.g., swales).	Refueling and maintenance of construction equipment should occur within designated areas only. Any hazardous materials used for construction will be handled in accordance to appropriate regulations. A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans for the construction of new landfill cells and general site preparation for proposed road extension. Personnel shall be trained in how to apply the plans and the plans shall be reviewed to strengthen their effectiveness and continuous improvement. Spills or depositions into watercourses shall be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on site at all times during the work. Spills will be reported to the Ontario Spills Action Centre at 1-800-268-6060.	A qualified Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC are followed. Workers shall report any instances of spills to their supervisors.	No net effects anticipated.
Surface and Groundwater	Headwater feature	Change in water balance to seasonally flooded or wet habitat within natural vegetation communities affecting groundwater recharge functions.	Incorporation of Low Impact Development (LID) to direct surface water flow to grassed swales, bioretention gardens and infiltration galleries in close proximity to the natural heritage features (refer to CVC Grey to Green Road Retrofits). LID elements should be designed to preserve local predevelopment water balance as they reduce runoff volume through the processes of infiltration and evapotranspiration and improve stormwater quality through a variety of physical and biological treatment processes.	Monitoring of vegetation communities for changes in plant species composition and soil moisture regime.	No net effects anticipated
Natural Environment	Vegetation	Direct effects of construction activities will include the limited clearing and loss of both herbaceous and woody vegetation. Indirect effects include the increase to edge habitats, which includes a number of potential effects, such as wind throw and sunscald, introduction of invasive plant and wildlife species which may outcompete or predate native species, change in soil moisture regime and	Construction hoarding should be installed prior to commencement of construction activities to both prevent the unnecessary encroachment / disturbance by humans and machinery into vegetation communities and to prevent wildlife from entering the construction areas. Hoarding should be installed and inspected prior to any land disturbance. Hoarding should be installed at the dripline of any trees to be preserved. Construction activity should be outside of the dripline of any trees that are to remain.	Fencing shall be inspected regularly to ensure damage is repaired in a timely manner and that additional risk to wildlife is minimized. Hoarding site visit required.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
		water availability to plants and plant communities, increases in light penetration (pollution) and noise, soil compaction, equipment and pedestrian “traffic”, equipment laydown and spills.	Plant species loss should be minimized, where possible, and compensatory planting plans established in areas of the Study Area when no clearing activities are proposed, referencing CVC’s Plant Selection Guidelines for the existing soil and vegetation communities. Potential for establishing pollinator species of plants should also be included when establishing a formal planting plan. The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance should be included as part of the detailed design and landscape plan for the road extension.		
Natural Environment	Wildlife and Wildlife Habitat (General) – Breeding Birds	Potential for disturbance or destruction of migratory breeding birds and their habitat by the landfill expansion (prohibitions under the *Migratory Bird Convention Act*, *1994*).	To reduce the risk of contravening the *Migratory Birds Convention Act, 1994*, timing constraints shall be applied to avoid any limited vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period – broadly from April 1st to August 31st for most species (regardless of the calendar year); Active nests (nests with eggs or young birds) of protected migratory birds, including SAR protected under the ESA, 2007, cannot be destroyed at any time of the year. The destruction of inactive nests for some species may also be prohibited. If a nesting migratory bird (or SAR protected under ESA, 2007) is identified within or adjacent to the construction site (or during operations and maintenance activities) and the activities are such that continuing works in that area would result in a contravention of the *Migratory Birds Convention Act, 1994* or ESA, 2007, all activities will stop and the Contract Administrator (with assistance from an Avian Biologist) shall discuss mitigation measures with the City. Should SAR be identified, all activities will stop and MNRF will be contacted immediately to ensure compliance with the ESA. The Contract Administrator shall instruct the Contractor on how to proceed based on the mitigation measures established through discussions with the Town, the MNRF and/or Environment Canada.	An Avian Biologist may be required on-site as needed should a nesting migratory bird (or SAR protected under ESA, 2007) be identified within or adjacent to the construction site. The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNRF for further advice.	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
Natural Environment	Wildlife and Wildlife Habitat (General)	Temporary displacement of, and disturbance to, wildlife and wildlife habitat during the construction phase (i.e., vegetation removals, noise, light trespass), including SAR. Development in these habitats may limit wildlife movement and reduce useable habitat. Wildlife habitat may be removed as a result of the proposed activities. • Removal of Significant Wildlife Habitat (SWH) including; - Candidate Waterfowl Stopover and Staging Areas (Terrestrial); - Candidate Raptor Wintering Areas; - Candidate Bat Maternity Colonies (Non-SAR); - Candidate Reptile Hibernacula; - Candidate Foraging Areas with Abundant Mass (Peel-Caledon); - Candidate Old Growth Forest; - Confirmed Special Concern and Rare Wildlife Species; ▪ Eastern Wood-pewee (Special Concern); and, ▪ Monarch (Special Concern).	In the event that an animal is encountered during construction and does not move from the construction zone, the Contract Administrator will be notified. If the construction activities are such that continuing construction in the area would result in harm to wildlife, construction activities in that location will temporarily stop and the MNRF shall be contacted for direction; If temporary construction hoarding is used at a location, it shall be installed to allow wildlife to leave the fenced area during vegetation clearing. Once the work area has been cleared, it can be securely fenced to prevent wildlife from returning. The excluded area should be searched immediately following fencing installation for any wildlife (including SAR) that may have become trapped. Any wildlife should be safely relocated, or permitted to escape, to a suitable habitat. All works should stop immediately and MNRF contacted should a SAR be encountered within a construction or operational area to ensure compliance with the ESA. Avoid vegetation clearing during sensitive times of the year for local wildlife, such as spring and early summer (when many animals bear their young or migrate between wintering and summer habitats).		No net effects anticipated.
Natural Environment	Woodlands	Removal of snag trees suitable as Bat Maternity Habitat (BMH) on the edge of forests directly adjacent to proposed road extension. a) Potential for direct environmental effects to woodland habitat (FOD9-1 / FOD9-4) during clearing and construction activities for the proposed road extension. b) Potential for indirect environmental effects to adjacent woodland features. Potential	a) Note: A permit under the ESA may be required before any work can occur in Regulated habitat at any time during the year – as such, mitigation measures outlined below will be refined during the permitting process, including details of construction hoarding, timing of works, etc. Removal of candidate BMH trees will require appropriate compensation during the appropriate timing windows, including the installation of bat house(s) to compensate for loss of habitat. The recommended approach from MNRF includes proactive	a) A Biologist shall be on-site during construction works in the event that wildlife is trapped within the construction zone and requires removal and relocation to land outside of the construction zone. They may also be required on-site as needed should a species that is protected under the ESA, 2007 be identified within or adjacent	No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
		indirect effects may include noise disturbance as a result of construction and/or operations and maintenance activities. Noise disturbance may impact breeding success of avian species, including SCC (Wood Thrush, Eastern Wood-pewee), whose habitat is considered SWH.	establishment of alternate bat habitat features within the Study Area to avoid the requirement for permitting under the ESA. - Prior to construction works commencing, installation of construction hoarding is recommended along the perimeter of the limit of construction which includes all areas required for excavation and spoil stockpile, vehicle and worker access and material laydown in order to prevent any wildlife from attempting to access the construction zone during construction works – specifically, fencing shall be installed at the beginning of April or earlier. - If designated areas are created during construction for the stockpiling of materials, especially fill, soil and gravel, the Contractor shall install temporary construction hoarding around the perimeter of these areas to prevent any reptile species from entering the area and attempting to nest (reptiles are attracted to these materials for nesting). - Any wildlife should be safely relocated, or permitted to escape, to a suitable habitat no more than 200 m away from the work zone. Wildlife shall be released no more than 200 m away from the work zone in a similar ecosystem type. - In the event that SAR are found within the construction zone all activities will stop and mitigation options shall be discussed with the Town, whereby an MNRF SAR Biologist may be contacted for advice as these animals are protected under ESA 2007. - Educational material shall be provided by a Biologist to construction personnel prior to commencement of construction works to assist personnel in identifying SAR species, should they be encountered. These materials shall also include protocols to be followed to prevent contravention of the ESA 2007, should any SAR be encountered. - All works should stop immediately and MNRF contacted should a SAR be encountered within a construction or operation area to ensure compliance with the ESA; - In the event that SAR are found within the construction zone all activities will stop and mitigation options shall be discussed with the Town, whereby an MNRF SAR Biologist may be	to the construction site. The Biologist may be required to confirm the presence and identification of a particular species prior to contacting the MNRF for further advice. a) Fencing should be monitored on a regular basis to ensure there is no damage that may result in a decrease in function or opportunities for injury or death to wildlife species. b) An Avian Biologist may be required on-site as needed should a nesting migratory bird (or SAR protected under ESA, 2007) be identified within or adjacent to the construction site. b) The Avian Biologist may be required to confirm the presence and identification of an active nest and/or breeding bird prior to contacting MNRF for further advice.	

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			contacted for advice as these animals are protected under ESA 2007. - SAR identification training shall be provided by a Biologist to construction personnel prior to commencement of construction works to assist personnel in identifying SAR species, should they be encountered. Educational materials shall also include protocols to be followed to prevent contravention of the ESA 2007, should any SAR be encountered. All construction personnel will be trained on how to identify and deal with SAR encountered during work. a) A mitigation plan will be designed and implemented to compensate for the temporary removal of vegetation and provide enhancement of the existing features. b) To reduce the risk of disturbing breeding birds (and contravening the *Migratory Bird Convention Act, 1994*), timing constraints shall be applied to avoid vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period - broadly from end of March to end of August for most species (regardless of the calendar year) (see Breeding Birds for more detail).		
Natural Environment	Cultural Thicket-Cultural Meadow	Potential for direct environmental effects (i.e., habitat removal) to cultural thicket and cultural meadow which composes most of the proposed road extension footprint area. This feature is candidate SWH for raptor wintering area and shrub/ early successional bird breeding habitat, and is confirmed habitat for breeding birds generally. a) Candidate raptor wintering area: Modification to, or removal of, vegetation structure or drainage patterns in fields or forests supporting a winter roost may make it unattractive.	a) Prior to construction, surveys should be conducted by an Avian Biologist in winter to determine if the site is significant habitat for raptors. If this is not possible due to project time constraints, habitat shall be considered “candidate” habitat. Consultation with MNRF is required prior to construction to determine what mitigation measures are appropriate to avoid potential negative effects. d) To reduce the risk of disturbing breeding birds (and contravening the *Migratory Bird Convention Act, 1994*), timing constraints shall be applied to avoid vegetation clearing (including grubbing) and/or structure works (construction, maintenance) during the breeding bird period - broadly from end of March to end of August for most species (regardless of the calendar year) (see Breeding Birds for more detail).		No net effects anticipated.

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
		c) Shrub / early successional bird breeding habitat: permanent removal of candidate habitat reduces overall size of available habitat for bird species that depend on this type of vegetation structure for food, cover and nesting. A reduction in overall size will also reduce the ecological function in the remaining habitat due to fragmentation. d) Potential for indirect environmental effects may include noise disturbance as a result of construction and/or operations and maintenance activities. Noise disturbance may impact nesting success of bird species nesting in this habitat.			
Natural Environment	Fish Habitat	Potential indirect impacts to downstream fish habitat from water quality and quantity impairments (sediment loading; fuels and lubricants from machinery) as a result of construction works (earthworks-based activities).	SMP and ESC Plans shall be developed as noted above. Wet weather restrictions shall be applied during site preparation and excavation. Work will be avoided near watercourses and headwater drainage features during periods of excessive precipitation and/or excessive snow melt. Compliance with the *Ontario Water Resources Act, 1990* shall be maintained with respect to the quality of water discharging into natural receivers. Sediment and erosion control measures (such as silt fence barriers, etc.) shall be installed and maintained during the work phase and until the site has been stabilized. Control measures shall be inspected daily to ensure they are functioning and are maintained as required. If control measures are not functioning properly, no further work shall occur until the problem is resolved. All temporary ESC measures shall be installed in accordance with recognized provincial standards. Extra silt fence / turbidity curtain shall be stored on-site, should additional sediment control be required. Any stockpiled material shall be stored and stabilized away from the surface water features. All materials and equipment used for the purpose of site preparation and road construction shall be operated	An Environmental Inspector shall regularly monitor construction activities to confirm the requirements outlined in the SMP and ESC plans are followed. Workers shall report any instances of spills or impacts to surface water features.	No net effects anticipated

Environmental Component	Environmental Sub-Component	Potential Environmental Effects	Impact Management Measures (including Mitigation Measures)	Recommended Monitoring Activities	Net Effects
			and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water. ESC plans and a spill response plan shall be developed and shall include, but not be limited to, the details described above. CVC shall be consulted during detailed design with regard to potential works within or in close proximity flood regulated areas, as appropriate.		

7.0 References

Aquafor Beech Ltd. 2011. Executive Summary (Phase 1): Sheridan Creek watershed Study and Impact Monitoring Characterization Report.

Bird Studies Canada (BSC). 2009. Marsh Monitoring Program Participants Handbook for Surveying Amphibians. Published by Bird Studies Canada in cooperation with Environment Canada and the U.S. Environmental Protection Agency. 13 pp.

Cadman, M.D., Sutherland, D.A., Beck, G.G., Lepage, D., Couturier, A.R. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

Chapman, L.J., Putnam, D.F. 1984. Physiography of Southern Ontario. Map P.2715 (coloured). Scale 1: 600 000.

City of Mississauga. 2017. Mississauga Official Plan. Accessed July 3, 2017 from: http://www.mississauga.ca/portal/residents/mississaugaofficialplan.

City of Mississauga. 2014. Natural Areas Survey. Accessed June 20, 2017 from: http://www.mississauga.ca/portal/residents/environmentalplanning?paf_gear_id=11800020&itemId=8700012&returnUrl=%2Fportal%2Fresidents%2Fenvironmentalplanning%3Bjsessionid%3DKTHU1LGXTSDOFTRPH3XD5XWOF25W4PW0.

Credit Valley Conservation (CVC). 2017. Regulation Mapping. Accessed July 3, 2017 from: http://www.creditvalleyca.ca/planning-permits/regulation-mapping/.

Credit Valley Conservation (CVC). 2010. Low Impact Development Stormwater Management Planning and Design Guide. Accessed July 3, 2017 from: http://www.creditvalleyca.ca/wp-content/uploads/2014/04/LID-SWM-Guide-v1.0_2010_1_no-appendices.pdf.

Environment and Climate Change Canada (ECCC). 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada. Accessed June 20, 2017 from: http://www.registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=2475.

Environment and Climate Change Canada (ECCC). 2013. *Migratory Birds Convention Act – Avoidance Guidelines*. Accessed on July 30, 2017. Accessed June 20, 2017 from: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=AB36A082-1.

Environment and Climate Change Canada (ECCC). 2002. *Species at Risk Act*. Statutes of Canada. Chapter 29.

Environment and Climate Change Canada (ECCC). 1994. *Migratory Birds Convention Act*. Statutes of Canada, Chapter 22.

Fisheries and Oceans Canada (DFO). 2015. Distribution of Fish Species at Risk, Credit Valley Watershed. Her Majesty the Queen in Right of Canada.

Fisheries and Oceans Canada (DFO). *Fisheries Act*. 1985. Royal Statutes of Canada, Chapter F-14.

Government of Canada. 2017. Species at Risk Public Registry. Accessed online on October 16, 2017 at: http://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1.

Lee, H.T, W.D. Bakowsky, J.L. Riley, J. Bowles, M. Puddister, P. Uhlig, S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Region, Science Development and Transfer Branch. Technical Manual ELC-005.

McCracken, J.D., R.A. Reid, R.B. Renfrew, B. Frei, J.V. Jalava, A. Cowie, and A.R. Couturier. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorous*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 88 pp.

Ministry of Environment and Climate Change (MOECC). 2017. Water Well Information System (Well Location and Summary). Accessed August 28, 2017 from: https://www.ontario.ca/environment-and-energy/map-well-records.

Ministry of the Environment and Climate Change (MOECC). 1990. *Environmental Assessment Act*. Royal Statutes of Ontario, Chapter E.18.

Ministry of Municipal Affairs and Housing (MMAH). 2017. Greenbelt Plan. Accessed June 20, 2017 from: http://www.mah.gov.on.ca/AssetFactory.aspx?did=18549.

Ministry of Municipal Affairs and Housing (MMAH). 2014. Provincial Policy Statement (PPS) under the *Planning Act*. Accessed August 28, 2017 from: http://www.mah.gov.on.ca/Page10679.aspx.

Ministry of Natural Resources and Forestry (MNRF). 2017a. Natural Heritage Information Centre (NHIC). Data pertaining to natural areas and provincially significant species. Accessed April 21, 2017 from: http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html.

Ministry of Natural Resources and Forestry (MNRF). 2017b. Species at Risk in Ontario. Accessed February 22, 2017 from: https://www.ontario.ca/environment-and-energy/species-risk-ontario-list.

Ministry of Natural Resources and Forestry (MNRF). 2017c. Survey Protocol for Species at Risk Bats within Treed Habitats: Little Brown Myotis, Northern Myotis, & Tri-colored Bat. Guelph District.

Ministry of Natural Resources and Forestry (MNRF). 2016. Barn Swallow General Habitat Description. Accessed July 3, 2017 from: https://www.ontario.ca/page/barn-swallow-general-habitat-description.

Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E and 7E.

Ministry of Natural Resources and Forestry (MNRF). 2014. Aquatic Resources Area mapping made available by the MNRF through Ontario Open Data.

Ministry of Natural Resources and Forestry (MNRF). 2013. O. Reg. 160/06: Credit Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Accessed June 20, 2017 from: https://www.ontario.ca/laws/regulation/060160.

Ministry of Natural Resources and Forestry (MNRF). 2011. Guidance for Development Activities in Redside Dace Protected Habitat, Ministry of Natural Resources.

Ministry of Natural Resources and Forestry (MNRF). 2007. *Endangered Species Act*. Statues of Ontario, Chapter 6.

Ministry of Natural Resources and Forestry (MNRF). 2005. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ministry of Natural Resources and Forestry (MNRF). 2000. Significant Wildlife Habitat Technical Guide (SWHTG) *&* Appendices. 151 pp.

Ministry of Transportation (MTO). 2009. Environmental Guide for Fish and Fish Habitat. Accessed July 25, 2017 from: http://www.raqsb.mto.gov.on.ca/techpubs/eps.nsf/0/8d35d8cff877c2bb852572d7005a2a39/$FILE/MTO Fish Guide June 2009 Final.pdf.

North-South Environmental Inc. Dougan & Associates and Sorensen Gravely Lowes. 2009. Peel Caledon Significant Woodlands and Significant Wildlife Habitat Study. Report prepared for the Region of Peel and the Town of Caledon, Ontario. *xi* + 187 pp.

Accessed July 3, 2017, from: https://www.peelregion.ca/planning/officialplan/pdfs/Peel-CaledonSW-SWH-Study-Report-Part4.pdf.

Ontario Breeding Bird Atlas (OBBA). 2005. Atlas Records and Square Summaries. Accessed July 3, 2017 from: http://www.birdsontario.org/atlas/squareinfo.jsp.

Ontario Breeding Bird Atlas (OBBA). 2001. Guide for Participants. Accessed July 3, 2017 from: http://www.birdsontario.org/download/atlas_feb03.pdf.

Ontario Geological Survey. 2010. Surficial Geology of Southern Ontario. Ontario Geological Survey, Miscellaneous Release Data 128 – Revised. Accessed August 28, 2017 from: http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD128-REV.

Ontario Reptile and Amphibian Atlas (ORAA). Atlas Records and Square Summaries. Accessed July 3, 2017 from: http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php.

Region of Peel. 2016. Peel Region Official Plan. Accessed July 3, 2017 from: https://www.peelregion.ca/planning/officialplan/download.htm.

Toronto and Region Conservation Authority (TRCA). 2013. Evaluation, Classification and Management of Headwater Drainage Features. Toronto and Region Conservation Authority and Credit Valley Conservation.

Appendix A

Background Records Search and Screening Table

Appendix A: Screening Table - Background Review of Species at Risk and Species of Conservation Concern Potentially Present in the Study Area

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
BIRDS									
Bank Swallow (Source: OBBA)	*Riparia riparia*	S4B	THR	THR	-	-	In Ontario, Bank Swallows typically nest in exposed earthen banks created by erosion along watercourses and lakeshores. It has also adapted to nesting in sand and gravel pits, along roadsides, and in stockpiles of soil and other materials. The largest populations are supported by the shorelines of the lower Great Lakes, and they can be found throughout southern Ontario in the Carolinian and Lake Simcoe-Rideau regions.[5]	No nesting habitat confirmed present in the Study Area. Potential for foraging habitat over open areas of the Study Area based on observations of other aerial insectivores, such as Barn Swallow.	No.
Barn Swallow (Source: OBBA, MNRF)	*Hirundo rustica*	S4B	THR	THR	-	-	Barn Swallows usually build mud nests on ledges of walls in or outside of a barn or other man-mad structures, including building and bridges. Natural nesting locations include caves and cliffs, but they are now rarely used. They often nest in small colonies in areas often associated with other insectivores. They are most abundant south of the Canadian Shield, within agricultural lands in the Carolinian and Lake Simcoe-Rideau regions.[5]	No nesting habitat confirmed present in the Study Area. Confirmed foraging habitat over open areas of the Study Area.	Yes. Foraging only.
Bobolink (Source: MNRF, OBBA)	*Dolichonyx oryzivorus*	S4B	THR	THR	-	-	Bobolinks generally prefer open grasslands and hay fields for nesting, typically featuring relatively tall vegetation. Sometimes uses large fields of winter wheat and rye in southwestern Ontario. Sensitive to vegetation structure and composition. They are positively associated with high grass-to-forb ratios, and moderate litter depth. They tolerate wetter portions of fields compared to Eastern Meadowlark and are more likely to nest closer to field centers rather than field margins. They have a lower tolerance to presence of patches of bare ground, and appear to prefer larger fields than Eastern Meadowlark.[5, 7]	No nesting habitat confirmed present in the Study Area.	No.
Chimney Swift (Source: MNRF, OBBA)	*Chaetura pelagica*	S4B,S4N	THR	THR	THR	1	Chimney Swifts have historically nested/roosted in deciduous and coniferous, typically wet, forest types, with a well-developed, dense shrub layer. Currently, most are found in anthropogenic structures, most commonly in uncapped chimneys.[5]	No nesting or roosting habitat confirmed present in the Study Area. Potential for foraging habitat over open areas of the Study Area based on observations of other aerial	No.

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
								insectivores, such as Barn Swallow.	
Common Nighthawk (Source: OBBA)	*Chordeiles minor*	S4B	SC	THR	THR	1	Nests in open habitats, forests and urban areas. They prefer rock outcrops, alvars, sand barrens, bogs, fens, and openings created by clear-cuts and burns. In southern Ontario, they can be found in grasslands, agricultural fields, gravel pits, prairies, alvars and at airports. In urban areas, they nests mostly on flat, graveled roofs but occasionally on railways or railway ROWs and pedestrian pathways.[5]	No nesting habitat confirmed present in the Study Area. Potential for foraging habitat over open areas of the Study Area based on observations of other aerial insectivores, such as Barn Swallow.	No.
Eastern Meadowlark (Source: MNRF, OBBA)	*Sturnella magna*	S4B	THR	THR	-	-	Generally prefers grassy pastures, meadows and hay fields. Prefers moderately tall grass with abundant litter cover, a high proportion of grass cover, moderate forb density, low proportions of shrub and woody vegetation cover, and low percent of bare ground. Prefers to nest in drier sites and frequently nests around field margins.[5,7]	No nesting habitat confirmed present in the Study Area.	No.
Eastern Whip-poor-will (Source: OBBA)	*Caprimlugus vociferus*	S4B	THR	THR	THR	1	Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred. In Ontario, its preferred habitats include rock or sand barrens with scattered trees, savannahs, old burns in state of early forest succession, and open conifer plantations.[5]	No nesting habitat confirmed present in the Study Area.	No.
Eastern Wood-pewee (Source: OBBA)	*Contopus virens*	S4B	SC	SC	-	-	Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. They do not require large areas of woods, but occurs less frequently in woodlots surrounded by development than in those without.[5]	Confirmed nesting habitat in the wooded portions of the Study Area.	Yes.
Grasshopper Sparrow (Source: OBBA)	*Ammodramus savannarum*	S4B	SC	SC	-	-	Prefers drier, sparsely vegetated grasslands, particularly rough or unimproved pastures, at least 30 ha in size. Such grasslands support varying amounts of forb and shrub growth. It will occasionally also use cultivated hayfields and cereal crops. The species is found across Southern Ontario, mostly south of the Canadian Shield, with small, isolated populations north to Sault Ste. Marie and in western Rainy River District near Lake of the Woods.[5]	No nesting habitat confirmed present in the Study Area.	No.
Henslow's Sparrow (Source: NHIC)	*Ammodramus henslowii*	SHB	END	END	END	1	Commonly found in the grasslands of eastern Minnesota south to Kansas and east to central New York. In Canada, it is restricted to southern Ontario. They tend to nest in large, open, usually moist to	No nesting habitat confirmed present in the Study Area.	No.

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
							wet, flat fields with a high graminoid to ford/shrub ratio. Vegetation must be dense and over 30 cm in height. In Ontario, it has nested in regenerating old fields, lightly used pastures, hayfields, wet meadows and sedge marshes. It has low breeding site fidelity, and fidelity is generally greater in large grasslands supporting larger colonies. This species is very rare in the province, and detected on average at only one or two sites per year in Ontario.[5]		
Wood Thrush (Source: OBBA)	*Hylocichla mustelina*	S4B	SC	THR	-	-	The Wood Thrush occurs throughout the Great Lakes-St. Lawrence Forest. In Ontario, it inhabits woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understory are usually prerequisites for site occupancy. Most abundant in the Lake Simcoe-Rideau and Carolinian regions.[5]	No nesting habitat confirmed present in the Study Area. Marginal habitat exists in the wooded portions of the Study Area; however, these wooded habitats lack the thick understory that they prefer. These wooded habitats are also fragmented and small in size, making them less than ideal habitat.	No.
FISH									
Redside Dace (Source: NHIC)	*Clinostomus elongatus*	S2	END	END	SC	3	Redside Dace can be found in pools and in slow-moving areas of streams and headwaters with gravelly bottoms. Populated streams generally have overhanging grasses and shrubs. Spawning occurs in shallower, gravel bottom areas that are popular spawning areas for other minnow species. The northern extent of the population includes the Lake Superior drainage area and north end of Lake Huron in Ontario, specifically tributaries of western Lake Ontario, the Holland river (Lake Simcoe drainage), and Irvine Creek (Lake Erie drainage).[6, 8]	No suitable habitat identified on the Study Area or Vicinity. Marginal habitat may exist downstream of headwater drainage features closer to Sheridan Creek.	No.

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
INSECTS									
Monarch (Source: MNRF)	*Danaus plexisppus*	S2N,S4B	SC	END	SC	1	Monarchs can be found in areas that Milkweed (*Asclepius sp.*) and other wildflowers are present. This includes open spaces (fields), abandoned farmland, and roadsides. Pin-sized green eggs are laid on the underside of various Milkweed species, which are the primary food source of the Monarch caterpillar. Overwintering occurs along the California coast, and the Oyamel Fir Forest in central Mexico.[8]	Confirmed present in the Study Area. Adults were observed foraging on wildlflowers. Milkweed is also present, which is suitable for supporting the larval stage of this species.	Yes.
MAMMALS									
Little Brown Myotis (Source: MNRF)	*Myotis lucifugus*	S4	END	END	END	1	Overwintering habitat: Generally underground openings, including caves, abandoned mines, wells, and tunnels, but at some sites only specific sections of the site will be used for hibernation. Roosting habitat: Uses buildings and other anthropogenic structures (e.g., bat boxes, bridges, and barns) to roost (particularly for maternity roosting), but it will also use cavities of canopy trees, foliage, tree bark, crevices on cliffs, and other structures. Females show a strong tendency to roost in large-diameter trees, although roost properties may vary significantly throughout the summer. Roosting areas are generally used annually and individual natural roost sites can be used for upwards of 10 years. Little Brown Myotis are particularly loyal to anthropogenic structures and sites may be used for 50 years or more. They also exhibit strong within-year site fidelity to anthropogenic structures. Males roost individually or in small groups and periodically switch roosts.[10]	Candidate Bat Maternity Habitat (BMH) trees were identified within forested ecosites. No individuals were observed. Removal of Candidate BMH is to be avoided if at all possible.	No.
Northern Myotis (Source: MNRF)	*Myotis septentrionalis*	S3	END	END	END	1	Overwintering habitat: Generally underground openings, including caves, abandoned mines, wells, and tunnels, but at some sites only specific sections of the site will be used for hibernation. Roosting habitat: roost singly or in small groups and favour tree roosts (under raised bark and in tree cavities and crevices), but they can also be found in	Candidate Bat Maternity Habitat (BMH) trees were identified within forested ecosites. No individuals were observed. Removal of Candidate BMH is to be avoided if at all possible.	No.

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
							anthropogenic structures (e.g., under shingles). maternity roosts are strongly associated with forest cover, streams, and tree characteristics (e.g., species, height, diameter, age, and decay). Females prefer to roost in tall, large diameter trees in early- to mid-stages of decay. Males generally roost alone under raised bark or within cavities of trees in mid-stages of decay.[10]		
Tri-colored Bat (Source: MNRF)	*Pipistrellus subflavus*	S3?	END	END	END	1	Overwintering habitat: Generally underground openings, including caves, abandoned mines, wells, and tunnels, but at some sites only specific sections of the site will be used for hibernation. They often select the deepest part of caves or mines where temperature is the least variable, have strong humidity level preferences, and use warmer walls than other species. Roosting habitat: Most roost sites are found within forested habitats, where this species also forages. Tri-colored Bats may roost in clumps of dead foliage and lichens. Females roost alone or in small colonies. In more anthropogenically modified landscapes, maternity roosts may be barns or similar human-made structures. Males roost individually.[10]	Candidate Bat Maternity Habitat (BMH) trees were identified within forested ecosites. No individuals were observed. Removal of Candidate BMH is to be avoided if at all possible.	No.
PLANTS									
Butternut (Source: MNRF)	*Juglans cinerea*	S2?	END	END	END	1	Butternut grows best in rich, moist and well-drained soils or limestone gravel sites. They are less commonly found in dry, rocky and sterile soils. They generally grow alone or in small groups in deciduous forests that are commonly comprised of Linden, Black Cherry, Beed, Black Walnut, Elm, Hemlock, Hickory, Oak, Red Maple, Sugar Maple, Yellow Poplar, White Ash and Yellow Birch. In Ontario, they can be found throughout the southwest, and north towards the Bruce Peninsula, and south of the Canadian Shield.[6,8]	Suitable habitat exists within the Study Area to support this species. Tree removal areas were catalogued extensively and no individuals were identified.	No
REPTILES & AMPHIBIANS									
Blanding's Turtle (Source: ORRA)	*Emydonidea blandingii*	S3	THR	THR	THR	1	The Blanding's Turtle is a semi-aquatic species. Although it spends most of its time in aquatic	No habitat confirmed present in the Study Area. The Study Area	No.

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
							habitats, it has seasonal movement patterns which allow it to meet different biological or behavioural needs, including use of terrestrial habitats during the active season. Habitat use varies as a function of the different activities undertaken by individuals to complete their life cycle. Blanding's Turtles use aquatic habitats for overwintering, mating, foraging, thermoregulation, summer inactivity, and movement. They often favour relatively eutrophic environments, with shallow water (less than 2 m deep), soft organic substrate, and abundant submergent, floating, and emergent vegetation. They can occur in a variety of wetland habitats (e.g., marshes, ponds, swamps, bogs, fens, coastal wetlands), slow flowing rivers and creeks, pools, lakes, bays, sloughs, marshy meadows, and artificial channels. Blanding's Turtles have been shown to select all wetland types over lotic environments and have also shown a preference for ponds and marshes when available.[11]	lacks suitable aquatic habitats for this species.	
Eastern Musk Turtle (Source: NHIC)	*Sternotherus odoratus*	S3	SC	SC	THR	1	The Eastern Musk Turtle is a highly aquatic species that undertakes only limited overland travel because it moves slowly on land and is prone to rapid dehydration. Eastern Musk Turtles commonly inhabit stagnant or slow-moving shallow wetlands that are connected to larger permanent waterbodies or shallow bays of lakes and rivers. In Canada, Eastern Musk Turtles have been found in different types of water bodies, such as lakes, ponds, marshes, rivers, and streams. Nevertheless, the species has been described as a habitat specialist since it seems to require water with abundant emergent, floating, and submerged aquatic vegetation that provides surface cover, which may be important for foraging, adult and juvenile refuge, and thermoregulation. They are often found in areas with a soft substrate such as sand or organic mud where they can readily bury themselves, and also areas with gravel bottoms.[12]	No habitat confirmed present in the Study Area. The Study Area lacks suitable aquatic habitats for this species.	No.
Northern Map Turtle (Source: ORAA)	*Graptemys geographica*	S3	SC	SC	SC	1	The Northern Map Turtle relies primarily on aquatic habitat, and makes limited use of terrestrial habitat for nesting and basking. In the northern portion of their range, Northern Map Turtles typically inhabit well oxygenated bodies of water such as small to	No habitat confirmed present in the Study Area. The Study Area lacks suitable aquatic habitats for this species.	No.

Common Name **(Source)	Scientific Name	Provincial S-RANK[1]	Provincial SARO Status[2]	COSEWIC[3]	Federal SARA Status[3]	Federal SARA Schedule[4]	Habitat Description	Habitat Present in Study Area?	Species Observed In Study Area During Field Surveys?
							major rivers with slow to moderate flows, and lakes. Within lake habitats, the species tends to utilize areas with undeveloped shorelines or marshy habitats. In lakes occurring on the Canadian Shield, Northern Map Turtle utilizes rocky open shorelines and shoals, rock islands and substrates as well as muck substrate. Within river habitats, the species tends to inhabit areas where moderate flow and turbidity are maintained. In most rivers, Northern Map Turtles tend to avoid areas where the water is less transparent. During the active season (April to October), individuals prefer shallow waters and generally avoid waters greater than 2.5 m deep. The Northern Map Turtle requires suitable basking sites, such as partially submerged rocks and logs and exposed banks that are adjacent to deep water. They favour natural shoreline environments and have home ranges primarily in shallow waters near shore. [13]		
Snapping Turtle (Source: ORAA)	*Chelydra serpentina*	S3	SC	SC	SC	1	Although Snapping Turtles occupy a wide variety of habitats, the preferred habitat for this species is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Established populations are most often found in ponds, marshes, swamps, peat bogs, shallow bays, river and lake edges, and slow-moving streams. Although individual turtles may persist in developed areas (e.g., golf course ponds, irrigation canals) and environments with heavily polluted water (e.g., some port areas), it is unlikely that local populations will persist in such habitats, since environmental contamination is known to severely compromise reproductive success. [14]	No habitat confirmed present in the Study Area. The Study Area lacks suitable aquatic habitats for this species.	No.

** Sources: Natural Heritage Information Centre (NHIC) database searched on April 12, 2017 and August 21, 2017 for square 17PJ0719 and 17PJ0819; Correspondence with MNRF Aurora District, (Received May 29, 2017); Ontario Reptile and Amphibian Atlas (ORAA) for Square 17PJ01, searched online on May 5, 2017; Ontario Breeding Bird Atlas (OBBA) 2001-2005 database for Square 17PJ01 searched online on April 12, 2017.

[1]S-Ranks (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state 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 province.
S2 — Imperiled - Imperiled in the 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 province.
S3 — Vulnerable - Vulnerable in the 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 province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
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).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*

(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

[3]SARA (Federal *Species at Risk Act*) Status and Schedule (includes COSEWIC Status)
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

Extinct - A wildlife species that no longer exists.
Extirpated (EXT) - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.
Endangered (END) - A wildlife species facing imminent extirpation or extinction.
Threatened (THR) - A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

[4]SARA Schedule

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

Sources:

[5] Cadman, M.D., et al. (eds). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.
[6] Species at Risk Public Registry(http://www.sararegistry.gc.ca)
[7] McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario .Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario, viii + 88 pp.
[8] MNRF SARO List Species Descriptions (http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CSSR_SARO_LST_EN.html)
[9] Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario, vii + 76 pp.
[10] Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.
[11] Environment Canada. 2016. Recovery Strategy for the Blanding's Turtle (*Emydoidea blandingii*), Great Lakes / St. Lawrence population, in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 49 pp.
[12] Environment Canada. 2016. Recovery Strategy for the Eastern Musk Turtle (*Sternotherus odoratus*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. viii + 58 pp.
[13] Environment Canada. 2016. Management Plan for the Northern Map Turtle (*Graptemys geographica*) in Canada [Proposed]. Species at Risk Act Management Plan Series. Environment Canada, Ottawa. iv + 45 pp.
[14] Environment and Climate Change Canada. 2016. Management Plan for the Snapping Turtle (*Chelydra serpentina*) in Canada [Proposed]. Species at Risk Act Management Plan Series. Environment and Climate Change Canada, Ottawa. iv + 39 p.

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix B

Record of Agency Correspondence

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forets

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

May 29, 2017

Sarah Robbins
R.J, Burnside & Associates Limited
128 Wellington Street West, Suite 301
Barrie, ON L4N 8J6
705-797-4254
Sarah.Robbins@rjburnside.com

Re: Sheridan Park Drive EA, Mississauga

Dear Sarah Robbins,

In your email of April 18, 2017 you requested information regarding the above location.

Species at risk recorded in the vicinity include Butternut (endangered), Barn Swallow (threatened), Bobolink (threatened), Chimney Swift (threatened), and Eastern Meadowlark (threatened). There is potential for endangered bats (i.e., Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat) in cavities or leaf clusters.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. Appropriate inventory work is needed depending on the undertakings proposed. Approval from MNRF may be required if work you are proposing could cause harm to any species that receive protection under the *Endangered Species Act 2007*.

Species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific sensitive information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

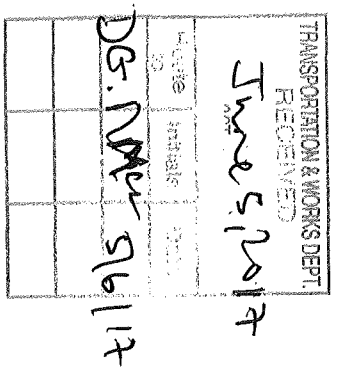
If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca or Bohdan.Kowalyk@Ontario.ca.

Sincerely,

B. Kowalyk

Bohdan Kowalyk, R.P.F.
Aurora District, Ontario Ministry of Natural Resources and Forestry

CREDIT VALLEY CONSERVATION



May 31, 2017

Dana Glofcheskie, P.Eng
Project Manager
City of Mississauga
201 City Centre Drive, Suite 800
Mississauga, ON L5B 2T4

Re: City of Mississauga–Notice of Study Commencement/Stakeholder Advisory Committee Meeting No.1
Municipal Class Environmental Assessment Study for Sheridan Park Drive Extension
CVC File No.: EA 17/001

CVC staff offer the following preliminary/initial comments with respect to the above noted project:

It is the understanding of CVC staff that the City of Mississauga is undertaking a Schedule B Municipal Class Environmental Assessment (EA) with the purpose of exploring the opportunity to connect the east and west sections of Sheridan Park Drive to maximize access to Sheridan Park, create options for alternative routes and improve road network connectivity.

Site Characteristics:
The proposed works are located within the Sheridan Creek watershed. The location of the proposed works does fall within an area located in close proximity to a watercourse and its associated floodplain.

Permit Approval Requirements:
In accordance with Ontario Regulation 160/06 (our Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation), a permit would be required from the CVC prior to commencement of the works involving development, interference with a wetland and/or alterations to a watercourse.

Fish Habitat and Fisheries and Oceans Canada (DFO):
Please note that CVC's agreement with the DFO establishes a streamlined approach to addressing issues pertaining to the Federal Fisheries Act. CVC staff, in consultation with the DFO staff, is responsible for co-coordinating the review of proposed works that may potentially result in the harmful alteration, disruption or destruction (HADD) of fish habitat. Please be advised that in stream works where the HADD of fish habitat requires compensation; authorization from DFO is required pursuant to Section 35(2) of the Federal Fisheries Act.

General comments:

1. The proposed natural environment evaluation criteria focus heavily on impacts to existing natural features and wildlife. CVC suggests these are expanded to include other higher level objectives such as the preservation and enhancement of a functional natural heritage system and urban forest, and protecting/enhancing/restoring/improving natural connections.

CVC recommends that the city of Mississauga's Natural Heritage and Urban Forest Strategy also be consulted when developing objectives and goals for the EA.

2. As per the intent of CVC's guiding policies, the proposal is to demonstrate, to the satisfaction of CVC, that an ecological gain is achieved. As such, the EA must outline the proposed rehabilitation, restoration, or habitat improvements for existing disturbed and adjacent natural heritage areas.

3. CVC encourages options which pursue the following objectives in order to avoid impacts, and maintain/enhance ecological functions:
    - Retention and enhancement of natural features and habitat (avoidance of natural heritage features is the preferred approach to mitigation)
    - Fish habitat protection and enhancement
    - Mitigation measures for roadways adjacent to natural areas – lighting, landscaping, noise attenuation, debris management, etc.
    - Incorporation of wildlife friendly plantings, in particular for migrant and breeding birds since this area is known to be within significant areas for migratory birds.

4. Please note that CVC is no longer administering the *Fisheries Act* on behalf of Fisheries and Oceans Canada (DFO). As a result, it is up to the proponent to ensure that the DFO requirements under the self-assessment process are addressed.

5. Depending on the nature of the preferred option, it is anticipated that restoration and enhancement plans will be required for both watercourses at the detailed design stage. The EA should address the restoration/enhancement potential of the property, and include at minimum the recommended/required measures to demonstrate an ecological gain for the proposal. The restoration/enhancement plans must be prepared by a qualified professional such as an ecologist or landscape architect.

6. Depending on the nature of the preferred option, if watercourse interference is pursued, detailed isolation and dewatering arrangements must be provided to the satisfaction of CVC.

Detailed comments:

7. In order to ensure that the proposed supporting environmental studies are sufficient and in keeping with accepted ecological protocols, a terms of reference/statement of work detailing the studies should be provided and reviewed by CVC and the City. The comments below provide some preliminary direction on which to base this TOR/statement of work. CVC would be happy to meet and discuss further details of study design.

8. CVC is supportive of the proposed terrestrial ecology assessment components, namely: bat habitat surveys, frog call surveys, tree inventory, breeding bird surveys, and ecological land classification (ELC). Please note that supplementary surveys may be required based on the results of the initial surveys; for

example, bat acoustic surveys if suitable mat habitat and maternity roost trees are identified; or targeted nests searches for species at risk bids or birds that may indicate the presence of significant wildlife habitat.

9. The proposed tree inventory should document all trees <10cm DBH within the limit of disturbance in order to help inform avoidance/mitigation/restoration opportunities.

10. Vegetation inventory/ELC: the optimal period is between end of May and September. Protocol to follow is the ELC system for Southern Ontario. A full vegetation list should be provided on a polygon basis. Species rarity is to be based on the following sources: Vascular Plant Flora of the Region of Peel & the Credit River Watershed. (2001) (Kaiser, 2001 and amendments), City of Mississauga local rarity ranks, S-Ranks using the NHIC species lists and Species at Risk in Ontario list. Rare, at risk or otherwise significant species will be required to be georeferenced. Please consult the NHIC, MNRF and the City of Mississauga Natural Areas Survey for any already documented rare and uncommon species within the natural areas in the study area; these should be an additional focus of the vegetation inventory work.

11. The breeding bird survey must be done in accordance with the Forest Bird Monitoring Program, 2002 (CWS) or the Marsh Monitoring Program (CWS and Bird Studies Canada). That is, two surveys must be conducted at least 10 days apart between late May and July 5th. The surveys must be conducted in either the early morning and/or early evening depending on habitat and potential species present, as per the protocols. These surveys should be designed to ensure that the *full habitat patch* is sampled in order to base recommendations and conclusions on the feature and its function. CVC notes that much of the forest and meadow habitat within the study area extends beyond the study area and should be included in the survey.

12. Amphibian surveys – Sampling is to follow Bird Studies Canada Great Lakes Marsh Monitoring Program protocol, with 3 separate spring/early summer seasonal survey timing windows. Since this is in a very urbanized area with much noise, point counts should be extended to a minimum of 6 minutes from the typical 3 minutes.
13. Bat habitat surveys should follow the protocol for species at risk bats within tree habitats (Ministry of Natural Resources and Forestry, April 2017). CVC notes that much of the forest habitat within the study area extends beyond the study area and should be included in the survey.

14. Depending on the nature of the aquatic habitat within the study area a Headwater Drainage Feature assessment may also be required to determine appropriate management recommendations. Please refer to the following document: Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC & TRCA, January 2014).

15. An evaluation of significant wildlife habitat must be undertaken in order to address impacts to candidate or confirmed habitat within or adjacent to the study area. The assessment should be based both on the Ministry of Natural Resources Ecoregion criteria for 7E (2015), and the Region of Peel -Town of Caledon Significant Woodland and Wildlife Habitat technical guide (2009). Please assess referencing applicable current literature. Previous work in this vicinity has indicated the potential for the following types of significant wildlife habitat (others may also exist) which must be specifically addressed:

- Raptor wintering habitat
- Land bird Migratory Stopover Areas
- Migratory Butterfly Stopover Area
- Habitat for Species of Special Concern

16. It is anticipated that a staking of natural features (woodland, wetland) will be required in the future.

17. Preliminary screening of this project indicates that species at risk are known for the area. The proponent should contact the local district MNRF office (Aurora) to request a species at risk screening for his/her project in order to identify any concerns related to species at risk and associated habitat. Inquiries can be directed to: Esa.aurora@ontario.ca

Given CVC's interest staff would like to be kept informed of future meetings and proceedings through the Environmental Assessment process. Please forward any information or reports when available to ensure that this Authority's policy and program interest are reflected in the planning and design components for this project.

Should you have any further questions please contact the undersigned at (905) 670-1615 extension 236.

Regards,

Ken Thajer
Regulations Officer

cc: David Argue, P.Eng., PTOE
Consultant Project Manager
R.J. Burnside & Associates Limited
6990 Creditview Road, Unit 2
Mississauga, ON L5N 8R9

Mark Heaton, Ministry of Natural Resources (by e-mail)

Jamie Ferguson, City of Mississauga (by e-mail)

Shae Richter

From: Kowalyk, Bohdan (MNRF) <bohdan.kowalyk@ontario.ca>
Sent: Thursday, June 01, 2017 11:47 AM
To: Peter DeCarvalho
Cc: Nicholle Smith
Subject: RE: Bat Protocol Discussion

Hello,

It may be easiest if you provide your findings and I will respond with my own interpretations to them and any specific questions by email.

Regards,

Bohdan Kowalyk, R.P.F.
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Peter DeCarvalho [mailto:Peter.DeCarvalho@rjburnside.com]
Sent: June-01-17 10:54 AM
To: Kowalyk, Bohdan (MNRF)
Cc: Nicholle Smith
Subject: Bat Protocol Discussion

Dear Mr. Kowalyk,

We are in the process of conducting the bat maternity habitat assessment for a road extension of Sheridan Park Drive in Mississauga. Thus far we have completed leaf-off surveys for the treed ecosites adjacent to the proposed corridor using the 2017 Guelph District BMH protocol. As this is a newer protocol, we would like to discuss our findings and obtain guidance from the MNRF regarding what our next steps should be for assessing potential bat habitat on the site.

Would it be possible to arrange a time to discuss our strategy for this site moving forward with respect to SAR bats and the new Guelph District protocol?

There are two of us that would be interested in participating in this discussion. We are available at any time today, and would also be free next week on Thursday the 8th in the afternoon, or at any point on Wednesday the 7th and Friday the 9th.

Thanks very much for your time,

Peter

BURNSIDE

R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20

Peter De Carvalho, EIT
B.Sc. (Bio), B.Eng. (Env)
Terrestrial Ecologist/Engineering Assistant

Guelph ON N1H 1C4
Office: (226) 486-1782 Cell: (226) 820-3767
www.rjburnside.com

Shae Richter

From: Peter DeCarvalho
Sent: Thursday, June 08, 2017 4:21 PM
To: Kowalyk, Bohdan (MNRF)
Cc: mark.heaton@ontario.ca; Nicholle Smith
Subject: RE: Bat Protocol Discussion
Attachments: 039474_Sheridan Park EA Bat Memo Final.pdf

Mr. Kowalyk,

Please see attached our Bat Maternity Habitat findings and interpretations for the proposed road extension at Sheridan Park Drive in Mississauga.

All the best,

Peter

BURNSIDE

Peter De Carvalho, EIT
B.Sc. (Bio), B.Eng. (Env)
Terrestrial Ecologist/Engineering Assistant

R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20
Guelph ON N1H 1C4
Office: (226) 486-1782 Cell: (226) 820-3767
www.rjburnside.com

From: Kowalyk, Bohdan (MNRF) [mailto:bohdan.kowalyk@ontario.ca]
Sent: Thursday, June 01, 2017 11:47 AM
To: Peter DeCarvalho
Cc: Nicholle Smith
Subject: RE: Bat Protocol Discussion

Hello,

It may be easiest if you provide your findings and I will respond with my own interpretations to them and any specific questions by email.

Regards,

Bohdan Kowalyk, R.P.F.
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8

Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Peter DeCarvalho [mailto:Peter.DeCarvalho@rjburnside.com]
Sent: June-01-17 10:54 AM
To: Kowalyk, Bohdan (MNRF)
Cc: Nicholle Smith
Subject: Bat Protocol Discussion

Dear Mr. Kowalyk,

We are in the process of conducting the bat maternity habitat assessment for a road extension of Sheridan Park Drive in Mississauga. Thus far we have completed leaf-off surveys for the treed ecosites adjacent to the proposed corridor using the 2017 Guelph District BMH protocol. As this is a newer protocol, we would like to discuss our findings and obtain guidance from the MNRF regarding what our next steps should be for assessing potential bat habitat on the site.

Would it be possible to arrange a time to discuss our strategy for this site moving forward with respect to SAR bats and the new Guelph District protocol?

There are two of us that would be interested in participating in this discussion. We are available at any time today, and would also be free next week on Thursday the 8th in the afternoon, or at any point on Wednesday the 7th and Friday the 9th.

Thanks very much for your time,

Peter

BURNSIDE

Peter De Carvalho, EIT
B.Sc. (Bio), B.Eng. (Env)
Terrestrial Ecologist/Engineering Assistant

R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20
Guelph ON N1H 1C4
Office: (226) 486-1782 Cell: (226) 820-3767
www.rjburnside.com

R.J. Burnside & Associates Limited 292 Speedvale Avenue West Unit 20 Guelph ON N1H 1C4 CANADA
telephone (519) 823-4995 **fax** (519) 836-5477 **web** www.rjburnside.com

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Memorandum

Date: June 8, 2017 **Project No.:** 300039474.0000

Project Name: Sheridan Park Drive Extension, Mississauga

Client Name: City of Mississauga

To: MNRF – Aurora District

From: Peter DeCarvalho

R.J. Burnside and Associates Limited (Burnside) has been retained by the City of Mississauga to complete an Environmental Assessment relating to the proposed extension of Sheridan Park Drive in Mississauga connecting the northeast and southwest segments of the road (Figure 1). Proposed development includes joining Sheridan Park Drive between Speakman Drive and Winston Churchill Boulevard. Some of the areas proposed for expansion are treed forest / woodlot communities which have potential to provide Bat Maternity Habitat (BMH) for three of the four Endangered bat species in Ontario regulated under the *Endangered Species Act* (2007).

Terrestrial ecologists have completed leaf-off surveys for BMH in forest / woodlot areas within the project study area that have potential to be impacted by proposed expansion. We are currently seeking guidance from the Ministry of Natural Resources and Forestry (MNRF) regarding our current findings as well as the appropriate next steps given the specifics of this project. The surveys followed leaf-off protocol from the MNRF Guelph District Survey Protocol for Species at Risk within Treed Habitats (Little Brown Myotis, Northern Myotis and Tri-colored Bat) dated April 2017, as outlined below.

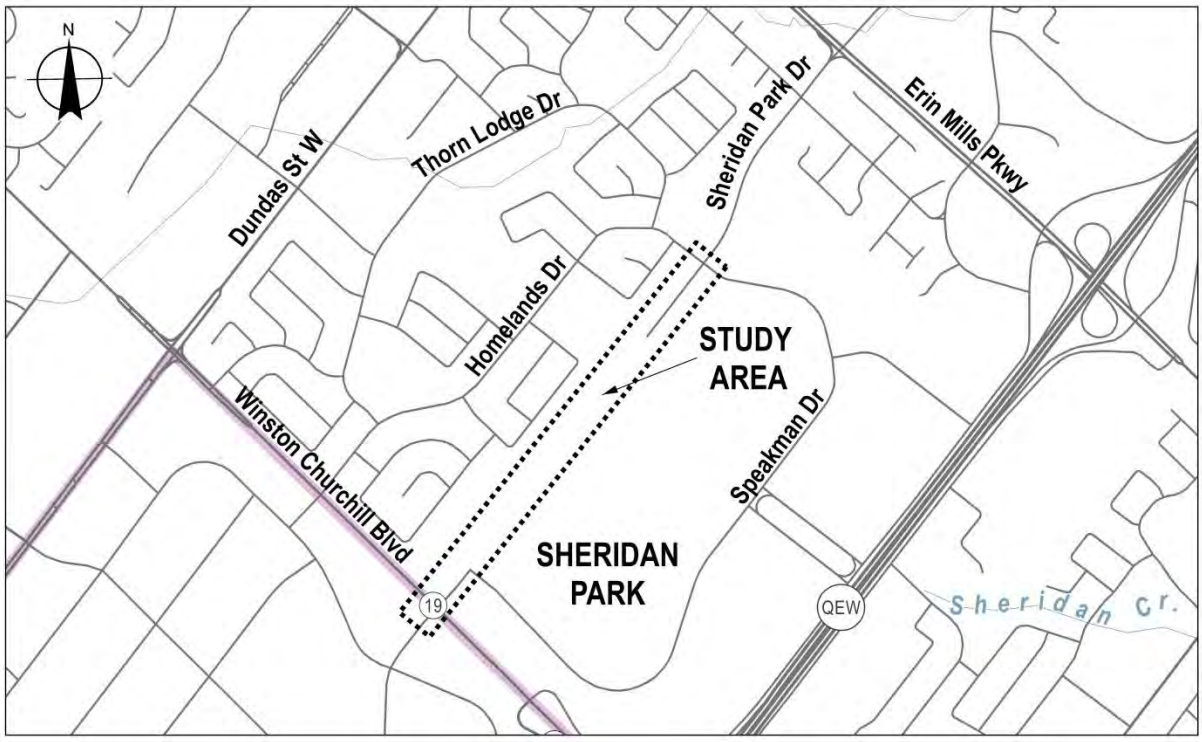


Figure 1: Project Area for Sheridan Park Drive Extension, Mississauga.

Methodology

Leaf-off surveys of treed habitat for maternity / roosting colonies focus on Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis serpentrionalis*). These species prefer to roost in tree cavities or under loose bark.

The initial step of the MNRF protocol is to conduct a site reconnaissance in treed areas that may be disturbed as a result of the proposed works and identify any candidate BMH. With small areas (under 10 ha), a comprehensive walkthrough of an ecosite is conducted to look for snag trees, as opposed to larger sites where sub-samples and snag density surveys are more appropriate. As each ecosite potentially impacted by these developments were under 10 ha, walkthrough surveys were completed. The areas surveyed for BMH were the natural areas adjacent to and within the right-of-way for Sheridan Park Drive (Figure 2).

According to the protocol, there are 10 criteria for evaluating the suitability of a snag for BMH. These criteria are listed below in order of importance:

1. Tallest snag trees;
2. Snag exhibits cavities or crevices often originating as cracks, scars, knot holes or woodpecker cavities;
3. Snag has the largest diameter breast height (DBH) (>25 cm);
4. Snag is within the highest density of other snags;

5. Snag has the highest amount of loose, peeling bark (naturally occurring / due to decay);
6. Cavity or crevice is high on the tree (>10 m) or is chimney-like with a low entrance.
7. Tree is a species known to be rot-resistant (such as Black Cherry, Black Locust);
8. Tree species typically provides good cavity habitat (e.g. White Pine, Maple, Aspen, Ash, Oak);
9. Snag is located within an area where the canopy is more open; and,
10. Snag exhibits early stages of decay (Decay Class 1-3).

With these factors in mind, we surveyed all treed areas that fell within the Sheridan Park Drive right-of-way that may potentially fall within proposed development envelopes for traits that indicate potential BMH. We recorded for each candidate tree: species, DBH, canopy height class, approximate height, cavity type, the presence of other nearby snags, and decay class. Each tree was recorded with a GPS waypoint and photo records.

Areas surveyed along the right-of-way include edge habitat of the western woodlot (Fresh Sugar Maple Deciduous Forest) and the Eastern woodlot (Moist Ash Lowland Deciduous Forest transitioning to Dry-Fresh Oak-Hardwood Deciduous Forest), as well as the north-central Cultural Thicket / Cultural Meadow, as outlined in cross-hatch on Figure 2.

Data

Bat maternity surveys were conducted for Sheridan Park Drive on April 11th. The results are presented below in Tables 1 and 2.

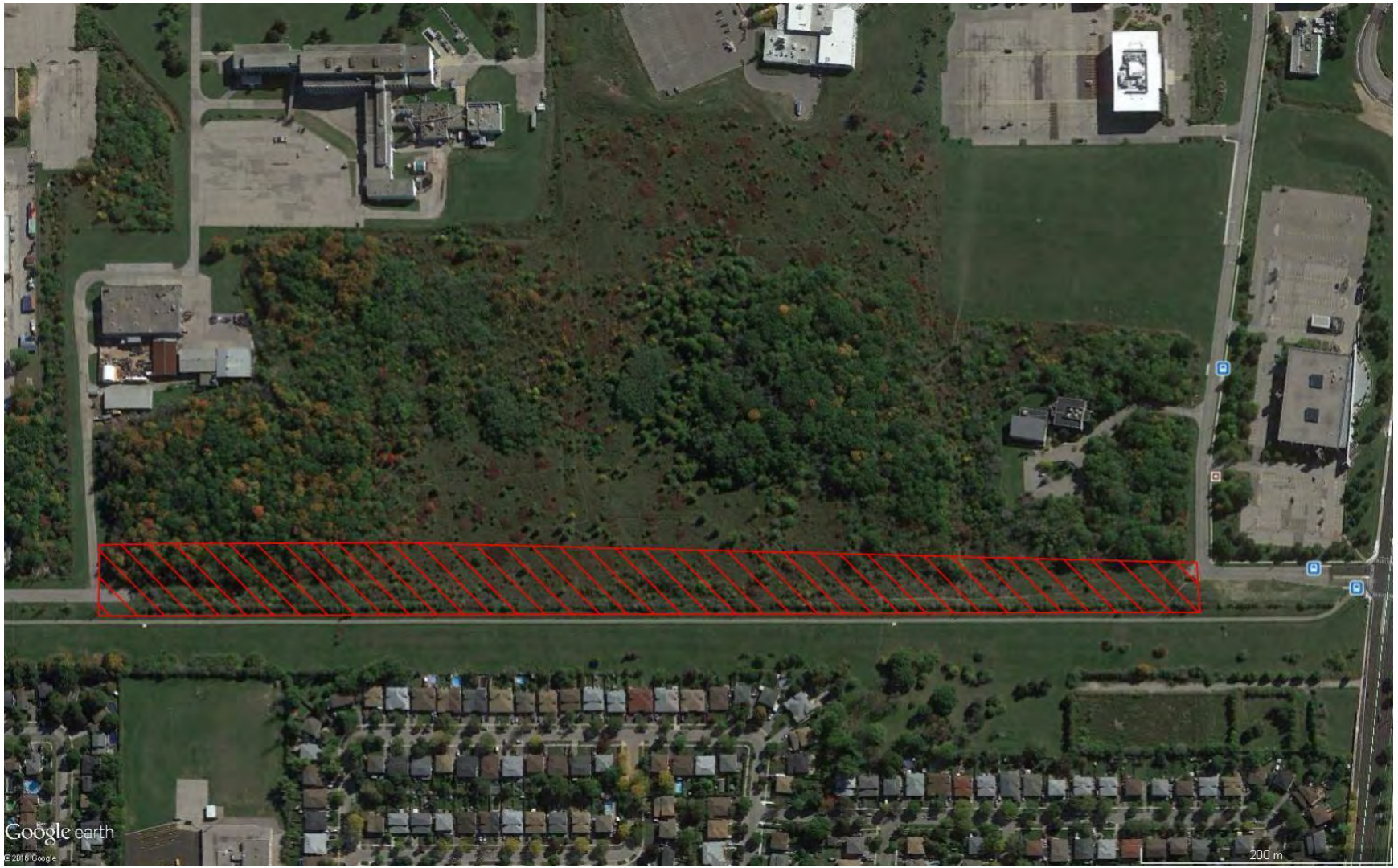


Figure 2: Sheridan Park Drive right-of-way. Area surveyed for Bat Maternity Habitat outlined / hatched in red.

Table 1: Northeastern FOD Community

Tree Species ID	DBH (cm)	Approximate Height (m)	Cavity Type	Cavity Heights (m)	Decay Class
American Elm	36	15	Peeling Bark	4	5
White Ash	74.5	28	Peeling Bark/Knothole	10+	3
Red Maple	45	20	Long fissures	8+	2
Sugar Maple	44	27	Cavity	15	1
Sugar Maple	46	25	Large cavity in upper branches	12	1
Red Maple	52.5	28	Small cavity	14	1
Red Oak	55	18	Large Crack/Cavity	8	1
Deciduous (Dead)	53	12	Decaying Standing Trunk	4 to 10	5
Beech	26	15	Hollow areas of trunk	6, 10+	2
Beech	17.5	12	Hollow areas of trunk	6, 8	4
White Ash	36.5	25	Cracked bark	6	1
Sugar Maple	70	27	Hollow areas of trunk	1	1
Deciduous (Dead)	56.5	12	Dead standing trunk with cavities	6, 10	6
White Ash	62	25	Dead standing trunk with loose bark	8, 15	4
White Ash	41	23	Loose bark	6,10	1
Beech	33	7	Large cavities	3, 5	3
Red Pine	53	25	Knot hole	2, 3.5, 6	1
Sugar Maple	43	16	Cavity, loose bark	6 to 15	3

Table 2: Southwestern FOD Community

Tree Species ID	DBH (cm)	Approximate Height (m)	Cavity Type	Cavity Heights (m)	Decay Class
Green Ash	21	14	Loose Bark	4	1

Analysis

The greatest abundance of cavity trees was identified in the northeastern FOD community. A total of 18 snag trees were identified in these two areas. All but one of these trees was greater than 25 cm DBH, and all but one was greater than 10 m in height. Of these trees, 11 featured snags, crevices, or loose bark at heights of 10 m or greater. A high density of Shagbark Hickory (*Carya ovata*) was also identified in the surveyed right-of-way in this woodlot. With its namesake shaggy bark, mature individuals of this species will also potentially serve as bat maternity habitat, even if they are not strictly considered snag trees.

The edge woodlot to the southwest was an immature stand of Green Ash (*Fraxinus pennsylvanica*) with little potential for cavity trees. One individual was observed in this region, an ash with regions of shedding bark low on the trunk (4 m). It should be noted that beyond the property-line for this area, mature hardwood deciduous appeared to dominate, and would likely have potential for BMH as well.

No snag trees were identified in the open meadow / thicket region of the right-of-way.

It is our opinion that the combination of identified cavity trees and the perceived density of Shagbark Hickory within the northeastern deciduous woodlot indicates that this area possesses characteristics indicative of Bat Maternity Habitat.

Next Steps

The results of our leaf-off survey strongly suggest that the northeastern forest edge that falls within the right-of-way should be considered candidate Bat Maternity Habitat. The early-successional Green Ash thicket that borders the mature hardwood forest to the southwest, conversely, did not possess any indication that it would meet the Significant Wildlife Habitat definition of BMH.

It is proposed that, in lieu of additional surveys, a conservative approach to bat habitat potential and significance is applied to the Sheridan Park site. This approach would recommend that the northeastern forest be treated as candidate BMH moving forward, subject to any approvals or mitigations that this designation would require given the proposed works. Mitigation to potential impacts to protected habitats could potentially include avoiding tree removal by modifying placement of the road corridor or compensatory tree plantings/bat-box installations to compensate for lost habitat.

Conclusion

It is our opinion that the information gathered through leaf-off surveys as prescribed by the MNRF Guelph District Bat Maternity Habitat Protocol (2017) is conclusive in demonstrating that the mature northeastern forest that falls within the Sheridan Park Drive right-of-way should be considered candidate Bat Maternity Habitat. Additionally, it has been indicated through

analyzing these data that, in absence of large, mature trees (>10 DBH) the early-successional Green Ash thicket that occupies the right-of-way on the southwestern edge does not meet the habitat requirements of Little Brown and Northern Myotis or Tri-colored Bat.

It is our intent to proceed with the environmental impact study for this corridor extension assuming that the project area to the north does contain candidate BMH, and that, in doing so, we accept the requirements and processes that working with candidate SAR habitat will entail.

PD:sr

039474_Sheridan Park EA Bat Memo Final
6/8/2017 3:10 PM

Shae Richter

From: Kowalyk, Bohdan (MNRF) <bohdan.kowalyk@ontario.ca>
Sent: Thursday, June 08, 2017 4:45 PM
To: Peter DeCarvalho
Cc: Heaton, Mark (MNRF); Nicholle Smith
Subject: RE: Bat Protocol Discussion

Hello,

The interpretation seems reasonable. It appears that south is towards the top of the photomap (which should have a north arrow). For further assessment, please provide the actual area (in square metres) of forest habitat that would be affected.

Bohdan Kowalyk, R.P.F.
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Peter DeCarvalho [mailto:Peter.DeCarvalho@rjburnside.com]
Sent: June-08-17 4:21 PM
To: Kowalyk, Bohdan (MNRF)
Cc: Heaton, Mark (MNRF); Nicholle Smith
Subject: RE: Bat Protocol Discussion

Mr. Kowalyk,

Please see attached our Bat Maternity Habitat findings and interpretations for the proposed road extension at Sheridan Park Drive in Mississauga.

All the best,

Peter

BURNSIDE

Peter De Carvalho, EIT
B.Sc. (Bio), B.Eng. (Env)
Terrestrial Ecologist/Engineering Assistant

R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20
Guelph ON N1H 1C4
Office: (226) 486-1782 Cell: (226) 820-3767
www.rjburnside.com

From: Kowalyk, Bohdan (MNRF) [mailto:bohdan.kowalyk@ontario.ca]
Sent: Thursday, June 01, 2017 11:47 AM
To: Peter DeCarvalho
Cc: Nicholle Smith
Subject: RE: Bat Protocol Discussion

Hello,

It may be easiest if you provide your findings and I will respond with my own interpretations to them and any specific questions by email.

Regards,

Bohdan Kowalyk, R.P.F.
Aurora District
Ontario Ministry of Natural Resources and Forestry
50 Bloomington Road, Aurora, Ontario L4G 0L8
Phone: 905-713-7387; Email: Bohdan.Kowalyk@Ontario.ca

From: Peter DeCarvalho [mailto:Peter.DeCarvalho@rjburnside.com]
Sent: June-01-17 10:54 AM
To: Kowalyk, Bohdan (MNRF)
Cc: Nicholle Smith
Subject: Bat Protocol Discussion

Dear Mr. Kowalyk,

We are in the process of conducting the bat maternity habitat assessment for a road extension of Sheridan Park Drive in Mississauga. Thus far we have completed leaf-off surveys for the treed ecosites adjacent to the proposed corridor using the 2017 Guelph District BMH protocol. As this is a newer protocol, we would like to discuss our findings and obtain guidance from the MNRF regarding what our next steps should be for assessing potential bat habitat on the site.

Would it be possible to arrange a time to discuss our strategy for this site moving forward with respect to SAR bats and the new Guelph District protocol?

There are two of us that would be interested in participating in this discussion. We are available at any time today, and would also be free next week on Thursday the 8th in the afternoon, or at any point on Wednesday the 7th and Friday the 9th.

Thanks very much for your time,

Peter

BURNSIDE

Peter De Carvalho, EIT
B.Sc. (Bio), B.Eng. (Env)
Terrestrial Ecologist/Engineering Assistant

R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20
Guelph ON N1H 1C4
Office: (226) 486-1782 Cell: (226) 820-3767
www.rjburnside.com

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Appendix C

Breeding Bird Summary Table and Field Datasheets

Breeding Bird Survey Summary Table – June 1, 2017 and June 13, 2017

Surveys Conducted by: Hannah Maciver

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]	Provincial MNRF Area Sensitive Species[5]	Total Number Recorded in Study Area	Highest Recorded Breeding Evidence in Study Area[6]	Comments
Alder Flycatcher	*Empidonax alnorum*	S5B						1	S	
American Crow	*Corvus brachyrhynchos*	S5B						3	FY	
American Goldfinch	*Carduelis tristis*	S5B						15	D	
American Robin	*Turdus migratorius*	S5B						22	CF	
Baltimore Oriole	*Icterus galbula*	S4B						2	T	
Barn Swallow	*Hirundo rustica*	S4B	THR	THR	No Status	No Schedule		1	X	Flyover
Black-capped Chickadee	*Poecile atricapillus*	S5						9	T	
Blue Jay	*Cyanocitta cristata*	S5						4	S	
Brown Thrasher	*Toxostoma rufum*	S4B						4	T	
Brown-headed Cowbird	*Molothrus ater*	S4B						13	T	
Canada Goose	*Branta canadensis*	S5						35	X	Flyover
Cedar Waxwing	*Bombycilla cedrorum*	S5B						5	T	
Common Grackle	*Quiscalus quiscula*	S5B						7	CF	
Downy Woodpecker	*Picoides pubescens*	S5						1	S	
Eastern Phoebe	*Sayornis phoebe*	S5B						1	S	
Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC				4	T	

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]	Provincial MNRF Area Sensitive Species[5]	Total Number Recorded in Study Area	Highest Recorded Breeding Evidence in Study Area[6]	Comments
European Starling	*Sturnus vulgaris*	SNA						15	FY	
Gray Catbird	*Dumetella carolinensis*	S4B						4	T	
Great Crested Flycatcher	*Myiarchus crinitus*	S4B						3	T	
House Sparrow	*Passer domesticus*	SNA						5	P	
Mourning Dove	*Zenaida macroura*	S5						6	T	
Northern Cardinal	*Cardinalis cardinalis*	S5						10	A	
Northern Flicker	*Colaptes auratus*	S4B						3	S	
Red-bellied Woodpecker	*Melanerpes carolinus*	S4						1	S	
Red-eyed Vireo	*Vireo olivaceus*	S5B						4	T	
Red-winged Blackbird	*Agelaius phoeniceus*	S4						16	CF	
Ring-billed Gull	*Larus delawarensis*	S5B,S4N						8	X	Flyover
Rock Pigeon	*Columba livia*	SNA						2	X	Flyover
Sharp-shinned Hawk	*Accipiter striatus*	S5					Yes	1	H	
Song Sparrow	*Melospiza melodia*	S5B						10	FY	
White-breasted Nuthatch	*Sitta carolinensis*	S5					Yes	1	S	
Willow Flycatcher	*Empidonax traillii*	S5B						3	A	
Yellow Warbler	*Dendroica petechia*	S5B						6	P	

[1]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state 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 province.
S2 — Imperiled - Imperiled in the 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 province.
S3 — Vulnerable - Vulnerable in the 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 province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
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).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*
(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

[3]SARA (Federal *Species at Risk Act*) Status and Schedule (includes COSEWIC Status)
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

Extinct - A wildlife species that no longer exists.
Extirpated (EXT) - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.
Endangered (END) - A wildlife species facing imminent extirpation or extinction.
Threatened (THR) - A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

[4]SARA Schedule
Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[5]Source: Ontario Ministry of Natural Resources. 2000. *Significant Wildlife Habitat Technical Guide* & Appendices.

[6]Ontario Breeding Bird Atlas - Breeding Evidence Codes

Observed	
X	Species observed in its breeding season (no breeding evidence).

Possible	
H	Species observed in its breeding season in suitable nesting habitat.
S	Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

Probable	
P	Pair observed in suitable nesting habitat in nesting season.
T	Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V	Visiting probable nest site
A	Agitated behaviour or anxiety calls of an adult.
B	Brood Patch on adult female or cloacal protuberance on adult male.
N	Nest-building or excavation of nest hole.

Confirmed	
DD	Distraction display or injury feigning.
NU	Used nest or egg shells found (occupied or laid within the period of the survey).
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE	Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS	Adult carrying fecal sac.
CF	Adult carrying food for young.
NE	Nest containing eggs.
NY	Nest with young seen or heard.

BURNSIDE

Breeding Bird Evidence Field Form

Project Name / #: Sheridan Park Drive EA - 300039474

Visit #1			**Temperature °C:**	**Sky Code[1]:** 0	**Wind[2]:** 1-3
Date: June 1, 2017	**Start Time (24 hr):** 0610	**End Time:** 0845	Start: 10°C	End: 13°C	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		
Visit #2			**Temperature °C:**	**Sky Code[1]:** 2	**Wind[2]:** 0
Date: June 13, 2017	**Start Time:** 0625	**End Time:** 0900	Start: 23°C	End: 23°C Humid	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		

NOTES: Some traffic noise disturbance from roads in vicinity to Study Area
On second visit, lawn crew cutting around woodlot immediately prior to surveying this area.

HABITAT UNIT REFERENCE

Woodlot - Area A
Mainly deciduous

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

X Species observed in its breeding season (no breeding evidence).

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED

DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carying fecal sac.
CF Adult carying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

Other Observations (e.g., wildlife)

June 1, 2017 - American Crow mobbing Sharp-shinned Hawk, indicating possible AMCR nest in woodlot. Very vocal during visit.

June 13, 2017 - Fledged AMCR in direct vicinity to this woodlot during visit, indicating that AMCR nest very probable.

Species Observed[3]: Visit #1	Breeding Evidence	Tally Visit #1	Species Observed[3]: Visit #2	Breeding Evidence	Tally Visit #2
REVI	S	1	REVI	P	2
RBWO	S	1	-	-	-
AMCR	A	2	AMCR	FY	3
NOCA	S	1	-	-	-
SSHA	H	1	-	-	-
BLJA	S	1	-	-	-
GCFL	S	1	GCFL	S	1
WBNU	S	1	-	-	-
			NOFL	S	1
			HOSP	H	1
			EAWP	S	1
			AMRO	FY	2
			MODO	S	1

Species[3]	Highest Evidence Recorded	Highest Number Recorded
REVI	P	2
RBWO	S	1
AMCR	FY	3
NOCA	S	1
SSHA	H	1
BLJA	S	1
GCFL	T	1
WBNU	S	1
NOFL	S	1
HOSP	H	1
EAWP	S	1
AMRO	FY	2
MODO	S	1

BURNSIDE

Breeding Bird Evidence Field Form

Project Name / #: Sheridan Park Drive EA - 300039474

Visit #1			**Temperature °C:**	**Sky Code[1]:** 0	**Wind[2]:** 1-3
Date: June 1, 2017	**Start Time (24 hr):** 0610	**End Time:** 0845	Start: 10°C	End: 13°C	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		
Visit #2			**Temperature °C:**	**Sky Code[1]:** 2	**Wind[2]:** 0
Date: June 13, 2017	**Start Time:** 0625	**End Time:** 0900	Start: 23°C	End: 23°C Humid	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		

NOTES: Some traffic noise disturbance from roads in vicinity to Study Area

HABITAT UNIT REFERENCE

Woodlot - Area B
Central portion of this woodlot heavily disturbed by human usage - fire pit, graffiti on tree trunks, very compact bare soil, garbage, tree damage, etc.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

X Species observed in its breeding season (no breeding evidence).

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED

DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carying fecal sac.
CF Adult carying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

Other Observations (e.g., wildlife)

Species Observed[3]: Visit #1	Breeding Evidence	Tally Visit #1	Species Observed[3]: Visit #2	Breeding Evidence	Tally Visit #2
COGR	S	1	-	-	-
AMRO	NU	1	AMRO	CF	6
AMGO	H	2	AMGO	S	1
SOSP	S	1	SOSP	S	1
GRCA	S	1	GRCA	S	1
EAWP	S	1	EAWP	S	1
			GCFL	S	1
			BCCH	S	1
			NOCA	S	1
			REVI	S	1

Species[3]	Highest Evidence Recorded	Highest Number Recorded
COGR	S	1
AMRO	CF	6
AMGO	S	2
SOSP	T	1
GRCA	T	1
EAWP	T	1
GCFL	S	1
BCCH	S	1
NOCA	S	1
REVI	S	1

BURNSIDE

Breeding Bird Evidence Field Form

Project Name / #: Sheridan Park Drive EA - 300039474

Visit #1			**Temperature °C:**	**Sky Code[1]:** 0	**Wind[2]:** 1-3
Date: June 1, 2017	**Start Time (24 hr):** 0610	**End Time:** 0845	Start: 10°C	End: 13°C	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		
Visit #2			**Temperature °C:**	**Sky Code[1]:** 2	**Wind[2]:** 0
Date: June 13, 2017	**Start Time:** 0625	**End Time:** 0900	Start: 23°C	End: 23°C Humid	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		

NOTES: Some traffic noise disturbance from roads in vicinity to Study Area

HABITAT UNIT REFERENCE

Area C - Shrub Thicket/Meadow Community
Very compact, clay soils
Area disturbed by anthropogenic uses such as bike trails, illegal dumping, natural gas pipeline, etc.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

X Species observed in its breeding season (no breeding evidence).

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED

DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carying fecal sac.
CF Adult carying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

Other Observations (e.g., wildlife)

Species Observed[3]: Visit #1	Breeding Evidence	Tally Visit #1	Species Observed[3]: Visit #2	Breeding Evidence	Tally Visit #2
BRTH	S	4	BRTH	S	3
RWBL	P	7	RWBL	CF	10
YWAR	P	3	YWAR	P	5
SOSP	S	5	SOSP	FY	6
NOCA	P	4	-	-	-
EAPH	S	1	-	-	-
AMGO	P	5	AMGO	D	8
WIFL	S	3	WIFL	A	3
CEDW	S	2	CEDW	S	5
BHCO	S	5	BHCO	S	9
GRCA	S	3	GRCA	S	2
RBGU	X	2	RBGU	X	5
HOSP	P	2	-	-	-
AMRO	H	1	AMRO	FY	5
COGR	S	4	COGR	CF	4
CAGO	X	35	-	-	-
BARS	X	1	-	-	-
BCCH	S	2	-	-	-
			GCFL	S	1
			EAWP	S	1
			BLJA	S	2
			MODO	S	1
			EUST	S	2
			ROPI	X	2
			ALFL	S	1
			BAOR	S	1
			DOWO	S	1

Species[3]	Highest Evidence Recorded	Highest Number Recorded
BRTH	T	4
RWBL	CF	10
YWAR	P	5
SOSP	FY	6
NOCA	P	4
EAPH	S	1
AMGO	D	8
WIFL	A	3
CEDW	T	5
BHCO	T	9
GRCA	T	3
RBGU	X	5
HOSP	P	2
AMRO	FY	5
COGR	CF	4
CAGO	X	35
BARS	X	1
BCCH	S	2
GCFL	S	1
EAWP	S	1
BLJA	S	2
MODO	S	1
EUST	S	2
ROPI	X	2
ALFL	S	1
BAOR	S	1
DOWO	S	1

BURNSIDE

Breeding Bird Evidence Field Form

Project Name / #: Sheridan Park Drive EA - 300039474

Visit #1			**Temperature °C:**	**Sky Code[1]:** 0	**Wind[2]:** 1-3
Date: June 1, 2017	**Start Time (24 hr):** 0610	**End Time:** 0845	Start: 10°C	End: 13°C	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		
Visit #2			**Temperature °C:**	**Sky Code[1]:** 2	**Wind[2]:** 0
Date: June 13, 2017	**Start Time:** 0625	**End Time:** 0900	Start: 23°C	End: 23°C Humid	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		

NOTES: Some traffic noise disturbance from roads in vicinity to Study Area

HABITAT UNIT REFERENCE

Woodlot - Area D
Disturbed by human usage (bike trails, garbage, temporary shelters); surrounded by border of raspberry, hawthorn, etc.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

X Species observed in its breeding season (no breeding evidence).

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED

DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carying fecal sac.
CF Adult carying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

Other Observations (e.g., wildlife)

Species Observed[3]: Visit #1	Breeding Evidence	Tally Visit #1	Species Observed[3]: Visit #2	Breeding Evidence	Tally Visit #2
EAWP	S	1	EAWP	S	1
BAOR	S	1	BAOR	S	1
REVI	S	1	REVI	S	1
NOCA	S	1	NOCA	A	1
EUST	S	4	EUST	S	2
BCCH	S	5	BCCH	S	2
			NOFL	H	1

Species[3]	Highest Evidence Recorded	Highest Number Recorded
EAWP	T	1
BAOR	T	1
REVI	T	1
NOCA	A	1
EUST	T	4
BCCH	T	5
NOFL	H	1

BURNSIDE

Breeding Bird Evidence Field Form

Project Name / #: Sheridan Park Drive EA - 300039474

Visit #1			**Temperature °C:**	**Sky Code[1]:** 0	**Wind[2]:** 1-3
Date: June 1, 2017	**Start Time (24 hr):** 0610	**End Time:** 0845	Start: 10°C	End: 13°C	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		
Visit #2			**Temperature °C:**	**Sky Code[1]:** 2	**Wind[2]:** 0
Date: June 13, 2017	**Start Time:** 0625	**End Time:** 0900	Start: 23°C	End: 23°C Humid	
Observer Name(s):	Hannah Maciver		**Precipitation:** None		

NOTES: Some traffic noise disturbance from roads in vicinity to Study Area
Lawn crew out during second visit; grass recently cut.

HABITAT UNIT REFERENCE

Area E

Open Areas - turfgrass (maintained) and landscaped trees/shrubs along paved multi-use trail.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

X Species observed in its breeding season (no breeding evidence).

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED

DD Distraction display or injury feigning.
NU Used nest or egg shells found (occupied or laid within the period of the survey).
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS Adult carying fecal sac.
CF Adult carying food for young.
NE Nest containing eggs.
NY Nest with young seen or heard.

Other Observations (e.g., wildlife)

Eastern Cottontail
Black/Grey Squirrel
Monarch

Species Observed[3]: Visit #1	Breeding Evidence	Tally Visit #1	Species Observed[3]: Visit #2	Breeding Evidence	Tally Visit #2
AMRO	S	9	AMRO	FY	3
NOFL	H	1	-	-	-
HOSP	S	2	-	-	-
MODO	S	2	MODO	S	4
SOSP	S	3	SOSP	S	1
EUST	FY	9	-	-	-
BHCO	S	4	-	-	-
AMGO	S	5	AMGO	S	3
YWAR	S	1	-	-	-
BLJA	H	1	-	-	-
NOCA	S	3	NOCA	S	3
RWBL	P	6	-	-	-
RBGU	X	3	-	-	-
COGR	P	2	-	-	-
			BCCH	S	1

Species[3]	Highest Evidence Recorded	Highest Number Recorded
AMRO	FY	9
NOFL	H	1
HOSP	S	2
MODO	T	4
SOSP	T	3
EUST	FY	9
BHCO	S	4
AMGO	T	5
YWAR	S	1
BLJA	H	1
NOCA	T	3
RWBL	P	6
RBGU	X	3
COGR	P	2
BCCH	S	1

[1] NAAMP/ Beaufort Sky Codes

0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, duststorm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[2] Beaufort Wind Scale

0 = Calm, smoke rises vertically (0-2km/hr)
1 = Light air movement, smoke drifts (3-5)
2 = Slight breeze, wind felt on face; leaves rustle (6-11)
3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30)
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

[4] Habitat Codes Used in OBBA 2001-2005

(found online at: http://www.bsc-eoc.org/dataentry/codes.jsp?ts=1430836464891)

[3] Species Codes (4-Letter Codes Used in OBBA 2001-2005

SNGO	Snow Goose	AMBI	American Bittern	SESA	Semipalmated Sandpiper	CHSW	Chimney Swift	RCKI	Ruby-crowned Kinglet	WIWA	Wilson's Warbler
ROGO	Ross's Goose	LEBI	Least Bittern	LESA	Least Sandpiper	RTHU	Ruby-throated Hummingbird	BGGN	Blue-gray Gnatcatcher	CAWA	Canada Warbler
BRAN	Brant	GBHE	Great Blue Heron	WRSA	White-rumped Sandpiper	RUHU	Rufous Hummingbird	NOWH	Northern Wheatear	YBCH	Yellow-breasted Chat
CACG	Cackling Goose	GREG	Great Egret	BASA	Baird's Sandpiper	BEKI	Belted Kingfisher	EABL	Eastern Bluebird	EATO	Eastern Towhee
CAGO	Canada Goose	SNEG	Snowy Egret	PESA	Pectoral Sandpiper	RHWO	Red-headed Woodpecker	MOBL	Mountain Bluebird	ATSP	American Tree Sparrow
MUSW	Mute Swan	TRHE	Tricolored Heron	PUSA	Purple Sandpiper	RBWO	Red-bellied Woodpecker	VEER	Veery	CHSP	Chipping Sparrow
TRUS	Trumpeter Swan	CAEG	Cattle Egret	DUNL	Dunlin	YBSA	Yellow-bellied Sapsucker	GCTH	Gray-cheeked Thrush	CCSP	Clay-colored Sparrow
TUSW	Tundra Swan	GRHE	Green Heron	STSA	Stilt Sandpiper	DOWO	Downy Woodpecker	SWTH	Swainson's Thrush	FISP	Field Sparrow
WODU	Wood Duck	BCNH	Black-crowned Night-Heron	BBSA	Buff-breasted Sandpiper	HAWO	Hairy Woodpecker	HETH	Hermit Thrush	VESP	Vesper Sparrow
GADW	Gadwall	YCNH	Yellow-crowned Night-Heron	SBDO	Short-billed Dowitcher	TTWO	Three-toed Woodpecker	WOTH	Wood Thrush	LASP	Lark Sparrow
AMWI	American Wigeon	GLIB	Glossy Ibis	COSN	Common Snipe	BBWO	Black-backed Woodpecker	AMRO	American Robin	SAVS	Savannah Sparrow
ABDU	American Black Duck	BLVU	Black Vulture	AMWO	American Woodcock	NOFL	Northern Flicker	GRCA	Gray Catbird	GRSP	Grasshopper Sparrow
MALL	Mallard	TUVU	Turkey Vulture	WIPH	Wilson's Phalarope	PIWO	Pileated Woodpecker	NOMO	Northern Mockingbird	HESP	Henslow's Sparrow
MBDH	American Black Duck x Mallard (hybrid)	OSPR	Osprey	RNPH	Red-necked Phalarope	OSFL	Olive-sided Flycatcher	SATH	Sage Thrasher	LCSP	Le Conte's Sparrow
BWTE	Blue-winged Teal	BAEA	Bald Eagle	BOGU	Bonaparte's Gull	EAWP	Eastern Wood-Pewee	BRTH	Brown Thrasher	NSTS	Nelson's Sparrow
CITE	Cinnamon Teal	NOHA	Northern Harrier	BHGU	Black-headed Gull	YBFL	Yellow-bellied Flycatcher	EUST	European Starling	FOSP	Fox Sparrow
NSHO	Northern Shoveler	SSHA	Sharp-shinned Hawk	LIGU	Little Gull	ACFL	Acadian Flycatcher	AMPI	American Pipit	SOSP	Song Sparrow
NOPI	Northern Pintail	COHA	Cooper's Hawk	LAGU	Laughing Gull	ALFL	Alder Flycatcher	SPPI	Sprague's Pipit	LISP	Lincoln's Sparrow
GWTE	Green-winged Teal	NOGO	Northern Goshawk	FRGU	Franklin's Gull	WIFL	Willow Flycatcher	BOWA	Bohemian Waxwing	SWSP	Swamp Sparrow
CANV	Canvasback	HRSH	Harris's Hawk	RBGU	Ring-billed Gull	LEFL	Least Flycatcher	CEDW	Cedar Waxwing	WTSP	White-throated Sparrow
REDH	Redhead	RSHA	Red-shouldered Hawk	CAGU	California Gull	EAPH	Eastern Phoebe	BWWA	Blue-winged Warbler	HASP	Harris's Sparrow
RNDU	Ring-necked Duck	BWHA	Broad-winged Hawk	HERG	Herring Gull	GCFL	Great Crested Flycatcher	GWWA	Golden-winged Warbler	WCSP	White-crowned Sparrow
GRSC	Greater Scaup	RTHA	Red-tailed Hawk	ICGU	Iceland Gull	WEKI	Western Kingbird	BGWW	Blue-winged/Golden-winged Warbler	DEJU	Dark-eyed Junco
LESC	Lesser Scaup	FEHA	Ferruginous Hawk	LBBG	Lesser Black-backed Gull	EAKI	Eastern Kingbird	LAWA	Lawrence's Warbler (hybrid)	MCLO	McCown's Longspur
KIEI	King Eider	RLHA	Rough-legged Hawk	GLGU	Glaucous Gull	FTFL	Fork-tailed Flycatcher	BRWA	Brewster's Warbler (hybrid)	LALO	Lapland Longspur
COEI	Common Eider	GOEA	Golden Eagle	GBBG	Great Black-backed Gull	LOSH	Loggerhead Shrike	TEWA	Tennessee Warbler	SMLO	Smith's Longspur
SUSC	Surf Scoter	AMKE	American Kestrel	CATE	Caspian Tern	NSHR	Northern Shrike	OCWA	Orange-crowned Warbler	SNBU	Snow Bunting
WWSC	White-winged Scoter	MERL	Merlin	BLTE	Black Tern	WEVI	White-eyed Vireo	NAWA	Nashville Warbler	SUTA	Summer Tanager
BLSC	Black Scoter	PEFA	Peregrine Falcon	COTE	Common Tern	YTVI	Yellow-throated Vireo	NOPA	Northern Parula	SCTA	Scarlet Tanager
LTDU	Long-tailed Duck	YERA	Yellow Rail	ARTE	Arctic Tern	BHVI	Blue-headed Vireo	YWAR	Yellow Warbler	WETA	Western Tanager
BUFF	Bufflehead	KIRA	King Rail	FOTE	Forster's Tern	WAVI	Warbling Vireo	CSWA	Chestnut-sided Warbler	NOCA	Northern Cardinal
COGO	Common Goldeneye	VIRA	Virginia Rail	PAJA	Parasitic Jaeger	PHVI	Philadelphia Vireo	MAWA	Magnolia Warbler	RBGR	Rose-breasted Grosbeak
BAGO	Barrow's Goldeneye	SORA	Sora	LTJA	Long-tailed Jaeger	REVI	Red-eyed Vireo	CMWA	Cape May Warbler	BLGR	Blue Grosbeak
HOME	Hooded Merganser	PUGA	Purple Gallinule	BLGU	Black Guillemot	GRAJ	Gray Jay	BTBW	Black-throated Blue Warbler	INBU	Indigo Bunting
COME	Common Merganser	COMO	Common Gallinule	ECDO	Eurasian Collared-Dove	BLJA	Blue Jay	YRWA	Yellow-rumped Warbler	DICK	Dickcissel
RBME	Red-breasted Merganser	AMCO	American Coot	WWDO	White-winged Dove	BBMA	Black-billed Magpie	BTNW	Black-throated Green Warbler	BOBO	Bobolink
RUDU	Ruddy Duck	MOOT	moorhen/coot sp.	MODO	Mourning Dove	AMCR	American Crow	BLBW	Blackburnian Warbler	RWBL	Red-winged Blackbird
GRPA	Gray Partridge	SACR	Sandhill Crane	BUDG	Budgerigar	CORA	Common Raven	YTWA	Yellow-throated Warbler	EAME	Eastern Meadowlark
RIPH	Ring-necked Pheasant	BBPL	Black-bellied Plover	YBCU	Yellow-billed Cuckoo	HOLA	Horned Lark	PIWA	Pine Warbler	WEME	Western Meadowlark
SIPH	Silver Pheasant	AMGP	American Golden-Plover	CUCK	Black/Yellow-billed Cuckoo	PUMA	Purple Martin	KIWA	Kirtland's Warbler	YHBL	Yellow-headed Blackbird
RUGR	Ruffed Grouse	SEPL	Semipalmated Plover	BBCU	Black-billed Cuckoo	TRES	Tree Swallow	PRAW	Prairie Warbler	RUBL	Rusty Blackbird
SPGR	Spruce Grouse	PIPL	Piping Plover	BNOW	Barn Owl	NRWS	Northern Rough-winged Swallow	PAWA	Palm Warbler	BRBL	Brewer's Blackbird
WIPT	Willow Ptarmigan	KILL	Killdeer	EASO	Eastern Screech-Owl	BANS	Bank Swallow	BBWA	Bay-breasted Warbler	COGR	Common Grackle
STGR	Sharp-tailed Grouse	RODO	Rock Pigeon	GHOW	Great Horned Owl	CLSW	Cliff Swallow	BLPW	Blackpoll Warbler	BHCO	Brown-headed Cowbird
GPCH	Greater Prairie-Chicken	BNST	Black-necked Stilt	SNOW	Snowy Owl	BARS	Barn Swallow	CERW	Cerulean Warbler	OROR	Orchard Oriole
WITU	Wild Turkey	AMAV	American Avocet	NHOW	Northern Hawk Owl	BCCH	Black-capped Chickadee	BAWW	Black-and-white Warbler	BAOR	Baltimore Oriole
HELG	Helmeted Guineafowl	SPSA	Spotted Sandpiper	BUOW	Burrowing Owl	BOCH	Boreal Chickadee	AMRE	American Redstart	PIGR	Pine Grosbeak
NOBO	Northern Bobwhite	SOSA	Solitary Sandpiper	BDOW	Barred Owl	TUTI	Tufted Titmouse	PROW	Prothonotary Warbler	PUFI	Purple Finch
RTLO	Red-throated Loon	GRYE	Greater Yellowlegs	GGOW	Great Gray Owl	RBNU	Red-breasted Nuthatch	WEWA	Worm-eating Warbler	HOFI	House Finch
PALO	Pacific Loon	WILL	Willet	LEOW	Long-eared Owl	WBNU	White-breasted Nuthatch	SWWA	Swainson's Warbler	RECR	Red Crossbill
COLO	Common Loon	LEYE	Lesser Yellowlegs	SEOW	Short-eared Owl	BRCR	Brown Creeper	OVEN	Ovenbird	WWCR	White-winged Crossbill
PBGR	Pied-billed Grebe	UPSA	Upland Sandpiper	BOOW	Boreal Owl	CARW	Carolina Wren	NOWA	Northern Waterthrush	CORE	Common Redpoll
HOGR	Horned Grebe	WHIM	Whimbrel	NSWO	Northern Saw-whet Owl	BEWR	Bewick's Wren	LOWA	Louisiana Waterthrush	HORE	Hoary Redpoll
RNGR	Red-necked Grebe	HUGO	Hudsonian Godwit	CONI	Common Nighthawk	HOWR	House Wren	KEWA	Kentucky Warbler	PISI	Pine Siskin
EAGR	Eared Grebe	MAGO	Marbled Godwit	COPO	Common Poorwill	WIWR	Winter Wren	CONW	Connecticut Warbler	AMGO	American Goldfinch
ASTK	American Swallow-tailed Kite	RUTU	Ruddy Turnstone	CWWI	Chuck-will's-widow	SEWR	Sedge Wren	MOWA	Mourning Warbler	EVGR	Evening Grosbeak
AWPE	American White Pelican	REKN	Red Knot	WPWI	Whip-poor-will	MAWR	Marsh Wren	COYE	Common Yellowthroat	HOSP	House Sparrow
DCCO	Double-crested Cormorant	SAND	Sanderling	EWPW	Eastern Whip-poor-will	GCKI	Golden-crowned Kinglet	HOWA	Hooded Warbler		

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix D

Vegetation Species Lists for ELC Ecosites

Ecological Land Classification Vegetation Inventory Summary Tables – June 7, 2017

Surveys Conducted by: Peter De Carvalho

ELC Polygon # 1

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
American Basswood	*Tilia Americana*	S5	-	-	-	-
Ironwood	*Ostrya virginiana*	S5	-	-	-	-
Sugar Maple	*Acer saccharum*	S5	-	-	-	-
Shagbark Hickory	*Carya ovata*	S5	-	-	-	-
Red Pine	*Pinus resinosa*	S5	-	-	-	-
Red Oak	*Quercus rubra*	S5	-	-	-	-
White Oak	*Quercus alba*	S5	-	-	-	-
American Elm	*Ulmus americana*	S5	-	-	-	-
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Fly Honeysuckle	*Lonicera canadensis*	S5	-	-	-	-
Prickly Gooseberry	*Ribes cynosbati*	S5	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Enchanter's Nightshade	*Circaea canadensis*	S5	-	-	-	-
Jack in the Pulpit	*Arisaema triphyllum*	S5	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
False Solomon's Seal	*Maianthemum racemosum*	S5	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Spotted Jewelweed	*Impatiens capensis*	S5	-	-	-	-
Herb Robert	*Geranium robertanum*	S5	-	-	-	-
Wild Geranium	*Geranium maculatum*	S5	-	-	-	-
Aster sp.	*Symphotrichum sp.*	S?	-	-	-	-
Solidago sp.	*Solidago sp.*	S?	-	-	-	-
A sedge	*Carex c.f. rosea*	S5	-	-	-	-
A cinquefoil	*Potentilla c.f. simplex*	S5	-	-	-	-

ELC Polygon # 2

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
American Basswood	*Tilia Americana*	S5	-	-	-	-
American Beech	*Fagus grandifolia*	S4	-	-	-	-
Sugar Maple	*Acer saccharum*	S5	-	-	-	-
Shagbark Hickory	*Carya ovata*	S5	-	-	-	-
Red Pine	*Pinus resinosa*	S5	-	-	-	-
Red Oak	*Quercus rubra*	S5	-	-	-	-
White Oak	*Quercus alba*	S5	-	-	-	-
American Elm	*Ulmus americana*	S5	-	-	-	-
Bitternut Hickory	*Carya cordiformis*	S5	-	-	-	-
Wild Apple	*Malus pumila*	SNA	-	-	-	-
Red Maple	*Acer rubrum*	S5	-	-	-	-
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Fly Honeysuckle	*Lonicera canadensis*	S5	-	-	-	-
Prickly Gooseberry	*Ribes cynosbati*	S5	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Enchanter's Nightshade	*Circaea canadensis*	S5	-	-	-	-
Jack in the Pulpit	*Arisaema triphyllum*	S5	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
False Solomon's Seal	*Maianthemum racemosum*	S5	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Spotted Jewelweed	*Impatiens capensis*	S5	-	-	-	-
Herb Robert	*Geranium robertanum*	S5	-	-	-	-
Wild Geranium	*Geranium maculatum*	S5	-	-	-	-
Poison Ivy	*Toxicodendron radicans*	S5	-	-	-	-
May-apple	*Podophyllum peltatum*	S5	-	-	-	-
A sedge	*Carex c.f. rosea*	S5	-	-	-	-
White Trillium	*Trillium grandiflorum*	S5	-	-	-	-
Wild Buckwheat	*Fagopyrum esculentum*	SNA	-	-	-	-

ELC Polygon #2* (Drainage Swale)

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Green Ash	*Fraxinus pennsylvanica*	S4	-	-	-	-
Sugar Maple	*Acer saccharum*	S5	-	-	-	-
Shagbark Hickory	*Carya ovata*	S5	-	-	-	-
Little-leaf Linden	*Tilia cordata*	SNA	-	-	-	-
American Elm	*Ulmus americana*	S5	-	-	-	-
Trembling Aspen	*Populus tremuloides*	S5	-	-	-	-
An apple	*Malus c.f. coronaria*	S4	-	-	-	-
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Red-osier Dogwood	*Cornus stolonifera*	S5	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Common Blackberry	*Rubus allegheniensis*	S5	-	-	-	-
Russian Olive	*Elaegnus angustifolia*	SNA	-	-	-	-
European Euonymus	*Euonymus eruopaeus*	SNA	-	-	-	-
Ground Juniper	*Juniperus communis*	S5	-	-	-	-
A willow	*Salix sp.*	S?	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Enchanter's Nightshade	*Circaea canadensis*	S5	-	-	-	-
Smooth Brome	*Bromus inermis*	SNA	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
Ox-eye Daisy	*Leucanthemum vulgare*	SNA	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Wild Strawberry	*Fragaria virginiana*	S5	-	-	-	-
Kentucky Bluegrass	*Poa pratensis*	S5	-	-	-	-
Canada Thistle	*Cirsium arvense*	SNA	-	-	-	-
Aster sp.	*Symphotrichum sp.*	S?	-	-	-	-
Solidago sp.	*Solidago sp.*	S?	-	-	-	-
Poison Ivy	*Toxicodendron radicans*	S5	-	-	-	-
Bull Thistle	*Cirsium vulgare*	SNA	-	-	-	-
Rhubarb	*Rheum rhabarbarum*	SNA	-	-	-	-
Common Mullein	*Verbascum Thapsus*	SNA	-	-	-	-
Yarrow	*Achillea millefolium*	SNA	-	-	-	-
American Vetch	*Vicia americana*	S5	-	-	-	-
Narrow-leaved Cattail	*Typha augustifolia*	SNA	-	-	-	-
Teasel	*Dipsacus sylvestris*	SNA	-	-	-	-
Common Milkweed	*Asclepias syriaca*	S5	-	-	-	-
Wild Carrot	*Daucus carota*	SNA	-	-	-	-

ELC Polygon #3, 7

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Green Ash	*Fraxinus pennsylvanica*	S4	-	-	-	-
Black Locust	*Robinia pseudoacacia*	SNA	-	-	-	-
Sugar Maple	*Acer saccharum*	S5	-	-	-	-
American Elm	*Ulmus americana*	S5	-	-	-	-
Silver Maple	*Acer saccharinum*	S5	-	-	-	-
Morrow's Honeysuckle	*Lonicera morrowii*	SNA	-	-	-	-
Downy Arrowwood	*Viburnum rafinesquianum*	S5	-	-	-	-
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Red-osier Dogwood	*Cornus stolonifera*	S5	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Amur Maple	*Acer ginnala*	SNA	-	-	-	-
Ninebark	*Physocarpus opulifolius*	S5	-	-	-	-
Serviceberry	*Amelanchier sp.*	S?	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Virginia Rose	*Rosa virginiana*	SU	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Common Blackberry	*Rubus allegheniensis*	S5	-	-	-	-
Smooth Brome	*Bromus inermis*	SNA	-	-	-	-
Ox-eye Daisy	*Leucanthemum vulgare*	SNA	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Woodland Strawberry	*Fragaria vesca*	S5	-	-	-	-
Kentucky Bluegrass	*Poa pratensis*	S5	-	-	-	-
Canada Thistle	*Cirsium arvense*	SNA	-	-	-	-
Solidago sp.	*Solidago sp.*	S?	-	-	-	-
Bull Thistle	*Cirsium vulgare*	SNA	-	-	-	-
Rhubarb	*Rheum rhabarbarum*	SNA	-	-	-	-
Yarrow	*Achillea millefolium*	SNA	-	-	-	-
American Vetch	*Vicia americana*	S5	-	-	-	-
Teasel	*Dipsacus sylvestris*	SNA	-	-	-	-
Orchard Grass	*Dactylis glomerata*	SNA	-	-	-	-
Common Plantain	*Plantago major*	S5	-	-	-	-
A Hawkweed	*Pilosella c.f. aurantiaca*	SNA	-	-	-	-
Black Mustard	*Brassica nigra*	SNA	-	-	-	-
An Avens	*Geum c.f. aleppicum*	S5	-	-	-	-
A St. John's-wort	*Hypericum sp.*	S?	-	-	-	-
A Sedge	*Carex c.f. tenera*	S5	-	-	-	-
Common Cinquefoil	*Potentilla simplex*	S5	-	-	-	-

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Pennycress	*Thlaspi arvense*	SNA	-	-	-	-
Tall Buttercup	*Ranunculus acris*	SNA	-	-	-	-
Red Clover	*Trifolium pretense*	SNA	-	-	-	-
A Sedge	*Carex sp.*	S?	-	-	-	-
Timothy	*Pleum pretense*	SNA	-	-	-	-
Grass-leaved Starwort	*Stellaria graminea*	SNA	-	-	-	-
Common Speedwell	*Veronica officinalis*	SNA	-	-	-	-
Curly Dock	*Rumex crispus*	SNA	-	-	-	-

ELC Polygon #4

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Trees						
American Basswood	*Tilia Americana*	S5	-	-	-	-
Ironwood	*Ostrya virginiana*	S5	-	-	-	-
Sugar Maple	*Acer saccharum*	S5	-	-	-	-
Shagbark Hickory	*Carya ovata*	S5	-	-	-	-
Red Pine	*Pinus resinosa*	S5	-	-	-	-
Red Oak	*Quercus rubra*	S5	-	-	-	-
American Elm	*Ulmus americana*	S5	-	-	-	-
Shrubs						
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Fly Honeysuckle	*Lonicera canadensis*	S5	-	-	-	-
Common Blackberry	*Rubus allegheniensis*	S5	-	-	-	-
Virginia Rose	*Rosa virginiana*	SU	-	-	-	-
Herbs						
Enchanter's Nightshade	*Circaea canadensis*	S5	-	-	-	-
Jack in the Pulpit	*Arisaema triphyllum*	S5	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
Spotted Jewelweed	*Impatiens capensis*	S5	-	-	-	-
Herb Robert	*Geranium robertanum*	S5	-	-	-	-
Aster sp.	*Symphotrichum sp.*	S?	-	-	-	-
Rhubarb	*Rheum rhabarbarum*	SNA	-	-	-	-
An avens	*Geum c.f. macrophyllum*	S5	-	-	-	-
May-apple	*Podophyllum peltatum*	S5	-	-	-	-
Black Mustard	*Brassica nigra*	SNA	-	-	-	-
White Trillium	*Trillium grandiflorum*	S5	-	-	-	-
Woodland Strawberry	*Fragaria vesca*	S5	-	-	-	-

ELC Polygon #5

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Trees						
Green Ash	*Fraxinus pennsylvanica*	S4	-	-	-	-
Sugar Maple	*Acer saccharum*	S5	-	-	-	-
Shagbark Hickory	*Carya ovata*	S5	-	-	-	-
Red Oak	*Quercus rubra*	S5	-	-	-	-
White Oak	*Quercus alba*	S5	-	-	-	-
Shrubs						
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Riverbank Grape	*Vitis riparia*	S5	-	-	-	-
Virginia Rose	*Rosa virginiana*	SU	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Common Blackberry	*Rubus allegheniensis*	S5	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Russian Olive	*Elaegnus angustifolia*	SNA	-	-	-	-
Fly Honeysuckle	*Lonicera canadensis*	S5	-	-	-	-
Herbs						
Enchanter's Nightshade	*Circaea canadensis*	S5	-	-	-	-
Smooth Brome	*Bromus inermis*	SNA	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
Ox-eye Daisy	*Leucanthemum vulgare*	SNA	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Woodland Strawberry	*Fragaria vesca*	S5	-	-	-	-
Kentucky Bluegrass	*Poa pratensis*	S5	-	-	-	-
Canada Thistle	*Cirsium arvense*	SNA	-	-	-	-
Aster sp.	*Symphotrichum sp.*	S?	-	-	-	-
Poison Ivy	*Toxicodendron radicans*	S5	-	-	-	-
Rhubarb	*Rheum rhabarbarum*	SNA	-	-	-	-
Yarrow	*Achillea millefolium*	SNA	-	-	-	-
American Vetch	*Vicia americana*	S5	-	-	-	-
Teasel	*Dipsacus sylvestris*	SNA	-	-	-	-
Common Milkweed	*Asclepias syriaca*	S5	-	-	-	-
Wild Carrot	*Daucus carota*	SNA	-	-	-	-
Black Mustard	*Brassica nigra*	SNA	-	-	-	-
An Avens	*Geum c.f. aleppicum*	S5	-	-	-	-
A St. John's-wort	*Hypericum sp.*	S?	-	-	-	-
Common Cinquefoil	*Potentilla simplex*	S5	-	-	-	-
Pennycress	*Thlaspi arvense*	SNA	-	-	-	-
Wild Buckwheat	*Fagopyrum esculentum*	SNA	-	-	-	-

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Tall Tumble Mustard	*Sisymbrium altissimum*	SNA	-	-	-	-

ELC Polygon #6

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Trees						
Green Ash	*Fraxinus pennsylvanica*	S4	-	-	-	-
American Beech	*Fagus grandifolia*	S4	-	-	-	-
Ironwood	*Ostrya virginiana*	S5	-	-	-	-
Trembling Aspen	*Populus tremuloides*	S5	-	-	-	-
Red Maple	*Pinus resinosa*	S5	-	-	-	-
Red Oak	*Quercus rubra*	S5	-	-	-	-
Shrubs						
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
Riverbank Grape	*Vitis riparia*	S5	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Virginia Rose	*Rosa virginiana*	SU	-	-	-	-
Herbs						
Aster sp.	*Symphotrichum sp.*	S?	-	-	-	-
Teasel	*Dipsacus sylvestris*	SNA	-	-	-	-
Rhubarb	*Rheum rhabarbarum*	SNA	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
Enchanter's Nightshade	*Circaea canadensis*	S5	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Herb Robert	*Geranium robertanum*	S5	-	-	-	-
Poison Ivy	*Toxicodendron radicans*	S5	-	-	-	-

ELC Polygon #8

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Trees						
Green Ash	*Fraxinus pennsylvanica*	S4	-	-	-	-
White Ash	*Fraxinus americana*	S4	-	-	-	-
Wild Apple	*Malus pumila*	SNA	-	-	-	-
Red Oak	*Quercus rubra*	S5	-	-	-	-
American Elm	*Ulmus americana*	S5	-	-	-	-
Shrubs						
Gray Dogwood	*Cornus racemosa*	S5	-	-	-	-
Choke Cherry	*Prunus virginiana*	S5	-	-	-	-
Red-osier Dogwood	*Cornus stolonifera*	S5	-	-	-	-
Buckthorn sp.	*Rhamnus c.f. cathartica*	SNA	-	-	-	-
English Hawthorn	*Crataegus monogyna*	SNA	-	-	-	-
Serviceberry	*Amelanchier sp.*	S?	-	-	-	-
Virginia Rose	*Rosa virginiana*	SU	-	-	-	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-	-	-	-
Russian Olive	*Elaegnus angustifolia*	SNA	-	-	-	-
Hawthorn sp.	*Crataegus sp.*	S?	-	-	-	-
Tartarian Honeysuckle	*Lonicera tatarica*	SNA	-	-	-	-
Fly Honeysuckle	*Lonicera canadensis*	S5	-	-	-	-
Herbs						
Smooth Brome	*Bromus inermis*	SNA	-	-	-	-
Garlic Mustard	*Alliaria petiolata*	SNA	-	-	-	-
Ox-eye Daisy	*Leucanthemum vulgare*	SNA	-	-	-	-
Common Dandelion	*Taraxacum officinale*	SNA	-	-	-	-
Wild Strawberry	*Fragaria virginiana*	S5	-	-	-	-
Woodland Strawberry	*Fragaria vesca*	S5	-	-	-	-
Kentucky Bluegrass	*Poa pratensis*	S5	-	-	-	-
Canada Thistle	*Cirsium arvense*	SNA	-	-	-	-
Aster sp.	*Symphotrichum sp.*	S?	-	-	-	-
Solidago sp.	*Solidago sp.*	S?	-	-	-	-
Poison Ivy	*Toxicodendron radicans*	S5	-	-	-	-
Bull Thistle	*Cirsium vulgare*	SNA	-	-	-	-
Rhubarb	*Rheum rhabarbarum*	SNA	-	-	-	-
American Vetch	*Vicia americana*	S5	-	-	-	-
Teasel	*Dipsacus sylvestris*	SNA	-	-	-	-
Common Milkweed	*Asclepias syriaca*	S5	-	-	-	-
Wild Carrot	*Daucus carota*	SNA	-	-	-	-
Orchard Grass	*Dactylis glomerata*	SNA	-	-	-	-
A Hawkweed	*Pilosella c.f. aurantiaca*	SNA	-	-	-	-

Common Name	Scientific Name	Provincial SRANK[1]	Provincial SARO (Endangered Species Act, 2007)[2]	Federal COSEWIC[3]	Federal SARA (Species At Risk Act)[3]	Federal SARA Schedule[4]
Black Mustard	*Brassica nigra*	SNA	-	-	-	-
A St. John's-wort	*Hypericum sp.*	S?	-	-	-	-
Common Cinquefoil	*Potentilla simplex*	S5	-	-	-	-
Red Clover	*Trifolium pretense*	SNA	-	-	-	-
Grass-leaved Starwort	*Stellaria graminea*	SNA	-	-	-	-
Curly Dock	*Rumex crispus*	SNA	-	-	-	-
Wild Buckwheat	*Fagopyrum esculentum*	SNA	-	-	-	-
Dame's Rocket	*Hesperis matronalis*	SNA	-	-	-	-
Black Medick	*Medicago lupulina*	SNA	-	-	-	-
Common Shepherd's Purse	*Capsella bursa-pastoris*	SNA	-	-	-	-
Horticultural Lily	*Crinum sp.*	SNA	-	-	-	-
Butter-and-eggs	*Linaria vulgaris*	SNA	-	-	-	-
Prickly Lettuce	*Lactuca serriola*	SNA	-	-	-	-
Horseradish	*Armoracia rusticana*	SNA	-	-	-	-
Common Comfrey	*Symphytum officinale*	SNA	-	-	-	-

[1]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.natureserve.org/nsranks.htm)

SX — Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH — Possibly Extirpated (Historical) - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20-40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
S1 — Critically Imperiled - Critically imperiled in the province or state 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 province.
S2 — Imperiled - Imperiled in the 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 province.
S3 — Vulnerable - Vulnerable in the 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 province.
SNR — Unranked - Province conservation status not yet assessed.
SU — Unrankable - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
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).
S#? – Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

[2]SARO *Endangered Species Act, 2007*
(provincial status from http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3)
The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

Extinct - A species that no longer exists anywhere.
Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NAR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

[3]SARA (Federal *Species at Risk Act*) Status and Schedule (includes COSEWIC Status)
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

Extinct - A wildlife species that no longer exists.
Extirpated (EXT) - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.
Endangered (END) - A wildlife species facing imminent extirpation or extinction.
Threatened (THR) - A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

[4]SARA Schedule
Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk

ELC Community Summary Sheet	Polygon #	1

Project #: _____ **Project Name:** Sheridan Drive Ext **Surveyor(s):** PD **Date:** June 7/2017

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
	FOD	Moist deciduous forest

System:	Topographic Feature:	Dominant Plant Form:
~~Terrestrial~~ Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / ~~Tableland~~ Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub ~~Treed~~	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**		**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:** Silty Clay	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M - 35 cm / G - ~ cm, **Sample 2** M - 30 cm / G - ~ cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

Vegetation Layer		Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	25	60%	Sugar Maple
2	Subcanopy	12	50%	Sugar Maple / BNH
3	Understorey	6	30%	
4	Groundlayer	<1	50%	V. Creeper, ENS

Height Codes – (1) >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – (0) None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	A	O	R
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation
G. mustard / invasives along walking paths (dog)

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests
Crow

Comments:

		Community Name	Code		% of Community
Inclusion	Complex				
Inclusion	Complex				
Inclusion	Complex				

ELC Community Summary Sheet

Polygon #

Plant List	Layer / Abundance			
Trees	**1**	**2**	**3**	**4**
Basswood				O
Ironwood	C			
Sugar Maple	C		O	C
SBH	O	O	O	O
R. Pine	O			
R. Oak	C			
W. Oak	O			
Am. elm	O		O	

Shrubs	1	2	3	4
Grey Dogwood			C	
Choke Cherry		C		
Hawthorn Sp		O		
Buckthorn Sp		O		
Honeysuckle (Fly)		O		
Gooseberry (Prickly)		O		
V. Creeper		R	O	C

Plant List	Layer / Abundance			
Groundlayer	**1**	**2**	**3**	**4**
ENS			C	
~~Joe Pye weed~~ [illegible]		O		
Garlic Mustard		O	C	
False Solomons			C	
Dandelion			O	
Jewelweed			C	
Herb Robert			O	
Wild Geranium			O	
Aster Sp		O	O	
Solidago Sp		O	O	
Carex Cf. rosea			R	
Potentilla Sp			U	

TSTM

ELC Community Summary Sheet	**Polygon #**	2 → [illegible]

Project #: ______ **Project Name:** Sheridan [illegible] **Surveyor(s):** [illegible] **Date:** Jun [illegible]

Polygon Description

Community Series:	**Ecosite:**	**Vegetation Type:** Drainage Swale

System:	**Topographic Feature:**	**Dominant Plant Form:**
Terrestrial Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	**History:**	**Community Class:**
Open Shrub Treed	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			**Soil Analysis**	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth		**Basal Area (m2/ha):**	**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:**	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M - cm / G - cm, **Sample 2** M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

Vegetation Layer		**Height**	**Cover**	**Dominant Sp. Per Vegetation Layer**
1	Canopy	10	15%	G. Ash
2	Subcanopy	6	60%	[illegible]
3	Understorey	4	30%	
4	Groundlayer	1	70%	[illegible] / Aster

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	O	—	—
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Some cutting, [illegible] [illegible] [illegible]
[illegible]

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:
Drainage [illegible]
[illegible]

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet

Polygon #

Plant List — Trees	Layer / Abundance 1	2	3	4
G. Ash	C			
S. Maple		O		
SBH			O	
Little-leaf Linden	R			
Am Elm			O	R
T. Aspen	R			
Apple (crab??)		R		
Juniper	R			R

Shrubs	1	2	3	4
Buckthorn	C	C		
Choke Cherry			O	
Russian Olive		O	R	
Salix Sp.			O	
Euonymus europaeus			O	
RO Dogwood			O	
Black [illegible]			O	
Grey Dogwood			C	

Plant List — Groundlayer	Layer / Abundance 1	2	3	4
Solidago sp.			C	
Smooth Brome			C	
Dandelion			C	
Ox-eye Daisy				O
Wild Strawberry				R
Poison Ivy				O
Poa pratensis				A
Canada Thistle			O	
Bull Thistle			R	
Rhubarb			O	
Common Mullein			R	
Yarrow			C	
Am Vetch			C	
[illegible]		U		
G. Mustard			C	
FMS				C
Teasel				
Common Milkweed			C	
V. Creeper			O	
W. Carrot			O	
Aster sp.			O	

ELC Community Summary Sheet	Polygon #	2

Project #: _____ **Project Name:** Sheridan Drive **Surveyor(s):** PD **Date:** June 7, 2012

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
	FOD	Moist deciduous forest

System:	Topographic Feature:	Dominant Plant Form:
~~Terrestrial~~ Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / ~~Tableland~~ Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / ~~Deciduous~~ / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub ~~Treed~~	~~Natural~~ Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / ~~Forest~~ / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**		**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:** Silty Clay	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M - 20 cm / G - cm, **Sample 2** M - 25 cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

g <0.3
Very Moist

Vegetation Layer		Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	25	40%	SBH
2	Subcanopy	15	50%	SBH / S. Maple
3	Understorey	6-8	50%	Beech / Beech
4	Groundlayer	20.5	30%	Garlic Mustard

Height Codes – (1) >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – (0) None, **(1)** 1-10%, **(2)** 25-50%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	O	O	R
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Invasives Firepits
Foot paths Dumping
Cutting Garlic Mustard

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet

Polygon #

Plant List — Trees	Layer / Abundance 1	2	3	4
Beech	O	O	C	C
S. Maple	C	C	C	O
SBH	C	O	O	O
R. Pine	O			
Am. Elm		O	O	O
Wild Apple			R	
R. Oak	C		O	O
R. Maple	O		O	
W. Oak	C			
Basswood			O	O
Bitternut Hickory		R		

Shrubs	1	2	3	4
Buckthorn sp.		O	C	C
Fly Honeysuckle			O	O
Prickly Gooseberry			O	
Choke Cherry			O	
S. Maple			O	O
G. dogwood				O
Hawthorn sp.		O	O	
V. Creeper				

Plant List — Groundlayer	Layer / Abundance 1	2	3	4
FNS			C	
Wild Geranium				O
G. Mustard			C	
Poison Ivy				C
~~V. Creeper~~			O	O
Mayapple			O	
~~[illegible]~~ JITP				O
[illegible]				C
False Solomon				O
Carex sp.				O
[illegible]				O
White trillium				R
wild [illegible]				R

ELC Community Summary Sheet	Polygon #	3

Project #: _____ **Project Name:** Thunder **Surveyor(s):** PD **Date:** Jan 7

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
	CUM	graminoid open field

System:	Topographic Feature:	Dominant Plant Form:
~~Terrestrial~~ Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
~~Open~~ Shrub Treed	~~Natural~~ Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / ~~Young~~ / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**		**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / ~~Imperfect~~ / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:** Clay Loam	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M - 10 cm / G - cm, **Sample 2** M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	6	10%	Populus
2	Subcanopy	2	15%	Grey dogwood
3	Understorey	1		
4	Groundlayer	71	50%	Poa Pratensis

Height Codes – (1) >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – (0) None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	0	–	–	–
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Invasives, dumping, walking/biking paths

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4
Green Ash	O		O	O
Black Cherry	O	O		
Sugar maple				R
American Elm	R	R		
Silver maple	R			

Shrubs	1	2	3	4
Virginia Rose			O	
Virginia Creeper			O	
Red dogwood		R	O	
Morrow's Honeysuckle		O		
Hawthorn sp		O		
Buckthorn sp	O	O	O	O
Grey dogwood			C	C
Amur Maple	O	R	R	
Choke cherry		O		
Ninebark			R	
Amelanchier sp.			R	
Downy Arrowwood			R	

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Poa Pratensis			C	
American Vetch			C	
Orchard Grass			O	
Common Plantain				C
Hawkweed sp.			O	
Dandelion				C
Yarrow				C
Smooth Brome	C			
Goldenrod sp.		C		
Black Medic			O	
Geum c.f. aleppicum			C	
St. John's Wort		O	C	
Canada Thistle			C	
Rhubarb	O			
Bull Thistle		R		
Carex c.f. hirtea				O
Oxeye Daisy		O		
Woodland Strawberry				O
Teasel			C	
Common Blackberry				O
Common Cinquefoil				O
Penny cress				O
Tall buttercup			O	
Red Clover				O
Carex sp.				O
Timothy			O	
Lesser Stitchwort				O
Common Speedwell				C
Curled dock				R

ELC Community Summary Sheet	Polygon #	4

Project #: _____ **Project Name:** Sheridan **Surveyor(s):** PD **Date:** June 7

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
	FOD	Moist deciduous forest

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub Treed	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**		**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:** Clay Loam	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M 30 cm / G - cm, **Sample 2** M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	25	50	R. oak
2	Subcanopy	15	50	R. oak
3	Understorey	6	40	Hawthorn
4	Groundlayer	<1	30	Buckthorn

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	C	D	R
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Invasive Species
Trails
Dumping

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	

Plant List	Layer / Abundance			
Trees	1	2	3	4
Red Oak	D	C		
Shagbark Hickory		O	O	
Basswood	O			
American Elm			O	
Sugar Maple			O	
Ironwood		O		
Red Pine		R		

Shrubs	1	2	3	4
Hawthorn	O	C	O	
Buckthorn	O	O	C	C
Fly Honeysuckle			O	
Choke Cherry		O		O
Blackberry			O	
Grey Dogwood		O	O	C
Virginia Rose				O

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Aster sp		C		
Black Mustard		O		
Wood Strawberry				O
Enchanters Nightshade				S
Shagbark Hickory (sapling)			O	O
Herb Robert			O	
Mayapple			O	
Garlic Mustard				S
White trillium				O
Geum c.f. macrophyllum			O	
Rhubarb			R	
~~Joe Pye Weed~~			O	
Jewelweed				O

ELC Community Summary Sheet	Polygon #	5

Project #: ______ **Project Name:** Sheridan **Surveyor(s):** PD **Date:** June 7

Polygon Description

Community Series:	Ecosite: CUT-1	Vegetation Type: Shrub thicket

System:	Topographic Feature:	Dominant Plant Form:
~~Terrestrial~~ / Wetland / Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland (circled) / Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous (circled) / Coniferous / Mixed

Cover:	History:	Community Class:
Open / ~~Shrub~~ / Treed	Natural / Cultural (circled)	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural (circled) / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description		Soil Analysis
Community Age: Pioneer / Young (circled) / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**	**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect (circled) / Poor / V. Poor
Standing Snags: Rare / Occasional / Abundant (circled) / Dominant		**Soil Moisture Regime:** Dry / Fresh / Moist (circled) / Wet
Deadfall Logs: Rare / Occasional (circled) / Abundant / Dominant		**Effective Soil Texture:** Silty Clay
Health L (circled) / M / H — **Sensitivity** L (circled) / M / H	**Botanical Quality** L (circled) / M / H	**Depth to Mottles / Gley** Sample 1 M - 30cm / G - cm, Sample 2 M - cm / G - cm
Slope: None (circled) / Gentle / Moderate / Steep Simple / Complex		**Depth to G. Water:** @ m At surface / <1m / >1m — **Depth to Bedrock:** @ m At surface / <1m / >1m

Vegetation Layer		Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	20	5%	W. oak
2	Subcanopy	8	50%	Buckthorn
3	Understorey	5	20%	Grey dogwood / Green ash / buckthorn
4	Groundlayer	<0.5	50%	Poa pratensis / Garlic Mustard / Poison Ivy

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	O		
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Invasives trail dumping

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	Polygon #	5

Plant List	Layer / Abundance			
Trees	1	2	3	4
Red Oak	O	O	O	
White Oak	O		O	
Shagbark Hickory				O
Green Ash	O	O	C	
Sugar maple	R			

Shrubs	1	2	3	4
Buckthorn	C	C		
Grey dogwood		C	C	
American water				C
Blackberry			O	
Hawthorn		O		
Russian Olive		O		
Honeysuckle (?)		O	O	
Virginia Rose			O	O
Virginia creeper				C
Wild Grape				O

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Aster sp.			C	
Bromus Brome			O	
Woodland Strawberry			C	
Yarrow				O
St. John's Wort			O	
Teasel				C
Cryptotaenia (Canadensis)				O
Wild Carrot				C
Geum c.f. aleppicum			O	
Black Medick			O	
Poa pratensis				C
Erechtites hieracifolia				O
Common Buckwheat				O
Poa compressa				O
Ox-Eye Daisy			C	
Poa trivialis		I		C
Dandelion				C
Common Milkweed				R
Rhubarb				R
Tall thimbleweed	R			
Garlic Mustard			C	C
Canada Thistle		C	C	

ELC Community Summary Sheet	Polygon #	6

Project #: _____ **Project Name:** Sheridan **Surveyor(s):** PD **Date:** June 7

Polygon Description

Community Series:	Ecosite:	Vegetation Type:
	FOD	Moist deciduous forest

System:	Topographic Feature:	Dominant Plant Form:
Terrestrial Wetland Aquatic	Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed

Cover:	History:	Community Class:
Open Shrub Treed	Natural Cultural	Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description			Soil Analysis	
Community Age: Pioneer / Young / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**		**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect / Poor / V. Poor	
Standing Snags: Rare / Occasional / Abundant / Dominant			**Soil Moisture Regime:** Dry / Fresh / Moist / Wet	
Deadfall Logs: Rare / Occasional / Abundant / Dominant			**Effective Soil Texture:** Clay loam	
Health L / M / H	**Sensitivity** L / M / H	**Botanical Quality** L / M / H	**Depth to Mottles / Gley** **Sample 1** M - 28 cm / G - cm, **Sample 2** M - cm / G - cm	
Slope: None / Gentle / Moderate / Steep Simple / Complex			**Depth to G. Water:** @ m At surface / <1m / >1m	**Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	28	20%	R. Oak
2	Subcanopy	20	50%	Basswood
3	Understorey	10-8	20%	Buckthorn
4	Groundlayer	<0.5	20%	Buckthorn

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	O	R	R
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation
Dumping, Exotics, Cutting

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet

Polygon #

Plant List	Layer / Abundance			
Trees	1	2	3	4
Green Ash		C		O
Red Oak	C	C		
Trembling Aspen	O			O
Ironwood	C	C	O	O
Red maple	R			
Beech		O		

Shrubs	1	2	3	4
Buckthorn	C	C	C	C
Hawthorn	O	C	O	
Grey dogwood			O	C
Choke cherry		O		O
Virginia Rose			O	
Wild grape				O
Virginia creeper				O

Plant List	Layer / Abundance			
Groundlayer	1	2	3	4
Aster sp				C
Teasel				O
[illegible]			O	
Green Ash	O		O	
Garlic mustard			O	
Enchanter's Night Shade				O
Poison Ivy				O
Herb Robert				O
Dandelion				C

Hedgerow

ELC Community Summary Sheet	**Polygon #**	8#

Project #:________ **Project Name:** Sheridan Park **Surveyor(s):** PD **Date:** June 7, 2017

Polygon Description

Community Series:	**Ecosite:** Cut - 1	**Vegetation Type:** Shrub thicket hedgerow
System: Terrestrial / Wetland / Aquatic	**Topographic Feature:** Lacustrine / Riverine / Bottomland / Terrace / Valley Slope / Tableland / Rolling Upland / Cliff / Talus / Crevice / Cave / Alvar / Rockland / Beach / Bar / Sand Dune / Bluff	**Dominant Plant Form:** Plankton / Submerged / Floating-leaved / Graminoid / Forb / Lichen / Bryophyte / Deciduous / Coniferous / Mixed
Cover: Open (circled) / Shrub / Treed	**History:** Natural / Cultural (circled)	**Community Class:** Beach-Bar / Sand Dune / Bluff / Cliff / Talus / Alvar / Rock Barren / Crevice-Cave / Sand Barren / Tallgrass Prairie – Savannah & Woodland / Forest / Cultural (circled) / Swamp / Bog / Marsh / Open Water / Shallow Water

Stand Description		**Soil Analysis**
Community Age: Pioneer / Young (circled) / Mid-Aged / Mature / Old Growth	**Basal Area (m2/ha):**	**Soil Drainage:** V. Rapid / Rapid / Well / Moderately Well / Imperfect (circled) / Poor / V. Poor
Standing Snags: Rare / Occasional (circled) / Abundant / Dominant		**Soil Moisture Regime:** Dry / Fresh / Moist (circled) / Wet
Deadfall Logs: Rare (circled) / Occasional / Abundant / Dominant		**Effective Soil Texture:** Silty Clay (assumed)
Health L (circled) / M / H — **Sensitivity** L (circled) / M / H	**Botanical Quality** L (circled) / M / H	**Depth to Mottles / Gley** Sample 1 M- cm / G- cm, Sample 2 M- cm / G- cm
Slope: None (circled) / Gentle / Moderate / Steep Simple / Complex		**Depth to G. Water:** @ m At surface / <1m / >1m (marked) — **Depth to Bedrock:** @ m At surface / <1m / >1m

	Vegetation Layer	Height	Cover	Dominant Sp. Per Vegetation Layer
1	Canopy	8	30%	Buckthorn
2	Subcanopy	4	50%	Buckthorn
3	Understorey	2	30%	Grey Dogwood
4	Groundlayer	<1	40%	Garlic mustard / [illegible]

Height Codes – **(1)** >20m, **(2)** 10-20m, **(3)** 2-10m, **(4)** 1-2m, **(5)** 0.5-1m, **(6)** 0.2-0.5m, **(7)** <0.2m
Cover Codes – **(0)** None, **(1)** 1-10%, **(2)** 10-25%, **(3)** 25-60%, **(4)** >60%

Size Class Analysis (Rare / Occasional / Abundant / Dominant)	A	O	R	-
	< 10cm DBH	10 – 24cm DBH	25 – 50cm DBH	> 50cm DBH

Evidence of Disturbance:
Tree cutting, exotic species, trails, dumping, noise, predation

Dumping
Invasive/escaped hort [illegible]

Wildlife / Habitat Observations:
Birds, mammals, calls, observed, dens, nests

Comments:
Garden work dumping evident.
Likely source of abundant escaped hort sp.

				Community Name	Code		% of Community
Inclusion		Complex					
Inclusion		Complex					
Inclusion		Complex					

ELC Community Summary Sheet	**Polygon #**	

Plant List	Layer / Abundance			
Trees	**1**	**2**	**3**	**4**
W. Ash	R	R		
G. Ash	R			O
R. Oak	R			
Wild Apple	R			
A. Plum				R

Shrubs	1	2	3	4
Buckthorn Sp.	C	C	C	C
Hawthorn Sp.		O	O	
[illegible]	O			
[illegible] dogwood	C			
V. [illegible]			C	
Choke cherry	C			
[illegible]		R		
Red [illegible]			C	
Russian Olive	R			
V. Creeper				C
Amelanchier Sp.				
English Hawthorn		R		

Plant List	Layer / Abundance			
Groundlayer	**1**	**2**	**3**	**4**
Poa Pratensis				A
Dandelion				C
[illegible] sp.				C
Smooth brome				C
Tartarian Honeysuckle		O		
Vicia Cracca				C
hawkweed sp				O
Common Cinquefoil				O
Poison Ivy			C	O C
Teasel				O
Orchard grass			O	
wild Carrot			C	
Red Clover				O
St. Johns Wort			O	
Garlic Mustard				C
Black Mustard			O	
Dame's Rocket		O		
Black Medick				O
Lesser Stitchwort				O
Shepherd's Purse			O	
Solidago Sp.		C		
Ox Eye daisy			C	
Cirsium Sp.				O
Canada thistle		O	O	
Rhubarb			O	
Curley dock			R	
Wild Strawberry				O
Woodland Strawberry				O
Fly Honeysuckle			O	
Butter and Eggs			O	
Prickly Lettuce			O	
Common milkweed				R
Horse radish			R	
Common Comfrey			O	
Buckwheat				O
Bull thistle			O	
Horticultural Rose				R

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix E

Bat Maternity Habitat Tree List

Bat Maternity Colony Summary Tables – April 11, June 7, 2017

Surveys Conducted by: Peter De Carvalho

Leaf-off (Northern Myotis/Little Brown Myotis) BMH Trees

Tree Species	DBH (cm)	Cavity Type	Cavity Height (m)	UTM E (NAD83)	UTM N (NAD83)
American Elm	36	36	4	607982	4819747
White Ash	74.5	74.5	10+	607968	4819744
Red Maple	45	45	8+	607961	4819741
Sugar Maple	44	44	15	607971	4819714
Sugar Maple	46	46	12	607969	4819711
Red Maple	52.5	52.5	14	607945	4819719
Red Oak	55	55	8	607933	4819712
Deciduous (Dead)	53	53	4 to 10	607952	4819703
Beech	26	26	6, 10+	607911	4819679
Beech	17.5	17.5	6, 8	607911	4819675
White Ash	36.5	36.5	6	607889	4819658
Sugar Maple	70	70	1	607857	4819655
Deciduous (Dead)	56.5	56.5	6, 10	607888	4819627
White Ash	62	62	8, 15	607884	4819625
White Ash	41	41	6,10	607849	4819621
Beech	33	33	3, 5	607954	4819731
Red Pine	53	53	2, 3.5, 6	607945	4819721
Sugar Maple	43	43	6 to 15	607902	4819679
White Ash	21	21	4	607579	4819271

Leaf-on (Tri-colored Bat) BMH Trees

Tree Species	DBH (cm)	UTM E (NAD83)	UTM N (NAD83)
Sugar Maple	12	607932	4819740
Bur Oak	81	607888	4819673
Bur Oak	68	607861	4819652
Norway Maple	12	607653	4819383
Red Oak	68	607543	4819222
Red Oak	48	607488	4819144
White Oak	71	607476	4819106
Red Oak	74	607466	4819097

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix F

Significant Wildlife Habitat Screening Table for Ecoregion 7E

300039474 Sheridan Park Drive Extension Environmental Assessment
Appendix F: Significant Wildlife Habitat Screening within the On-site Study Area and Study Area Vicinity – Ecoregion 7E Criteria (2015)

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Seasonal Concentration Areas of Animals						
Waterfowl Stopover and Staging Areas (Terrestrial) **<u>Rationale</u>**: Habitat important to migrating waterfowl.	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grains in the Long Point, Rondeau, Lk. St. Clair, Grand Bend, and Pt. Pelee areas may be important to Tundra Swan	Fields with sheet water during Spring (mid-March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available.	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: • Any mixed species aggregations of 100 or more individuals required. • The flooded field ecosite habitat plus a 100-300 m radius area, dependant on local site conditions and adjacent land use is the significant wildlife habitat. • 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). • SWHMiST Index #7 provides development effects and mitigation measures.	Moderate potential CUM1 and CUT1 ecosites observed in Study Area. Imperfectly drained mineral substrate likely results in spring flooding.	Moderate potential CUM1 and CUT1 ecosites extend southwest from the Study Area.
Waterfowl Stopover and Staging Areas (Aquatic) **<u>Rationale:</u>** Important for local and migrant waterfowl populations during the spring or fall migration or both	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4	• 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. • These habitats have an	Studies carried out and verified presence of: • Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. • The combined area of the ELC ecosites and a 100 m radius area is	No potential No marshes or swamps are present. Stormwater features onsite do not qualify. The narrow strip of riparian vegetation doesn not provide suitable conditions.	No to low potential Surrounding areas are mostly residential subdivisions or commercial complexes.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
periods combined. Sites identified are usually only one of a few in the eco-district.	Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	SWD5 SWD6 SWD7	abundant food supply (mostly aquatic invertebrates and vegetation in shallow water)	the SWH. • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • 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). • SWHMiST Index #7 provides development effects and mitigation measures.		
Shorebird Migratory Stopover Area **<u>Rationale</u>**: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird’s Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • 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. • Sewage treatment ponds and storm water ponds do not qualify as a SWH.	Studies confirming: • 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). • Whimbrel stop briefly (<24 hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100 m radius area. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MiST Index #8 provides development effects and mitigation	No potential No marshes or swamps are present. Stormwater features onsite do not qualify. The narrow strip of riparian vegetation doesn not provide suitable conditions.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
	Dunlin			measures.		
Raptor Wintering Area **Rationale**: 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 **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; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. Bald Eagle: Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering sites (hawk/owl) need to be > 20 ha, with a combination of forest and upland Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water, large trees and snags available for roosting	Studies confirm the use of these habitats by: • 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. • 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. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects.” • SWHMiST Index #10 and #11 provides development effects and mitigation measures.	Moderate to high potential A complex of forest and upland ecosites was identified within the Study Area and Vicinity that meets the minimum size criteria for this SWH.	Moderate to high potential A complex of forest and upland ecosites was identified within the Study Area and Vicinity that meets the minimum size criteria for this SWH.
Bat Hibernacula **Rationale**: Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known.	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200 m radius around the entrance of the hibernaculum for most development types and 1000 m for wind farms. • 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”. • SWHMiST Index #1 provides development effects and mitigation measures.	No potential	No potential

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Bat Maternity Colonies **<u>Rationale:</u>** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25 cm dbh) wildlife trees. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • 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.	• Maternity Colonies with confirmed use by; – >10 Big Brown Bats – >5 Adult Female Silver- haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #12 provides development effects and mitigation measures.	Moderate to high potential Forest ecosites were identified along the natural corridor south and west of proposed developments. Mature deciduous trees were identified as having qualities that indicate suitable bat maternity habitat.	Moderate to high potential Forest ecosites extend south and west from the Study Area radius. It is assumed from air-photo interpretation that these forests are similar in age and composition to those identified through ELC.
Turtle Wintering Areas **<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 **<u>Special Concern:</u>** Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO 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. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map • Turtle or Snapping Turtle over-wintering within a wetland is significant. • 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. • Over wintering areas may be identified by searching for congregations (Basking Areas) of	No potential Wetland ecosites were not identified within the Study Area.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
				turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May). • Congregation of turtles is more common where wintering areas are limited and therefore significant. • SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.		
Reptile Hibernaculum **Rationale**: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**Snakes**: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern**: Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator.	• 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. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. • 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 groundcover.	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (e.g., foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) • Note: If there are Special Concern Species present, then site is SWH. • Note: 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. • SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula.	Moderate to high potential No soil samples reached the water table, which indicates that animal burrows in the area would not be inundated. Disused or abandoned burrows below the frost line would make suitable hibernacula. One Eastern Garter Snake was observed during field studies.	Moderate to high potential
Colonially - Nesting	Cliff Swallow	Eroding banks,	• Any site or areas with	Studies confirming:	No potential	Low potential

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Bird Breeding Habitat (Bank and Cliff) **Rationale**: 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.	Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation.	• Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough- winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests. • 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". • SWHMiST Index #4 provides development effects and mitigation measures.	Natural features providing exposed bank habitat are not present in the Study Area.	There is no indication from aerial imagery that naturally-occurring exposed banks exist in natural areas within the Study Area Vicinity.
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale:** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night - Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree.	Studies confirming: • Presence of 5 or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300 m radius or extent of the Forest Ecosite containing the colony or any island <15.0 ha with a colony is the SWH. • 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. • SWHMiST Index #5 provides development effects and mitigation measures.	No potential These ecosites are not present.	Low potential Based on aerial photo interpretation and ELC site reconnaissance, it does not appear that these ecosites are present in the Study Area Vicinity.
Colonially - Nesting Bird Breeding Habitat (Ground) **Rationale:** Colonies	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map).	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas.	Studies confirming: • 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.	No potential Study Area is not on a rocky island or peninsula within a lake or large river.	No potential Study Area Vicinity is not on a rocky island or peninsula within a lake or large river.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
are important to local bird population, typically sites are only known colony in area and are used annually.	Caspian Tern Brewer's Blackbird	Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM, CUT CUS	• Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands.	• Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150 m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0 ha 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". • SWHMiST Index #6 provides development effects and mitigation measures.		
Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: <u>Field</u>: CUM CUT CUS <u>Forest</u>: FOC FOD FOM CUP 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. • 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. • 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. • Staging areas usually provide protection from the elements	Studies confirm: • 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. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.	Moderate potential The site has an appropriate mix of cultural field, cultural thicket, and forest ecosites, and adult Monarch were observed feeding on Milkweed flowers. The habitat areas, however, did feature prominent indications of human disturbance and degradation.	Moderate to high potential It is possible that the natural ecosites to the south and west of the Study Area have been less disturbed by human use than areas closer to the pedestrian walking trails.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
			and are often spits of land or areas with the shortest distance to cross the Great Lakes.	• SWHMiST Index #16 provides development effects and mitigation measures.		
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: 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 >5 ha in size and within 5 km of Lake Ontario. • If multiple woodlands are located along the shoreline, woodland fragments 2-5 ha can be considered for this habitat. • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant • 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.	Studies confirm: • 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. • Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #9 provides development effects and mitigation measures.	Moderate potential One FOD forest ecosite was located in the Study Area that meets the minimum size criteria for this SWH.	Moderate potential The forest ecosite identified as potential for this SWH extends into the Study Area Vicinity.
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots > 100 ha in size or if large woodlots are rare in a planning area, woodlots > 50 ha. • Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • Large woodlots > 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha.	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • 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 MNRF. • Studies should be completed during winter (Jan/Feb) when >20 cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer	No potential No deer wintering areas identified by the MNRF.	No potential No deer wintering areas identified by the MNRF.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
				density survey. • SWHMiST Index #2 provides development effects and mitigation measures.		
Rare Vegetation Communities						
Cliffs and Talus Slopes **<u>Rationale:</u>** Cliffs and Talus Slopes are extremely rare habitats in Ontario.		Any ELC Ecosite within Community Series: TAO, CLO, TAS, CLS, TAT, CLT	A Cliff is vertical to near vertical bedrock >3 m in height. 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 • Confirm any ELC Vegetation Type for Cliffs or Talus Slopes. • SWHMiST Index #21 provides development effects and mitigation measures.	No potential Ecosite not present.	No potential Ecosite not present.
Sand Barren **<u>Rationale:</u>** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry		ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <u>≤</u> 60%.	A sand barren area >0.5 ha in size· 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%	• Confirm any ELC Vegetation Type for Sand Barrens • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #20 provides development effects and mitigation measures.	No potential Ecosite not present.	No potential Ecosite not present.
Alvar **<u>Rationale:</u>** Alvars are extremely rare habitats in Ecoregion 7E.		ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2	An Alvar site > 0.5 ha in size. Alvar is particularly rare in Ecoregion 7E where the An alvar is typically a level, 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,	• Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses.	No potential Ecosite not present.	No potential Ecosite not present.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
		Five Alvar Indicator Species: *Carex crawei* *Panicum philadelphicum* *Eleocharis compressa* *Scutellaria parvula* *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E.	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 animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	• SWHMiST Index #17 provides development effects and mitigation measures.		
Old Growth Forest **<u>Rationale:</u>** Due to historic logging Practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E		Forest Community Series: FOD FOC FOM SWD SWC SWM	Woodland area is >0.5 ha. Old Growth forests are characterized by heavy mortality or turnover of over- storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Field Studies will determine: • If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present). • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest forest area containing the old growth characteristics. • SWHMiST Index #23 provides development effects and mitigation measures.	Moderate potential Old growth forest is rare in Ecoregion 7E. Because the area threshold for this SWH is so small (>0.5 ha), any mature forest stand in this Ecoregion has the potential to be considered SWH.	Moderate potential Old growth forest is rare in Ecoregion 7E. Because the area threshold for this SWH is so small (>0.5 ha), any mature forest stand in this Ecoregion has the potential to be considered SWH.
Savannah **<u>Rationale:</u>** Savannahs are extremely		TPS1 TPS2 TPW1 TPW2 CUS2	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 7E should be used.	No potential Ecosite not present.	No potential Ecosite not present.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
rare habitats in Ontario.			A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In Ecoregion 7E, known tallgrass prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie Shoreline, in Brantfor and in the Toronto area (North of Lake Ontario.	• Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #18 provides development effects and mitigation measures.		
Tallgrass Prairie **<u>Rationale:</u>** Tallgrass Prairies are extremely rare habitats in Ontario.		TPO1 TPO2	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In Ecoregion 7E, known tallgrass prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie Shoreline, in Brantfor and in the Toronto area (North of Lake Ontario.	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiST Index #19 provides development effects and mitigation measures.	No potential Ecosite not present.	No potential Ecosite not present.
Other Rare Vegetation Communities **<u>Rationale:</u>** Plant communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M The OMNRF/NHIC will have up to	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG.	No potential	No potential MNRF did not identify any additional rare vegetation communities.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
that often contain rare species which depend on the habitat for survival.		that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	date listing for rare vegetation communities. Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	• Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST Index #37 provides development effects and mitigation measures.		
Specialized Habitat for Wildlife						
Waterfowl Nesting Area **<u>Rationale:</u>** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (> 0.5 ha) and any small wetlands (0.5 ha) within 120 m 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. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nest sites.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • 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. • SWHMiST Index #25 provides development effects and mitigation measures.	No potential Wetland ecosites were not identified within the Study Area.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.
Bald Eagle and Osprey Nesting,	Osprey	ELC Forest Community Series:	Nest are associated with lakes, ponds, river or wetlands along	Studies confirm the use of these nests by:	No potential	Low potential

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Foraging and Perching Habitat **<u>Rationale:</u>** Nest sites are fairly uncommon in Eco-region 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	**Special Concern** Bald Eagle	FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	forested shorelines, islands, or on structures over water. • 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. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).	• One or more active Osprey or Bald Eagle nests in an area. • 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. • 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. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. cvi, ccvii Area of the habitat from 400-800 m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat. • 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. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #26 provides development effects and mitigation measures.	The small watercourses identified in the Study Area were found to contain no fish, and displayed limited to no capacity for supporting fish populations.	There is some potential for this SWH downstream of the Study Area. The adjoining reaches of Sheridan Creek, however, were determined to not contain fish at the time of the Subwatershed Study completion.
Woodland Raptor Nesting Habitat	Northern Goshawk Cooper's Hawk	May be found in all forested ELC Ecosites.	All natural or conifer plantation woodland/forest stands >30ha	Studies confirm: • Presence of 1 or more active nests	No potential	No potential

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May also be found in SWC, SWM, SWD and CUP3	with >4 ha of interior habitat. Interior habitat determined with a 200 m buffer • 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.	from species list is considered significant cxlviii. • Red-shouldered Hawk and Northern Goshawk – A 400 m 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 • Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50 m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST Index #27 provides development effects and mitigation measures.	No forests exist within the Study Area that meet the size criteria for this SWH.	No forests exist within the Study Area Vicinity that meet the size criteria for this SWH.
Turtle Nesting Areas **Rationale:** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle Special Concern Species: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 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. • 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	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles. • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • 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 dependant on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to	No potential Wetland ecosites were not identified within the Study Area.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
			provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	nesting area are to be considered within the SWH as part of the 30-100m area of habitat. • 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. • SWH MiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.		
Seeps and Springs **<u>Rationale:</u>** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer 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. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • 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 slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • SWHMiST Index #30 provides development effects and mitigation measures	No potential Though headwater drainage features (seeps) were identified within the Study Area, these were in open CUM1 and CUT 1 areas.	Low potential No headwater features were identified in forested ecosites, but it is possible that forested areas not assessed in the Study Area Vicinity do contain headwater drainage features that may indicate seeps.
Amphibian Breeding Habitat (Woodland). **<u>Rationale:</u>** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest	• Presence of a wetland, pond or woodland pool (including vernal pools) >500 m^2 (about 25 m diameter) ccvii within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing	Studies confirm: • 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) lxxi or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys cviii will be required during the spring	High potential FOD ecosites observed in Study Area. Imperfectly drained mineral substrate likely results in spring flooding/vernal pooling.	High potential FOD ecosites extend southwest from the Study Area.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
populations		distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	water in most years until mid-July are more likely to be used as breeding habitat.	(March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230 m radius of woodland area. 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. • SWHMiST Index #14 provides development effects and mitigation measures.		
Amphibian Breeding Habitat (Wetlands) **<u>Rationale:</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	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	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500 m^2 (about 25 m 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. • 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. • Bullfrogs require permanent water bodies with abundant emergent vegetation.	Studies confirm: • 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 Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys cviii will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • 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	No potential Wetland ecosites were not identified within the Study Area.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
				Schedule. • SWHMiST Index #15 provides development effects and mitigation measures.		
Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale</u>:** 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 Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker **Special Concern:** Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD 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.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #34 provides development effects and mitigation measures.	No potential No forests exist within the Study Area that meet the size criteria for this SWH.	No potential No forests exist within the Study Area Vicinity that meet the size criteria for this SWH.
Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)						
Marsh Breeding Bird Habitat **<u>Rationale:</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • 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.	Studies confirm: • 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. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird	No potential Wetland ecosites were not identified within the Study Area.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
				and Bird Habitats: Guidelines for Wind Power Projects". • SWHMiST Index #35 provides development effects and mitigation measures.		

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Open Country Bird Breeding Habitat **<u>Rationale:</u>** 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 Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha. • 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). • 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. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	Field Studies confirm: • 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. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST cxlix Index #32 provides development effects and mitigation measures.	No potential No open country ecosites exist within the Study Area that meet the size criteria for this SWH.	No potential No open country ecosites exist within the Study Area Vicinity that meet the size criteria for this SWH.
Shrub/Early Successional Bird Breeding Habitat **<u>Rationale:</u>**	**Indicator Spp:** Brown Thrasher Clay-coloured Sparrow	CUT1 CUT2 CUS1 CUS2 CUW1	• Large field areas succeeding to shrub and thicket habitats >10ha in size. • Shrub land or early	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species.	Low to moderate potential CUT areas and high-shrub (20% to less than 25% cover) CUM areas complex within the	Low to moderate potential CUT areas and high-shrub (20% to less than 25% cover) CUM areas complex within the

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
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.	**Common Spp.** Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	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 5 years). • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	• 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. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • SWHMiST cxlix Index #33 provides development effects and mitigation measures.	Study Area and Vicinity to meet the size criteria for this SWH. Breeding evidence for Brown Thrasher was observed during surveys.	Study Area and Vicinity to meet the size criteria for this SWH.
Terrestrial Crayfish **<u>Rationale:</u>** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. ccii	Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish (*Cambarus Diogenes*) -	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM 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. • Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water. • 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.	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • 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. • SWHMiST Index #36 provides development effects and mitigation measures.	No potential Wetland ecosites were not identified within the Study Area.	Low potential Surrounding areas are mostly residential subdivisions or commercial complexes. It is possible that wetland conditions suitable for this SWH exist to the south and west of the Study Area, though air photo interpretation did not indicate any wetland areas in that direction.
Special Concern and	All Special Concern and Provincially Rare (S1-S3, SH)	All plant and animal element occurrences	When an element occurrence is identified within a 1 or 10 km	Studies Confirm: • Assessment/inventory of the site for	Confirmed	High potential

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
Rare Wildlife Species **<u>Rationale:</u>** These species are quite rare or have experienced significant population declines in Ontario.	plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	(EO) within a 1 or 10 km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites.	the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • 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. • SWHMiST cxlix Index #37 provides development effects and mitigation measures.	Monarch (SC) was observed during field investigations utilizing Common Milkweed within the open country areas. Eastern Wood-pewee (SC) was also identified with breeding evidence during breeding bird surveys.	Suitable habitat for Monarch and Eastern Wood-pewee as identified in the Study Area extend south and west into the Study Area Vicinity and beyond.
Animal Movement Corridors						
Amphibian Movement Corridors **<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. 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 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.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant • Corridors should have at least 15m of vegetation on both sides of waterwaycxlix or be up to 200m widecxlix of woodland habitat and with gaps <20m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat	Low potential The intermittent nature of identified watercourses, as well as the lack of interconnectivity between the Study Area and surrounding natural environments indicates limited potential as an Animal Movement Corridor.	Low potential The intermittent nature of identified watercourses, as well as the lack of interconnectivity between the Study Area Vicinity and surrounding natural environments indicates limited potential as an Animal Movement Corridor.

Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Potential Presence in the On-site Study Area	Potential Presence in the Study Area Vicinity (500 m radius from On-site Study Area)
		ELC Ecosite Codes	Habitat Criteria	Defining Criteria		
				• SWHMiST Index #40 provides development effects and mitigation measures		