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Snell's Hollow East Secondary Plan Baseline Conditions Report - 2019

Snell's Hollow East Landowners Group
c/o Glenn Schnarr & Associates Inc.
700-10 Kingsbridge Garden Circle
Mississauga ON L5R 3K6

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January 2020 (revised March 2020; August 2020)
300043952.0000

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Record of Revisions

Revision	Date	Description
0	January 28, 2020	Initial Submission to Snell's Hollow East Landowners Group c/o GSAI
1	March 31, 2020	Revised Submission to Snell's Hollow East Landowners Group c/o GSAI
2	August 19, 2020	Final Submission addressing TRCA Comments

R.J. Burnside & Associates Limited

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Hannah Maciver
Project Coordinator/Ecologist

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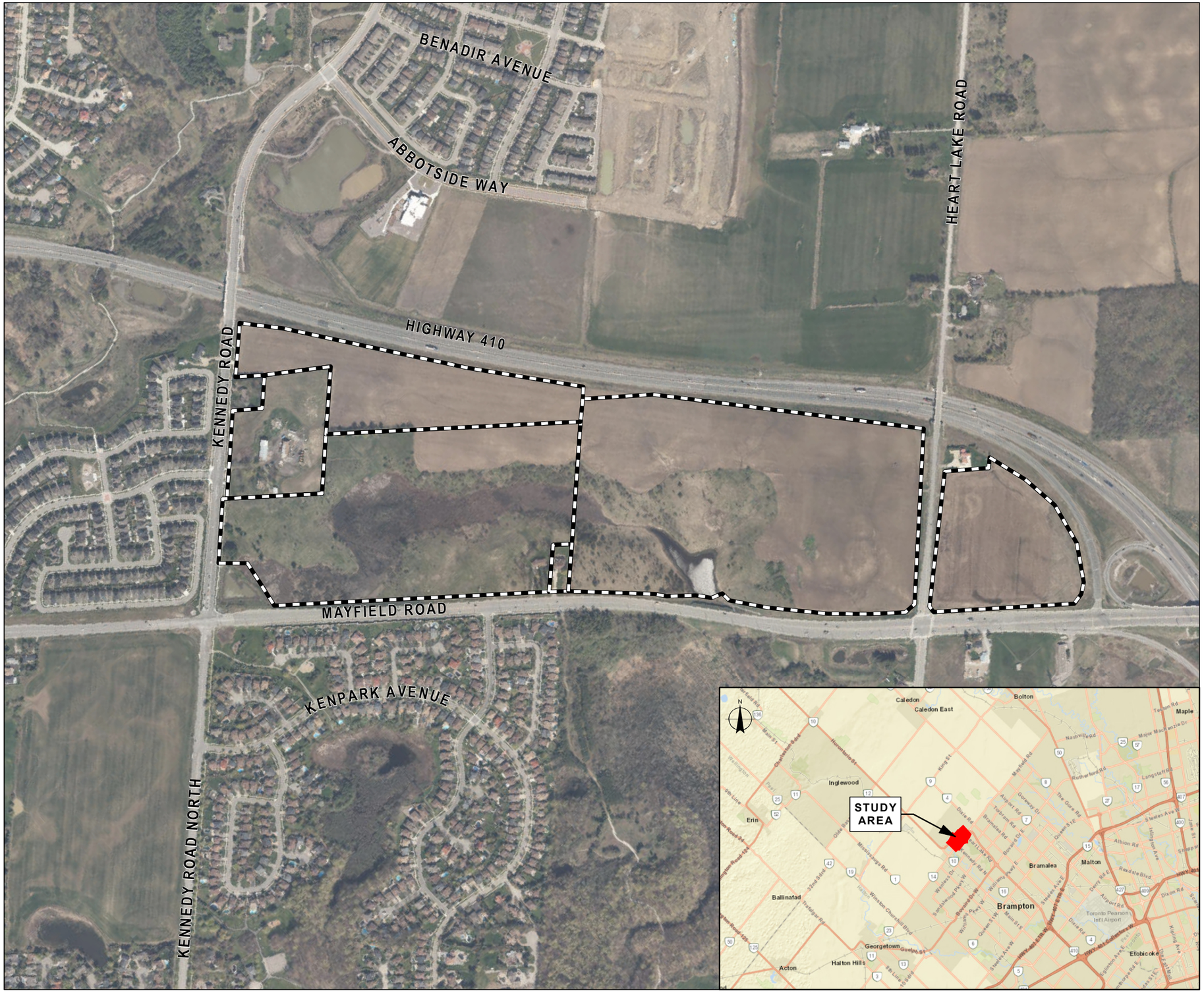
1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the Snell's Hollow East Landowners Group to undertake an Environmental Field Study and Baseline Monitoring Program for a development located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the "subject property"). The subject property is in the Town of Caledon (Town) and within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town of Caledon, in the proposed Snell's Hollow East Secondary Plan area. The site is bounded by Highway 410 to the north, Heart Lake Road to the east, Mayfield Road to the south and Kennedy Road to the west (Figure 1). The subject property contains a portion of the Heart Lake Provincially Significant Wetland (PSW) Complex and an Unnamed Tributary of Spring Creek, which drains beneath Mayfield Road towards Heart Lake Conservation Area to the south. The subject property is within the Spring Creek subwatershed of the Etobicoke Creek watershed.

It is our understanding that the establishment of meaningful baseline conditions will contribute to the Secondary Plan study that began in early 2019. The Annual Wetland Monitoring Report – Year 1 (2019) and the Technical Memorandum – 2019 Headwater Drainage Feature Assessment are provided under separate covers.



Study Area

Sources:

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Grid North

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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

STUDY AREA

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2.0 Baseline Conditions Framework

This document was prepared in accordance with the approved Terms of Reference (TOR) dated April 8, 2019 (Appendix A), Section 2.1 (Natural Heritage) of the Provincial Policy Statement (PPS; MMAH, 2020), the Natural Heritage Reference Manual (NHRM) for Natural Heritage Policies of the PPS, 2005 (MNR, 2010), the Significant Wildlife Habitat Technical Guide (SWHTG; MNR, 2000) and Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al., 2009). As such, this Baseline Conditions report includes:

- A review of applicable environmental and land use policies and regulations that may affect future development on the subject property;
- A review of existing secondary source data to identify any known natural features and constraints;
- Pre-submission consultation with various agencies to identify additional features and to confirm field study methodologies;
- Characterization of vegetation communities and summary of plant species recorded that are of regional conservation concern (L1-L3) based on site level field surveys completed in 2019;
- A summary of provincially significant natural areas and candidate and confirmed Significant Wildlife Habitat (SWH);
- A summary of the candidate and confirmed habitat of Endangered and Threatened species;
- A summary of incidental wildlife observations on the subject property; and
- Recommendations for future work.

Each of the report sections corresponds with the above objectives.

3.0 Background Records Review and Agency Consultation

A comprehensive desktop assessment was completed to compile and review existing natural heritage information available for the subject property. All areas within 120 m of the subject property were reviewed as part of the high-level assessment in order to identify significant natural heritage features located within, or directly adjacent to the subject property, that may be impacted by future development.

Burnside has reviewed the following resources:

- The Provincial Policy Statement (PPS) (MMAH, 2020)
- Town of Caledon Official Plan (OP) (April 2018 Consolidation)
- Region of Peel OP (December 2018 Consolidation)
- Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al., 2009)
- The Living City Policies (TRCA, 2014)
- Greening our Watersheds: Revitalization Strategies for Etobicoke and Mimico Creeks, Including the Etobicoke-Mimico Report Card (TRCA, 2002)
- Etobicoke and Mimico Creeks Watershed Technical Update Report (TRCA, 2010)
- Etobicoke Creek Watershed Report Card (TRCA, 2018)
- Recent Digital Aerial Photography (Google Earth Pro)
- Natural Heritage Information Centre (NHIC) database to identify records of rare wildlife species on, and in the vicinity of, the subject property (January 2019)
- The Ontario Breeding Bird Atlas (OBBA) for records of birds breeding in the area (January 2019)
- Ontario Reptile and Amphibian Atlas (ORAA) for records of reptiles and amphibians in the area (January 2019)
- Department of Fisheries and Oceans Canada (DFO) Aquatic SAR Mapping (April 2019)
- Ministry of Natural Resources and Forestry (MNRF) Provincially Significant Heart Lake Wetland Complex evaluation (November 2000)
- MNRF SAR list for Town of Caledon (provided January 2019)
- *A turtle population study in an isolated urban wetland complex in Ontario reveals a few surprises* (Dupuis-Désormeaux et al., 2019)

The subject property is located within the jurisdiction of TRCA and the MNRF Aurora District Office. Species protected under the ESA is administered by the MECP, Species at Risk Branch.

The MNRF was contacted on January 17, 2019 to retrieve information on SAR, fish dot information, PSW and ANSI reports for the subject property. The SAR information was received on January 22, 2019. The PSW and ANSI reports were later received on February 5, 2019 (see Appendix D).

4.0 Planning and Environmental Policy Considerations

The following policies, Acts and regulations apply to features present on the subject property that will need to be considered as part of the future Comprehensive Environmental Impact Study and Management Plan (CEISMP) report.

4.1 Species at Risk Act, 2002

The *Species at Risk Act, 2002* (SARA), provides protection for Species at Risk (SAR) and their habitat. Schedule 1 of SARA is considered the official list of wildlife species at risk that receive legal protection under the Act, and includes species that have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COESWIC) as Extirpated, Endangered, Threatened, or Special Concern (Government of Canada, 2017).

To ensure the protection of SAR, Section 32(1) and (2) of the SARA states;

> *(1) No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species, or a threatened species*
>
> *(2) No person shall possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual*

And Section 33 of the SARA states;

> *No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered or threatened species, or that is listed as an extirpated species if a recovery strategy has recommended reintroduction of the species into the wild in Canada*

SARA prohibitions pertaining to private lands include:

- Aquatic species listed on Schedule 1 as Endangered, Threatened or Extirpated;
- Migratory birds listed in the MBCA and also listed on Schedule 1 as Endangered, Threatened or Extirpated; and
- May apply through an order, to other species listed on Schedule 1 (i.e., not an aquatic or migratory bird species) as Endangered, Threatened or Extirpated, if provincial/territorial legislation or voluntary measures do not adequately protect the species and its habitat.

Although Environment and Climate Change Canada (ECCC) is the overall administrator of SARA, responsibility for implementation of the Act is shared by ECCC and the

Canadian Wildlife Service, Parks Canada, and DFO. On private lands, ECCC oversees matters related to migratory birds, while DFO oversees matters related to aquatic species. In most cases pertaining to non-aquatic species on private lands, provincial laws (e.g., the *Endangered Species Act, 2007*) provide protection for critical habitat (i.e., habitat that is necessary for the survival or recovery of a listed endangered, threatened or extirpated species). Alternatively, SARA prohibitions can be applied by an order, as described above, or through federal legislation (including SARA).

4.2 Federal Fisheries Act, 1985

4.2.1 Background and the Fisheries Act

Construction activities that have the potential to impact fish or fish habitat must be constructed and operated in compliance with the federal *Fisheries Act*. If the "death of a fish by means other than fishing", or the "harmful alteration, disruption or destruction of fish habitat" will likely result from a project, the proponent responsible for the activities is required to obtain an *Authorization* from the Minister of Fisheries and Oceans Canada (DFO) as per Paragraph 34.4(2) and 35(2)(b) of the *Fisheries Act.*

4.2.2 New Fish and Fish Habitat Provisions Under Bill C-68

On February 6, 2018, the Government of Canada introduced Bill C-68, which reflected a commitment to review the changes made in 2012 to the *Fisheries Act*, in order to restore lost protections and incorporate modern safeguards. Among other updates, proposed changes to the *Fisheries Act* included:

- Protecting all fish and fish habitats (i.e., not restricted to Commercial, Recreational and Aboriginal fisheries);
- Restoring the previous prohibitions against "harmful alteration, disruption, or destruction of fish habitat" (HADD); and
- Restoring a prohibition against cause "the death of fish by means of than fishing".

On August 28, 2019, Bill C-68 including the provisions listed above, came into force. The updated provisions supersede previous conditions of the *Fisheries Act* to provide modern safeguards to fish and fish habitat throughout Canada.

4.2.3 Proponent-led Self Assessment Process

DFO has introduced measures to facilitate its review process by allowing proponents to self-assess, if projects near water require DFO review. They have provided a list of waterbody types and activities that do not require review prior to undertaking the activity, and codes of practices to mitigate contraventions of the Act. Proponents are responsible to ensure that activities meet the criteria outlined on Fish and Fish Habitat Protection Program website (http://www.dfo-mpo.gc.ca/index-eng.htm) and that best management practices (i.e., Codes of Practice) are implemented in project design to avoid

contravention of the Act. To ensure compliance with *Fisheries Act*, a self-assessment should be completed by a qualified aquatic professional. The self-assessment process is a tool that is used to analyze the proposed works and determine the potential impacts, or Pathway of Effects (PoE), to the existing aquatic environment. If the PoE and residual impacts of the proposed works can be disrupted through avoidance and mitigation measures, then the project does not require a review by the DFO. If residual effects are anticipated during the self-assessment (potentially causing the death of a fish, or a HADD), even following the application of feasible avoidance and mitigation strategies, then DFO review is recommended.

Once reviewed, if it is determined that the project will not cause a HADD, the project may be allowed to proceed as planned, or with the condition of additional mitigation measures. If, however, it is determined that a HADD could result, proponents must apply for a *Fisheries Act* Authorization (Paragraph 35[2][b] *Fisheries Act*) from the Minister of Fisheries and Oceans. The Authorization process requires proponents to demonstrate that measures and standards have been applied to first avoid, then mitigate, and finally, offset any residual serious harm to fish that are part of or support a CRA Fishery.

4.3 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. 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.

[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.

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.

On June 1, 2019, proposed changes to the MBCA Regulations were published in Part I of the Canada Gazette. The amended MBRs propose the inclusion of an exception to the prohibition against damaging, destroying, disturbing or removing a nest, if certain conditions are met (i.e., the nest does not contain a live bird or viable egg, and it was built by a species whose nests are protected year-round, such as herons and egrets) (Government of Canada, 2019).

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.

4.4 Planning Act, 1990 / Provincial Policy Statement, 2020

The PPS (MMAH, 2020) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. 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;
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. Marys River);
5. Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys 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 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.

4.5 Provincial Endangered Species Act, 2007

The *Endangered Species Act, 2007* (ESA) provides protection for SAR and their habitat. The ESA is now administered by the Ministry of the Environment, Conservation and Parks (MECP) 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.

The ESA helps protect species (Section 9) and their habitat (Section 10). Section 9(1)(a) of the ESA states;

> *no person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species*

Section 10(1)(a) of the ESA states;

> *no person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario 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.

As of April 1, 2019, the MECP assumed responsibility of the ESA, including SAR in Ontario. It is no longer the responsibility of the MNRF. At the same time, the Government of Ontario proposed changes to the ESA that are part of the Government's proposed Bill 108, *More Homes, More Choice Act, 2019*. The Bill received royal assent

on June 6, 2019. Once the regulations have been published, it is expected that there will be changes made related to:

1. Assessing SAR and listing them on the SARO List;
2. Defining and implementing species and habitat protections;
3. Developing new SAR recovery policies;
4. Issuing ESA permits and agreements, and developing regulatory exemptions; and,
5. Enforcing the ESA.

The SARO List is updated from time to time, therefore, it is the proponent's responsibility to practice due diligence in order to ensure that the ESA and its regulations are not violated. It is the proponent's responsibility to be apprised of any amendments to the Act that may come into force for the duration of this project.

4.6 Toronto and Region Conservation Authority

4.6.1 Ontario Regulation 166/06

The PPS (2020) described in Section 4.4 of this report also outlines policies for managing development within, or adjacent to, natural hazard -prone lands. These policies are generally enacted through the Development, Interference with Wetlands and Alternations to Shorelines and Watercourses regulations, administered by Conservation Authorities. A large portion of the subject property is located within TRCA Regulation limits. TRCA administers O. Reg. 166/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under Section 28 of the *Conservation Authorities Act, 1990*. Through this regulation, TRCA has the ability to:

- Prohibit development in all areas within the jurisdiction of the Authority that are delineated as the "Regulation Limit" including:
  - Adjacent to or close to the shoreline of the Great Lakes – St. Lawrence River System or to inland lakes that may be affected by flooding, erosion, or dynamic beaches;
  - In river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse;
  - In hazardous lands;
  - In wetlands; or
  - In other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 m of all provincially significant wetlands and wetlands greater than 2 ha in size, and areas within 30 m of wetlands less than 2 ha in size.
- Require permission to develop in the aforementioned areas if, in the opinion of the authority, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development.

4.6.2 Toronto and Region Conservation Authority Living City Policies

One of TRCA's functions, in partnership with municipal, provincial, and federal governments, is to promote and help implement sustainable community development by advising stakeholders and regulating activities in the planning and development process. The Living City Policies for Planning and Development in the Watersheds of TRCA (LCP) contains the policies for the administration of TRCA's legislated and delegated roles and responsibilities in the planning and development approvals process.

The LCP is issued under the authority of Section 20 of the *Conservation Authorities Act* and was endorsed by TRCA's Board on November 28, 2014. The LCP document applies to all new applications, matters, or proceedings submitted to TRCA on or after November 28, 2014 and to all active applications, matters or proceedings before TRCA as of November 28, 2014.

The LCP serves the following functions:

- Updates the previous Valley and Stream Corridor Management Program with new and updated requirements in federal, provincial, and municipal legislation, policies, and agreements affecting TRCA;
- Indicates to all stakeholders TRCA's principles and policies for planning and development;
- Reflects the latest science known to TRCA;
- Complements TRCA's mandated regulatory and plan review roles in the planning and development process;
- Implements policies for TRCA's updated section 28 Regulation (O. Reg. 166/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses);
- Clarifies and implements TRCA responsibilities for Lake Ontario shoreline/waterfront management; and
- Adds policy emphasis to the restoration, remediation, and enhancement of existing water and natural heritage systems in response to provincial planning directions geared to urban redevelopment and intensification.

4.6.3 Other Toronto and Region Conservation Authority Reports

Several TRCA reports are available that provide guidance and direction on protection of the Etobicoke Creek watershed and its resources. These include: Greening our Watersheds: Revitalization Strategies for Etobicoke and Mimico Creeks, including the Etobicoke-Mimico Report Card (2002); Etobicoke and Mimico Creeks Watershed Technical Update Report (2010); and the Etobicoke Creek Watershed Report Card (2018).

The Technical Update Report identified the perched culvert (currently a barrier to fish habitat) located at Mayfield Road as a Etobicoke Creek Watershed Priority Barrier ("Category B") that should be mitigated along with two other barriers to fish habitat in Etobicoke Creek, thereby reconnecting wetland habitat currently fragmented at Mayfield Road and Highway 410. This report also identified terrestrial natural heritage restoration priority management areas within the Spring Creek subwatershed. The wetland located on the subject property is considered a "Level 4" management priority (on a scale of 1-4, with 1 being the highest priority) based on key areas in the watershed that require restoration, enhancement and management.

4.7 Municipal Official Plans

4.7.1 Region of Peel Official Plan

The most recent Region of Peel Official Plan (ROP) (December 2018 consolidation) was consulted to determine Regional land use designations and locations of natural heritage features. The subject property falls within the Mayfield West Secondary Plan Area. According to Schedule 'D' – Regional Structure, the subject property is designated as Rural Service Centre, which means this area is designated for urban growth. According to Schedule 'D3' – Greenbelt Plan Area Land Use Designations, a River Valley Connection Outside the Greenbelt is located approximately 856 m west of the subject property. The PSW that traverses through the centre of the subject property is designated as Core Areas of the Greenlands System, in Schedule A. Development and site alteration are prohibited within Core Areas of the Greenlands System. According to Schedule D4 – The Growth Plan Policy Areas in Peel, the subject property is a Designated Greenfield Area which means the subject property is designated to become a "completed community" – to support sustainable transportation and provide public open space that supports these activities. According to Figure 2 – Selected Areas of Provincial Interest, the subject property is a Rural Settlement.

4.7.2 Town of Caledon Official Plan

The current Town of Caledon Official Plan (April 2018 consolidation) includes a series of decisions related to Ontario Municipal Board (OMB) appeals, amendments to ensure conformity with provincial policies and legislation and the ROP policies.

According to Schedule 'B' – Mayfield West Land Use Plan, the subject property is designated as Residential Policy Area and the centre of the subject property (coincident with the PSW) is designated as Environmental Policy Area. According to Section 5.7.3.1.1 of the Town of Caledon Official Plan, new development within Environmental Policy Areas is prohibited. Schedule 'S' – The Greenbelt in Caledon shows the subject property as a settlement area with a watercourse traversing through the PSW. The closest Greenbelt Plan Natural Heritage System is approximately 1.6 km northwest of the subject property.

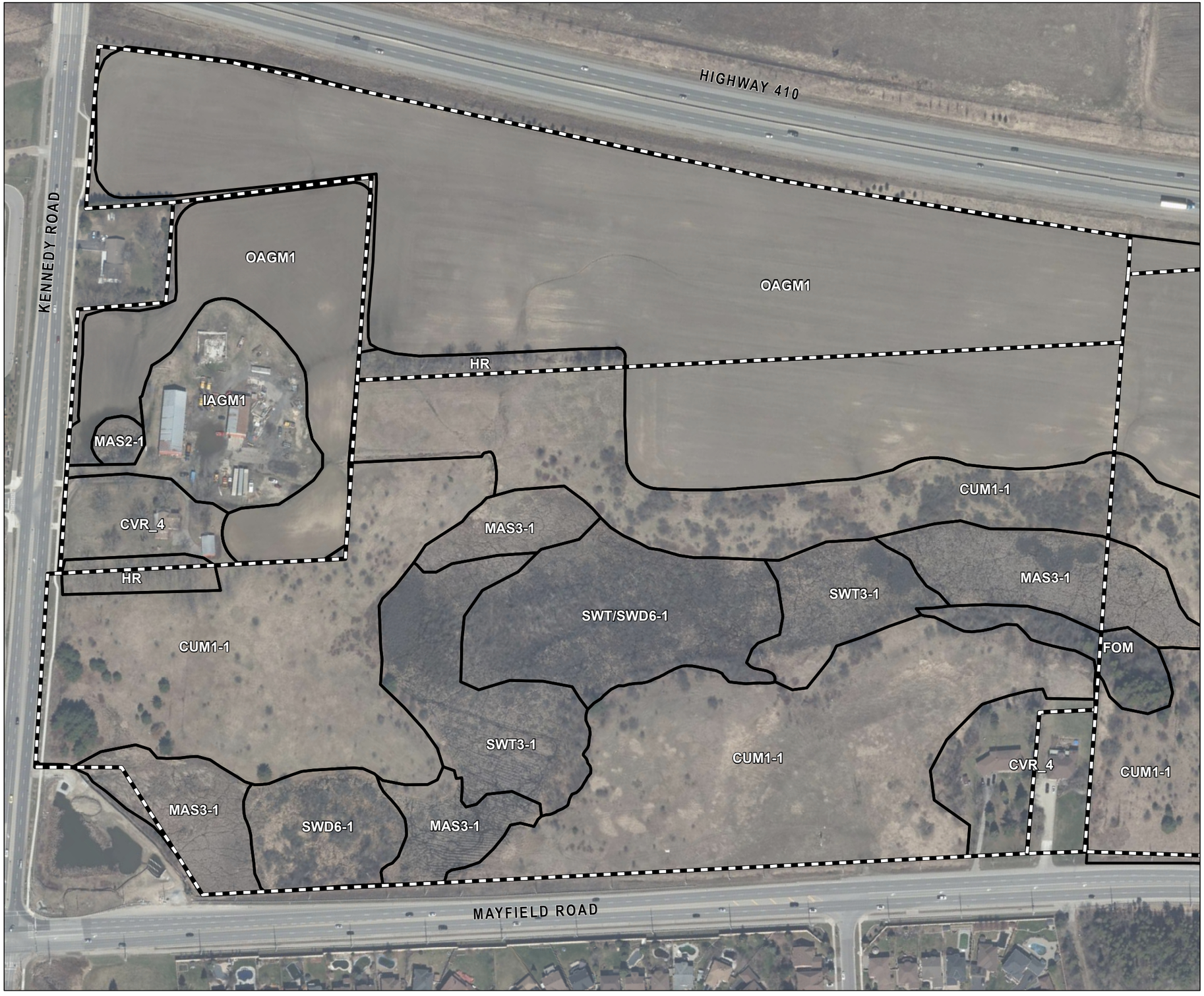
5.0 Baseline Conditions

5.1 Ecological Land Classification and Botanical Inventories

5.1.1 Field Methodology

A three-season vegetation inventory and Ecological Land Classification (ELC) survey was undertaken on May 15, 2019, July 11, 2019 and September 10, 2019. Vegetation communities were assessed and described using the Ecological Land Classification System for Southern Ontario: First Approximation and its Application (Lee et al., 1998), with reference to Second Approximation 2008 codes (Lee, 2008) for communities which could not be accurately described by the First Approximation 1998 codes (see Figure 2). All plant species observed on the subject property, and immediately adjacent lands, are listed in Appendix B. Species nomenclature is described according to the NHIC (2018). Species rarity analysis was based on:

- Species' status as listed on the Ontario Species at Risk list, under the ESA;
- Species status, as determined by COSEWIC and listed under the Species at Risk Act, 2002;
- Species S-rank, as provided by the NHIC species lists (updated June 28, 2018); and
- Rarity for Durham Region, the Greater Toronto Area, and Site District 6E-7, as listed in the "The Distribution and Status of the Vascular Plants of the Greater Toronto Area" Varga et al. (OMNR), 2000.



ELC Boundary

Study Area

ELC Descriptions

CUM1-1: Dry-Moist Old Field Meadow
CVR_4: Rural Property
FOM: Mixed Forest
HR: Hedgerow
IAGM1: Agricultural Buildings
MAM2: Mineral Meadow Marsh Ecosite
MAS2-1: Cattail Mineral Shallow Marsh Type
MAS3-1: Cattail Organic Shallow Marsh Type
OAGM1: Annual Row Crop
SAS1-1: Pondweed Submerged Shallow Aquatic
SWD6-1: Red Maple Organic Deciduous Swamp
SWT: Thicket Swamp
SWT3-1: Alder Organic Thicket Swamp

Sources:

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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

ECOLOGICAL LAND CLASSIFICATION

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5.1.2 Results

The subject property is mainly comprised of agricultural row crops, naturalized meadows, woodland inclusions and a large swamp thicket and marsh wetland associated with an Unnamed Tributary of Spring Creek that meanders through the centre of the site before diverting south and crossing Mayfield Road. The wetland is part of the provincially significant Heart Lake PSW Complex which straddles the City of Brampton and the Town of Caledon, extending about 1 km north of Mayfield Road, south to Bovaird Drive, and centered along Heart Lake Road (see Section 5.2.1).

The following summarizes the flora observed on the subject property during field studies in 2019:

- 122 plant taxa were observed. Of those, 109 were identified to species or subspecies level;
- Of those species, 72 (66.1%) were native and 37 (33.9%) were non-native to Ontario;
- Among the native species observed, 72 are considered secure – common or apparently secure – uncommon (S5 or S4) in Ontario;
- Two species observed are considered rare to the Greater Toronto Area (GTA):
  - Foxglove Beardtongue (*Penstemon digitalis*)
  - Red Pine (*Pinus resinosa*)
- Six species observed are considered species of regional conservation concern (L1 L3):
  - Speckled Alder (*Alnus incana*) (L3)
  - Common Spikerush (*Eleocharis palustris*) (L3)
  - Common Winterberry (*Ilex verticillate*) (L3)
  - Harlequin Blue Flag (*Iris versicolore*) (L3)
  - Red Pine (*Pinus resinosa*) (L1)
  - Swamp Red Currant (*Ribes triste*) (L3)

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

This community was identified along the perimeter of the subject property and borders a large majority of the wetland complex. Clusters of small trees and shrubs were observed in the northern region of the community but were also sparsely located throughout the rest of the subject property. These species include Eastern White Cedar (*Thuja occidentalis*), Scots Pine (*Pinus sylvestris*), Manitoba Maple (*Acer negundo*), and Wayfaring Viburnum (*Viburnum lantana*). The community was comprised of a mixture of native and non-native grass species [Kentucky Bluegrass (*Poa pratensis*), Common Timothy Grass (*Phleum pretense*), Smooth Brome Grass (*Bromus inermis*), and Perennial Ryegrass (*Lolium perenne*)] as well as native and non-native forb species [Bird's-foot Trefoil (*Lotus corniculatus*), Common Vetch (*Vicia sativa*), Wild Carrot

(*Daucus carota*), Common Burdock (*Arctium minus*) and common Goldenrod species (*Solidago spp*)].

Pondweed Submerged Shallow Aquatic (SAS1-1)

Located in the southwest of the subject property, this community was comprised of Curly-leaved Pondweed (*Potamogeton crispus*), Small Pondweed (*Potamogeton pusillis*), Watermeal species (*Wolffia sp.*), Small Duckweed (*Lemna minor*), Muskgrass (*Chara sp.*) and Sago Pondweed (*Stuckenia pectinata*). Standing water-depth is estimated to be no greater than 2 m at the deepest point, and open water is present at 95% to 100% of the community area.

During a wetland boundary staking exercise completed by the MNRF in February 2011, ELC surveys were completed during which this community was dominated by Floating-leaved Pondweed and co-dominated by Small Duckweed and Watermeal species. As such, it was considered a Duckweed Floating Leaved Shallow Aquatic community (SAF1-3). The recent changes to community type may be due to an increase in fixed submergent plants, particularly Curly-leaved Pondweed, a noxious invasive species. Curly-leaved Pondweed and Small Pondweed were found to be co-dominant species within this community during ELC surveys in 2019.

Cattail Organic Shallow Marsh (MAS3-1)

Several small communities of this type can be found throughout the wetland feature, specifically along the southwestern perimeter, in the center of the subject property and around the SAS1-1 community. Those along the southwestern and center of the subject property have been highly influenced by the adjacent thicket communities and contain small brush and tree species (<10%) such as Speckled Alder (*Alnus incana*), Meadow Willow (*Salix petiolaris*), and Common Winterberry (*Ilex verticillata*). Other species include Common Cattail, Purple Loosestrife (*Lythrum salicaria*), Tufted Yellow Loosestrife (*Lysimachia thyrsiflora*), Bittersweet Nightshade (*Solanum dulcamara*), Harlequin Blue Flag (*Iris versicolor*), and a Water Hemlock species (*Cicuta* sp.).

The marsh located around the SAS1-1 community is mainly comprised of Common Cattail, Fox Sedge (*Carex vulpinoidea*), Common Spikerush (*Eleocharis palustris*), Soft-stemmed Bulrush (*Schoenoplectus tabernaemontani*), Broad-leaved Arrowhead (*Sagittaria latifolia*), and a Water Hemlock species.

Reed-canary Grass Graminoid Mineral Meadow Marsh Type (MAM2-2)

This community can be found in the northwest corner of the subject property. According to aerial imagery, wet soil conditions appear to stem from two headwater drainage features that originate in the agricultural fields to the north of the subject property. This was confirmed during the third vegetation inventory and ELC survey conducted on

September 10, 2019. Where the two drainage features converge within the subject property, Reed Canarygrass (*Phalaris arundinacea*) dominates the vegetation community. Other plant species found within this community are Purple Loosestrife, Rice Cutgrass (*Leersia oryzoides*), Elecampane (*Inula helenium*), Devil's Beggarticks (*Bidens frondosa*), Spotted Jewelweed (*Impatiens capensis*), and Soft Rush (*Juncus effusus*).

Mixed Forest (FOM)

A small Mixed Forest (FOM) containing a Fresh-Moise White Cedar Coniferous Forest Type (FOC4-1) inclusion is located behind the residential lot (CVR_4) beginning at the edge of the CUM1-1 community and continuing down a gentle slope towards the wetland complex. The FOC4-1 inclusion contained primarily Eastern White Cedar and was located in the eastern edge of the community. The remaining area of the forest included mixture deciduous and coniferous trees, including Yellow Birch (*Betula alleghaniensis*), Eastern Hemlock (*Tsuga canadensis*), Red Pine (*Pinus resinosa*), and Black Cherry (*Prunus serotine*). Shrubs were comprised of European Buckthorn (*Rhamnus cathartica*) and English Hawthorn (*Crataegus monogyna*). Finally, ground layer vegetation was comprised of Large-leaved Aster (*Eurybia macrophylla*), Goldenrod (*Solidago sp.*), Virginia Creeper (*Parthenocissus quinquefolia*), Yellow Trout Lily (*Erythronium americanum*), Common Dandelion (*Taraxacum palustre*), Wild Strawberry (*Fragaria virginiana*), and Baneberry (*Actaea sp.*). The FOM inclusion contained in many cases single observations of certain tree and shrub species, such as Burr Oak (*Quercus macrocarpa*), Manitoba Maple, Honeysuckle (*Lonicera sp.*), and Chokecherry (*Prunus virginiana*).

This community was previously designated as SWT3-1 during the Ontario Wetland Evaluation System (OWES) evaluation and subsequent updates. However, during ELC surveys in 2019, moderately tall coniferous and deciduous trees were noted throughout the area resulting in a canopy cover of >60%. Shrub species were limited to approximately 5% to 10% of the community.

The unique mixture of plant species observed in this community suggests that it is likely being influenced by the adjacent residential lot.

Rural Property (CVR_4)

Two neighboring rural properties are located on the southcentral limit of the subject property, north of Mayfield Road, and another is located in the eastern parcel, on Heart Lake Road. All three properties include one residential home each, manicured lawns and several medium to large manicured trees of various species, including Blue Spruce (*Picea pungens*), White Pine (*Pinus strobus*) and Maple (*Acer sp.*).

Alder Organic Thicket Swamp Type (SWT3-1)

This community is found within the wetland complex, specifically towards the middle and west end of the site. Speckled Alder is the dominant shrub species in this community, along with Bebb's Willow (*Salix bebbiana*) and Pussy Willow (*Salix discolor*) as co-dominant species. Other shrubs found here include Common Winterberry, Red-osier Dogwood (*Conus sericea*), Chokecherry, Swamp Red Currant (*Ribes triste*), and Hawthorn (*Rosaceae sp.*). Other plant species include Common Cattail, Purple Loosestrife, Virginia Waterleaf (*Hydrophyllum virginianum*), Sensitive Fern (*Onoclea sensibilis*), Canada Goldenrod (*Solidago canadensis*), Late Goldenrod (*Solidago altissima*) White Panicled Aster (*Symphyotrichum lancelatum*), Grass-leaved Goldenrod (*Euthamia graminifolia*), Calico Aster (*Symphyotrichum lateriflorum*), Heart-leaved Aster (*Symphyotrichum cordifolium*), Swamp Aster (*Symphyotrichum puniceum*), and Purple Joe Pye Weed (*Eutrochium purpureum*).

SWT/SWD6-1

This community is located in between two SWT3-1 communities where there appears to be moderate increase in ground elevation in the middle of the wetland complex. Although soil saturation levels are still moist in this community, the undulating topography allows tall shrub and tree species to take root and grow in the middle of the wetland where elevation is highest.

Tree and shrub species observed in this community included Red Maple (*Acer rubrum*), American Elm (*Ulmus Americana*), Common Apple (*Malus pumila*), White Pine, Black Ash (*Fraxinus nigra*), Speckled Alder, Pussy Willow, Bebb's Willow, Red-osier Dogwood (*Cornus stolonifera*), and European Buckthorn. Ground layer vegetation included Bittersweet Nightshade, Narrow-leaved Cattail (*Typha angustifolia*), Dwarf Raspberry (*Rubus pubescence*), Sensitive Fern (*Onoclea sensibilis*), Wild Strawberry (*Fragaria virginiana*), Ostrich Fern (*Matteuccia struthiopteris*), Purple Loosestrife, Buttercup (*Ranunculus sp.*), Lake Sedge (*Carex lacustris*), Common Reed or Phragmites (*Phragmites australis*), Wild Lily-of-the-valley (*Maiantheum canadense*), Downy Yellow Violet (*Viola pubescens*), Jack-in-the-pulpit (*Arisaema triphyllum*), Field Horsetail (*Equisetum arvense*), and Canada Thistle (*Circium arvens*).

Red Maple Organic Deciduous Swamp Ecosite (SWD6-1)

Located on the southern limit on the west side of the subject property, this community contains a tall canopy layer and a thick understory with several fallen down logs and snags. Vegetation species that dominate this community include trees such as Red Maple (*Acer rubrum*) and American Elm (*Ulmus Americana*), as well as shrubs such as European Buckthorn and Common Winterberry. Other plant species observed in this community include Spotted Jewelweed, Common Cattail, Reed Canarygrass,

Canada Goldenrod, Wild Lily-of-the-valley (*Maianthemum canadense*), Sensitive Fern (*Onoclea sensibilis*), Virginia Creeper, Swamp Aster (*Symphyotrichum puniceum*), and Calico Aster (*Symphyotrichum lateriflorum*).

Cattail Mineral Shallow Marsh Type (MAS2-1)

A small, isolated pocket of cattails was identified on the western limit of the subject property, next to an active agricultural field and the industrial property and Kennedy Road to the west. The community did not appear to be connected to the former wetland communities but could be the result of a natural depression in the topography. It is likely that this feature has been impacted by the surrounding agricultural features and the driveway to the south. It was noted during HDF surveys that this feature was wet in April and May but dry by August and is not obviously connected to any other HDF networks.

Hedgerow (HR)

Two hedgerows were observed adjacent to the CVR_4 property located on Kennedy Road.

The hedgerow to the west of the CVR_4 property had a moderately dense canopy dominated by Sugar Maple (*Acer saccharum*), with an abundant number of Manitoba Maples and Black Walnut (*Juglans nigra*). A single Butternut (*Juglans cinerea*) or Butternut hybrid was observed in the middle of the hedgerow. Further hybridity testing would be required to confirm the species as Butternut, an Endangered species (SARA, 2002; and ESA, 2007) (refer to Figure 3).

A moderately dense shrub layer found at the edge of the hedgerow was found to be dominated by European Buckthorn, with an abundance of Hawthorn (*Crataegus sp.*) and Honeysuckle and small Sugar Maples. A dense ground layer vegetation was found at the edge of the hedgerow and was dominated by Smooth Brome Grass, with an abundance of Common Plantain (*Plantago major*), Bluejoint Reedgrass (*Calamagrostis canadensis*), Virginia Creeper, Garlic Mustard (*Alliaria petiolata*), and Violets (*Viola sp.*). Other plant species found included Common Timothy Grass, Eastern Prickly Gooseberry (*Ribes cynosbati*), Common Burdock, Philadelphia Fleabane (*Erigeron philadelphicus*), and Common Motherwort (*Leonurus cardiaca*).

The hedgerow located along the southern limit of the CVR_4 property had a moderately dense canopy that only consisted of Black Walnut. The ground layer contained dense vegetation consistent with that identified in the Dry to Moist Old Field Meadow Type (CUM1-1). No shrub layer was observed in this hedgerow.

Annual Row Crops (OAGM1)

Agricultural fields extend along the northern perimeter of the subject property, from Kennedy Road to Heart Lake Road (southwestern field). They also consume a large portion of the lands between Heart Lake Road and Highway 410 (northeastern field). At the time of the surveys, Soy (*Glycine max*) crop was planted in the southwestern field and Corn (*Zea mays*) was planted in the northeastern field.

It is expected that these crops are regularly rotated in accordance with typical best management practices for annual row crops.

Agricultural Buildings (IAGM1)

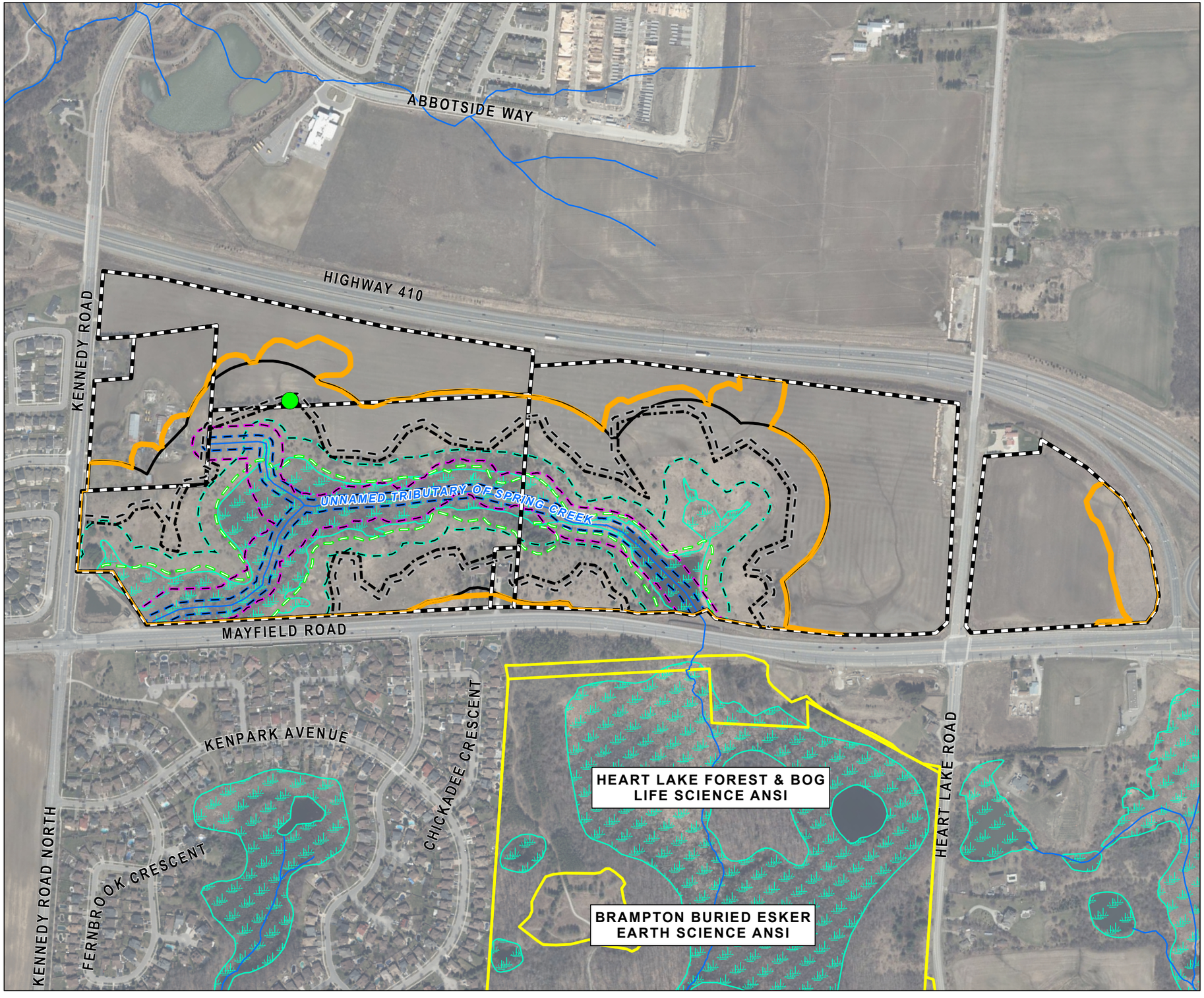
Several large farm buildings and containers, as well as a rural residential property, were observed on the western limit of the subject property, on Kennedy Road. Vegetation was not documented in the vicinity of the active agricultural equipment and structures for safety reasons.

5.2 Identification of Provincially Significant Natural Features

5.2.1 Provincially Significant Wetlands

The PPS (MMAH, 2020) 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.*"

As noted in Section 5.1.2, a portion of the Heart Lake PSW Complex (referred to as "Wetland No. 1" in the MNRF evaluation) is present on the subject property and is 7.53 ha in size. This wetland complex is protected and contained within TRCA regulated limits and the Natural Heritage System (NHS) (refer to Figure 3). The wetland is located on the headwater reaches of the Spring Creek subwatershed of Etobicoke Creek; most of the wetlands are hydrologically linked by watercourses within the complex (OMNR, 2009). Please refer to Burnside's Annual Wetland Monitoring Report – Year 1 (2019), provided under separate cover.



- Candidate Butternut Tree
- Watercourse (MNRF)
- Watercourse (MNRF) 10m Buffer
- TOB TRCA Staked/Approved 2018
- TOB TRCA Staked/Approved 2018 10m Buffer
- Meanderbelt (TRCA) 10m Buffer
- Provincially Significant Heart Lake Wetland Complex (MNRF)
- Provincially Significant Heart Lake Wetland Complex (MNRF) 30m Buffer
- TRCA ELC Wetlands 10m Buffer
- Wetland Area of Interference - 120m Buffer from PSW and 30m Buffer from Unevaluated Wetlands
- Area of Natural and Scientific Interest (MNRF)
- Regulation Limit (TRCA)
- Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. TRCA.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

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
Page Orientation: 310.49°	Scale Factor: 0.99960

Grid North

0 100 200 300 400 500
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BURNSIDE

Client

SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

NATURAL HERITAGE CONSTRAINTS

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5.2.2 Significant Valleylands

The NHRM (MNR, 2010) provides criteria for identifying Significant Valleylands, including a variety of landform related functions and attributes as well as ecological features and functions. A valleyland system associated with an Unnamed Tributary of Spring Creek is present on the subject property and meets the criteria for significant. According to the NHRM a Significant Valleyland is defined as:

> *a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. Large, well-defined valleylands are often significant landscape features essential to the character of an area.*

Additionally, the PPS (2020) defines Significant Valleylands as:

> *ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system.*

The NHRM further defines the recommended Significant Valleyland evaluation criteria and standards for areas with well-defined valley morphology (i.e., floodplains, meander belts, and valley slopes). One of the criteria is that features having an average width of 25 m are considered significant. The valleyland system associated with the Unnamed Tributary of Spring Creek includes a floodplain, meander belt, steep valley slopes greater than 10 m from the top of bank (TOB) to the toe of slope, and a corridor width between 150 m to 300 m. It should also be noted that TRCA staff staked/approved the TOB associated with the creek and valleyland on October 24, 2018 (see Figure 3) (TRCA, 2020). It is the Landowners understanding that this staking may be subject to further adjustments as deemed appropriate through the development approval process.

The Core Area of the Greenlands System as depicted on Schedule A of the ROP (2018) identifies a significant portion of the subject property is located within the Core Area land use designation. The Region's Core Area land use designation is an additional criterion used to determine significance as it relates to valley corridors. Core Areas represent provincially and regionally significant features and areas and are considered a sub-set of what would be significant under the PPS. Where there is a discrepancy between Schedule A and the identification of Core Areas in the text of the OP, the text shall govern. Section 2.3.2.2 (g) (Core Areas) of the ROP identify Core Areas as being valley and stream corridors meeting one or more of the criteria in Table 2: Criteria and Thresholds for the Identification of Core Valley and Stream Corridors. It is TRCA's opinion that the valleyland system associated with the Unnamed Tributary of Spring Creek meets the test of Core Areas as identified in the text of the ROP (TRCA, 2020).

5.2.3 Significant Woodlands

Significant Woodlands are typically identified by the local municipality. According to the PPS (MMAH, 2020), significant woodland is 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.*

No significant woodlands are present on the subject property.

5.2.4 Significant Areas of Natural and Scientific Interest (ANSI)

The PPS (MMAH, 2020), Section 6.0 defines 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 (MNR, 2010), 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 significant ANSIs are present on the subject property, however adjacent lands south of Mayfield Road (within the broader study area) consist of the Heart Lake Forest and Bog Life Science ANSI and the Brampton Buried Esker Earth Science ANSI.

5.2.5 Significant Wildlife Habitat

Determination of SWH is broadly categorized and described in the NHRM (MNR, 2010). Additionally, the MNRF's SWHTG (MNR, 2000) and SWH Criteria Schedule for Ecoregion 6E (MNRF, 2015) are additional supplemental documents intended to assist in identifying SWH. The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North-South Environmental Inc. et al 2009) is another supplemental document intended to assist in identifying SWH in the Peel-Caledon area, part of Ecoregion 6E. 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.
4. Animal movement corridors.

Appendix C includes a screening of the various categories of SWH for the subject property based on background records review, agency records, and aerial photo interpretation.

Table 1 summarizes Candidate and Confirmed SWH on the subject property.

Table 1: Candidate and Confirmed SWH on the Subject Property

Seasonal Concentration Areas of Animals
Confirmed Turtle Wintering Areas
Candidate Colonially Nesting Bird Breeding Habitat (Trees/Shrubs)
Specialized Habitat for Wildlife
Candidate Waterfowl Nesting Area
Candidate Turtle Nesting Areas
Habitat for Species of Conservation Concern
Candidate Terrestrial Crayfish
Confirmed Special Concern and Rare Wildlife Species

5.2.6 Habitat of Endangered and Threatened Species

Burnside's background database review and consultation with MNRF revealed the potential for species listed as Endangered or Threatened under the ESA (2007) on the subject property and lands within 120 m (Appendix D). These are all listed in the SAR and SCC Screening Table located in Appendix E. Table 2 below summarizes Confirmed and Candidate habitat for Endangered and Threatened species.

Table 2: Candidate and Confirmed Habitat for Endangered and Threatened Species on the Subject Property and Lands within 120 m

Confirmed and Candidate Habitat	**Subject Property**	**Lands within 120 m**
Confirmed Habitat Present	None	Bobolink (THR)
Candidate Habitat Present	Butternut (END) Barn Swallow (THR) Bobolink (THR) Chimney Swift (THR) Eastern Meadowlark (THR) Least Bittern (THR) Little Brown Myotis (END)* Northern Myotis (END)* Tri-colored Bat (END)* Blanding's Turtle (THR) *Roosting habitat only.	Barn Swallow (THR) Chimney Swift (THR) Eastern Meadowlark (THR) Least Bittern (THR) Little Brown Myotis (END)* Northern Myotis (END)* Tri-colored Bat (END)* Butternut (END) Blanding's Turtle (THR) *Roosting habitat only

There are rural residences, agricultural barns and other buildings present on the subject property that may be candidate habitat for Barn Swallow, Chimney Swift and SAR bats. These structures will need to be investigated at site level as part of the future CEISMP report.

5.3 Incidental Wildlife Observations

Incidental observations of wildlife, including Lepidoptera, were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

MNRFs provincial ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. With the exception of Monarch, the remaining species observed are not listed as provincially and/or federally significant and are listed as secure or apparently secure in Southern Ontario (in other words, they are ranked as S5 or S4, which is defined by the MNRF as species that are common, widespread and abundant in the province or uncommon but not rare). Refer to Table 3: for a summary of incidental observations.

Table 3: Summary of Incidental Wildlife Observations on the Subject Property

Common Name	Scientific Name	Number Observed on Subject Property	S-Rank	Comments
Birds				
American Woodcock	*Scolopax minor*	1	S4B	Breeding calls heard on May 15, 2019 west of SAS1-1 ecosite (see Figure 2).
Mammals				
American Beaver	*Castor canadensis*	2	S5	Observed in SWM pond (southwest corner of subject property) and in SAS1-1 ecosite (see Figure 2).
Coyote	*Canis latrans*	1	S5	Heard yipping near SAS1-1 ecosite (see Figure 2).
White-tailed Deer	*Odocoileus virginianus*	1	S5	Observed by SAS1-1 ecosite (see Figure 2) in the riparian vegetation.

Common Name	Scientific Name	Number Observed on Subject Property	S-Rank	Comments
Herpetofauna				
Midland Painted Turtle	*Chrysemys picta marginata*	10	S4	Basking in SAS1-1 ecosite on natural pond (see Figure 2).
Lepidoptera				
Monarch	*Danaus plexippus*	6	S2N, S4B	Observed adults and larva in CUM1-1 ecosite see Figure 2).

6.0 Summary and Recommendations for Future Work

Based on the background secondary source desktop assessment and ELC survey, the upland portions of the subject property primarily consist of rural residences and farm buildings, actively cultivated fields, cultural meadows, woodland inclusions. A large portion of the subject property contains a Significant Valleyland system associated with the Unnamed Tributary of Spring Creek and the Heart Lake PSW Complex ("Wetland No. 1"). Adjacent lands south of Mayfield Road consist of the Heart Lake Forest and Bog Life Science ANSI, the Brampton Buried Esker Earth Science ANSI and additional units of the Heart Lake PSW Complex.

Applicable federal, provincial, and municipal land use and planning policies will need to be considered during the future development phase of this project. These include: *Fisheries Act, 1985*; *Migratory Birds Convention Act, 1994*; *Provincial Policy Statement, 2020*; *Endangered Species Act, 2007*; TRCA Ontario Regulation 166/06 (i.e., regulated limits such as stable top of slope, watercourse, wetland area of interference) as defined in TRCA's Living City Policies; and relevant municipal land use designations and policies as outlined in the Region of Peel and Town of Caledon Official Plans.

Provincially significant wildlife habitat (candidate and confirmed) have been identified on the subject property. These include: Confirmed Turtle Wintering Areas and Special Concern and Rare Wildlife Species habitat; Candidate Colonially Nesting Bird Breeding Habitat (Trees/Shrubs), Candidate Waterfowl Nesting Area, Candidate Turtle Nesting Areas and Candidate Terrestrial Crayfish were identified on the subject property during ELC surveys.

Candidate habitat is present for ten provincially Threatened and Endangered SAR: Butternut (END); Barn Swallow (THR); Bobolink (THR); Chimney Swift (THR); Eastern Meadowlark (THR); Least Bittern (THR); Little Brown Myotis (END); Northern Myotis (END); Tri-colored Bat (END); and Blanding's Turtle (THR).

Incidental wildlife observations were made during field surveys for six different species: American Woodcock, American Beaver, Coyote, White-tailed Deer, Midland Painted Turtle and Monarch.

Wetland monitoring commenced in 2019 and will continue through the development phase and post-development phase of this project. Details of the wetland monitoring are provided in Burnside's Annual Wetland Monitoring Report – Year 1 (2019).

Based on Burnside's field studies in 2019 and background desktop review, further detailed ecological studies will need to be conducted at site level as part of the future CEISMP report and include:

- Breeding bird surveys, including targeted Bobolink and Eastern Meadowlark SAR surveys and marsh bird surveys to confirm presence of SAR and SWH.
- Structure surveys to assess habitat suitability for Barn Swallow, Chimney Swift, and SAR bats.
- Depending on the results of the structure surveys, additional surveys for SAR birds and/or bats.
- Targeted herpetofauna surveys (i.e., basking/nesting surveys for turtles) to confirm presence of SAR and SWH.
- A sample of the candidate Butternut will need to be submitted for genetic testing to confirm hybridity. A Butternut Health Assessment (BHA) may be required.
- Detailed aquatic habitat assessment(s).

The analysis of impacts and identification of mitigation measures will be completed once there is an understanding of the future land uses and infrastructure on the subject property. This will be considered as part of the future CEISMP report.

7.0 References

Conservation Authorities Act. 1990. Royal Statutes of Ontario, Chapter 27.

Dobbyn, J. 1994. Atlas of the mammals of Ontario. Federation of Ontario Naturalists.120 pp.

Dupuis-Désormeaux, M., D'Elia, V., Burns, R., White, B. and MacDonald, S.E. 2019. A turtle population study in an isolated urban wetland complex in Ontario reveals a few surprises. FACETS 4: 584-597.

Endangered Species Act. 2007. Statutes of Ontario, Chapter 6.

Fisheries Act. 1985. Royal Statutes of Canada, Chapter F-14.

Google. 2017. Google Earth Pro 7.3.0.3832

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.

Migratory Birds Convention Act (MBCA). 1994. Statutes of Canada, Chapter 22.

Ministry of Municipal Affairs and Housing (MMAH). 2020. Provincial Policy Statement (PPS) under the Planning Act. Obtained online at: https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf

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

Ministry of Natural Resources (MNR). March 2010. 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). 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E.

Natural Heritage Information Centre (NHIC). Species Lists. 2018. https://www.ontario.ca/page/get-natural-heritage-information

Ontario Ministry of Natural Resources. (2009). *Provincially Significant Heart Lake Wetland Complex.* Aurora District: OMNR.

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 + app.

Region of Peel. December 2018. Region of Peel Official Plan.

Species at Risk Act. 2002. Statutes of Canada. Chapter 29.

Toronto and Region Conservation Authority (TRCA). 2002. Greening our Watersheds: Revitalization Strategies for Etobicoke and Mimico Creeks, including the Etobicoke-Mimico Report Card.

TRCA. 2010. Etobicoke and Mimico Creeks Watershed Technical Update Report.

TRCA. 2018. Etobicoke Creek Watershed Report Card.

TRCA. 2020. Review of Snell's Hollow CEISMP Baseline Existing Conditions Analysis and Monitoring Results. Letter dated July 21, 2020.

Town of Caledon. April 2018. Town of Caledon Official Plan.

Varga, S., Leadbeater, D., Webber, J., Kaiser, J., Crins, B., Kamstra, J., Banville, D., Ashley, E., Miller, G., Kingsley, C., Jacobsen, C., Mewa, K., Tebby, L., Mosley, E. and E. Zajc. 2000. Distribution and Status of the Vascular Plants of the Greater Toronto Area. Ontario Ministry of Natural Resources Aurora District. 103 pp.

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Appendix A

Terms of Reference

R.J. Burnside & Associates Limited 128 Wellington Street West Suite 301 Barrie ON L4N 8J6 CANADA
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February 5, 2019 (Revised March 7, 2019; April 8, 2019)

Via: Email

Adam Miller
Senior Planner
Toronto and Region Conservation Authority
101 Exchange Avenue
Vaughan ON L4K 5R6

Dear Mr. Miller:

Re: Environmental Field Study and Baseline Monitoring Plan - Terms of Reference
Snell's Hollow East Secondary Plan, Snell's Hollow East Landowners Group.
Project No.: 300043952.0000

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the Snell's Hollow East Landowners Group to undertake an Environmental Field Study and Baseline Monitoring Program for a development, located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the subject property). The subject property is in the Town of Caledon (Town) and within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town of Caledon, in the proposed Snell's Hollow East Secondary Plan area. The site is bounded by Highway 410 to the north, Heart Lake Road to the east, Mayfield Road to the south and Kennedy Road to the west (Figure 1). The subject property contains portions of the Heart Lake Provincially Significant Wetland (PSW) Complex, which drains beneath Mayfield Road towards Heart Lake Conservation Area to the south. The existing land use is agricultural in the uplands, with meadows on the slopes and ridges adjacent to the PSW unit.

As a part of initial consultations with the Town, the Region of Peel (Region) and TRCA (collectively referred to as the Agencies), the need for a Baseline Monitoring Program was identified. It is our understanding that the establishment of meaningful baseline conditions will contribute to the Secondary Plan study that will begin in early 2019. In particular, the Agencies have identified the following ecological requirements:

- Determine what wetland monitoring is required.
- Recommend baseline Headwater Drainage Feature (HDF) monitoring.
- Propose a program for 3 season botanical/vegetation inventory survey.
- Establish a program with Ministry of Natural Resources and Forestry (MNRF) to assess Species at Risk (SAR).

2.0 Environmental Field Study and Baseline Monitoring Program Framework

This letter provides the proposed Terms of Reference (TOR) for the Environmental Field Study and Baseline Monitoring Program. Although construction of the subject property is not expected in the immediate future, this TOR seeks to establish meaningful pre-development existing conditions and monitoring data. At this time, we are seeking your input on our proposed approach for the field study, which is proposed to start in spring 2019, as well as any additional information you may have that is relevant to our study. We are hoping to receive time sensitive feedback as soon as possible, especially if it affects a closing window for fieldwork.

The TOR are organized as follows:

- Part I: Summary of Background Secondary Source Information.
- Part II: Proposed Environmental Field Study methodology, including:
  - 2019 Fieldwork Program;
  - Criteria for evaluating the significance, sensitivity and rarity of features on, and in the vicinity of the subject property;
  - Methodology for the evaluation of impacts; and
  - Reporting format.
- Part III: Proposed Natural Heritage Monitoring Program, including:
  - Monitoring methodologies to be used;
  - Sampling/survey timelines and schedule;
  - Methodology for the evaluation of monitoring data;
  - Reporting format and scheduling; and
  - Proposed remediation processes should monitor results show impacts to natural features.
- Part IV: Information Requests.

2.1 Part I: Background Secondary Source Information

Burnside has reviewed the following resources:

- The Provincial Policy Statement (PPS) (MMAH, 2014)
- Town of Caledon Official Plan (OP) (April 2018 Consolidation).
- Region of Peel OP (December 2016 Consolidation).
- Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (North South Environmental Inc. et al., 2009)
- The Living City Policies (TRCA, 2014).
- Greening our Watersheds: Revitalization Strategies for Etobicoke and Mimico Creeks, Including the Etobicoke-Mimico Report Card (TRCA, 2002).
- Etobicoke and Mimico Creeks Watershed Technical Update Report (TRCA, 2010).
- Mimico Creek Watershed Report Card (TRCA, 2018).
- Recent Digital Aerial Photography (Google Earth Pro).

- Natural Heritage Information Centre (NHIC) database to identify records of rare wildlife species on, and in the vicinity of, the subject property (January 2019).
- The Ontario Breeding Bird Atlas (OBBA) for records of birds breeding in the area (January 2019).
- Department of Fisheries and Oceans Canada (DFO) Aquatic SAR Mapping (September 2018).

The subject property is located within the jurisdiction of TRCA and the MNRF Aurora District Office. The site primarily consists of actively cultivated fields, cultural meadows, cultural thicket/woodland, rural residences and farm buildings, marsh, swamp and woodlands, while adjacent lands south of Mayfield Road consist of the Heart Lake Forest and Bog Life Science ANSI, the Brampton Buried Esker Earth Science ANSI and additional units of the Heart Lake PSW Complex.

Table 1: Applicable Environmental Land Use Designations

Plan/Regulation	Known Land Use Designations
Provincial Policy Statement Section 2.1 Natural Heritage	Significant Wetlands
Natural Heritage Reference Manual	Significant Wetlands
Caledon OP Schedule A – Land Use Plan Schedule B – Mayfield West Land Use Plan	Mayfield West Study Area Boundary Residential Policy Area A Environmental Policy Area
Region of Peel OP Schedule A – Core Areas of the Greenlands System in Peel Schedule D – Regional Structure Schedule D3 – Greenbelt Plan Area Land Use Designations Schedule D4 – The Growth Plan Policy Areas in Peel Figure 2 – Selected Areas of Provincial Interest	Core Areas of the Greenlands System Mayfield West Study Area Rural Service Centre Settlement Areas Outside the Greenbelt Designated Greenfield Area Rural Settlement
Toronto Region Conservation Authority (Ontario Regulation 166/06)	Large portions of the development are within TRCA regulation limits
Toronto Region Conservation Authority (Living City Policies)	Long-term Stable Top of Slope (10 m buffer) Provincially Significant Wetlands (30 m buffer) TRCA ELC Wetlands (10 m buffer) Watercourse (10 m buffer) Wetland Area of Interference (120 m from PSW, 30 m from un-evaluated wetlands) Regulatory Floodplain/Meanderbelt 10 m buffer

The above is not intended to be an exhaustive list of applicable environmental policies. Policies related to the above Land Use Designations, and other applicable environmental policies, will be reviewed and summarized as a part of the Environmental Field Study report.

In addition to the known land use designations listed above, additional land use designations, as they relate to ecological policies, may be observed based on field investigations, including:

- Significant Woodlands.
- Significant Valleylands.
- Significant Wildlife Habitat.
- Habitat of Endangered and Threatened Species.

Significance of features will be determined based on the PPS, the Significant Wildlife Habitat Technical Guide (MNRF, 2000), Ecoregional Schedules for Ecoregion 6E Criteria (2015), Town and Region Official Plans, the Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study, and MNRF Species at Risk guidelines.

2.2 Part II: Proposed Field Study and Baseline Monitoring Plan Methodology

It is anticipated that the fieldwork and reporting for the Environmental Field Study and Baseline Monitoring will include three main tasks, as follows:

Task 1: Baseline Conditions

Completion of Ecological Land Classification (ELC) according to the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee et al. 1998), with reference to 2008 updated ELC codes (Lee, 2008, 2013) for communities which are not well described under the first approximation.

Completion of an on-site, 3-season ecological botanical/vegetation inventory is proposed for the entire subject property. Vegetation inventories will be performed to help establish baseline habitat conditions, provide early identification of SAR (i.e., to avoid costly delays while obtaining permits associated with late detection), establish relative soil saturation and species variation, and subsequently be used to assess the impacts to habitats throughout various stages development. Baseline conditions need to be established during pre-development surveys conducted in 2019.

In particular, wetland habitats such as swamp lands and marshes exhibit saturated soil conditions capable of supporting vegetation that has adapted to moist to permanently flooded conditions. The identification of wetland plant species can therefore be used to delineate wetlands, determine the presence of species of conservation concern, assess habitat health throughout time and aid in the protection and management of wetland features.

A botanical inventory should be undertaken three times over the course of a year during the following periods:

- Spring (April 15th to June 15th)
- Summer (June 30th to August 15th)
- Fall (September 1st to October 15th)

An ecologist with experience in identifying plants and conducting botanical inventories will perform these surveys. Inventories should be undertaken in such a way that the entire site is surveyed, and a complete list of plants is created that represents all vegetation species observed on the subject property. For the PSW located on the subject lands, it should be noted that is has been formally evaluated by the MNRF (November 2000; updated November 2009 and 2012). The boundaries and vegetation communities of this feature have been previously staked and surveyed with the MNRF and are well-established and will not require new agency staking.

The results of the ELC and botanical surveys will be summarized in a technical memo. If any SAR are identified, additional studies, reporting and permitting may be necessary and will be determined in consultation with the MNRF, as required.

Task 2: Surface Water – Headwater Drainage Feature Assessment

A Headwater Drainage Feature (HDF) assessment will be completed for the entirety of the subject property, according to the TRCA HDF protocols. The protocol calls for up to 3 site visits, based on the findings of the early visits. The results of these surveys will be summarized in a technical memo submitted to the TRCA. Should additional HDF monitoring be required by the TRCA based on the findings of the initial HDF assessment or should the need for surface water quality monitoring be identified, the scope of work will be determined in consultation with the TRCA, as required.

Task 3: Wetland Monitoring

Monitoring is to be completed for 1-year pre-development, 2 years during development, and for 3 years – every other year – post-development.

Vegetation

The wetland will be monitored using methodology similar to the TRCA's Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program (January 2016). Transects will be established that will extend from the edge of the wetland to its centre. As illustrated in Figure 1 of the TRCA document, 4 m^2 woody plant subplots and 1 m^2 ground vegetation subplots will be established along the transect, centered on points 5 m east and 5 m west of the transect. A wooden stake will be installed in the centroid of each woody plant subplot and numbered to allow for subsequent visits to investigate the same locations. A GPS point will be taken at each centroid as well.

At each woody vegetation subplot, tree and shrub species that are 16 cm tall and greater will be recorded, per species by percent composition, for each subplot. A photograph will be taken of each subplot as well. A soil auger will be used in the woody vegetation subplot to determine the depth from the surface to subsurface water as an additional factor to measure. Following excavation of the hole and reasonable time to fill in with water, the surveyor will measure the distance from the soil surface to the water level. If standing water is present above the surface of the soil, water depth will be recorded.

At each ground vegetation subplot, vascular plants and woody plants less than 16 cm will be recorded, per species by percent composition for each subplot. A photograph will also be taken of each subplot.

Wetland vegetation monitoring will occur once per monitoring year. The first monitoring event is recommended to occur between May 15, 2019 and July 15, 2019. This timing will allow for the determination of ground flora (herbaceous and graminoid) presence at a time when indications of most spring and fall species and all summer species are present. One survey per year between May 15th and July 15th, performed during the summer monitoring period, will allow for the tracking of changes in these plots. Monitoring surveys will continue once per year during construction and once every other year for 5 years following construction (defined as >80% completion). It is assumed for the purposes of this TOR that construction will take 3 years and will begin in 2021. Should additional time be required for construction, or prior to construction, a plan of action will be developed in consultation with TRCA.

Our findings will be summarized yearly in a wetland monitoring report submitted to the TRCA.

Amphibian Breeding Habitat

The wetland will be monitored for Amphibian Breeding Habitat, following the protocol outlined in the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada, 2008). This protocol requires three surveys annual during the following periods, subject to weather conditions:

- April 15th to April 30th
- May 15th to May 30th
- June 15th to June 30th

The first monitoring event is recommended to occur in spring 2019. One round of surveys per year will be performed during construction and one round of surveys every other year for 5 years following construction. It is assumed, for the purposes of this TOR, that construction will take 3 years and will begin in 2021. Should additional time be required for construction, or prior to construction, an additional scope and cost will be submitted for approval prior to undertaking any additional work.

Our findings will be summarized yearly in a terrestrial monitoring report submitted to the TRCA.

Water Quality Monitoring

Monitoring water quality is an effective way to document the potential impacts of sediment mobilized during construction, develop supplemental mitigation strategies, and provide an early detection system to reduce potential negative effects and avoid serious harm to fish and fish habitat. The application of Erosion and Sediment Control (ESC) and turbidity monitoring programs are important mitigation strategies to ensure that the productive capacity of flowing water features associated with the wetland is maintained. It is expected that water quality monitoring will be completed as part of the Part A: Existing Conditions and Characterization of the future Comprehensive Environmental Impact Study and Management Plan (CEISMP) report.

Table 2: Summary of Field Work Proposed

Study Component	Field Work Requirements	Features/Areas to be Assessed	Survey Timing Window
Ecological Land Classification mapping and 3-season botanica/vegetation inventory	Ecological Land Classification mapping according to the Ecological Land Classification System (Lee et al. 1998). Botanical inventory and analysis of flora rarity (provincial and regional rarity ranking) for all species observed.	Entire subject property including the natural features and wetlands.	Spring (April 15th to June 15th) Summer (June 30th to August 15th Fall (September 1st to October 15th)
Targeted Butternut surveys	Identification of Butternut trees on subject property as part of Botanical Inventory.	Entire subject property, with special attention paid to NHS feature edges where butternut habitat (50 m) may overlap with development plan.	Concurrent with vegetation inventory, during leaf-on period, as defined in MNRF guidelines (May 15, 2019 to August 31, 2019)
Identification and characterization of wildlife habitats	Incidental wildlife meandering survey for features such as: Dens Reptile hibernacula Structures Uncapped chimneys Foundations.	Entire subject property and areas of intrusion into the NHS (i.e., anticipated stormwater outfall and LID locations, grading).	Concurrent with vegetation inventory. Spring (April 15th to June 15th) Summer (June 30th to August 15th Fall (September 1st to October 15th)
Amphibian Breeding Call Surveys	Three surveys, following Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada, 2008), for wetland features potentially impacted by the proposed development.	The PSW wetland and other wetland areas located on the subject lands will be assessed at a minimum of 3 stations in representative habitats within the wetland areas.	April to June Three surveys for pre-construction (2019) and during construction (2021-2023); three surveys (each applicable year), every other year, for 5 years post construction. It is assumed that construction will begin in 2021 and will take 3 years.

Study Component	Field Work Requirements	Features/Areas to be Assessed	Survey Timing Window
Headwater Drainage Feature Assessments	Confirmatory field work following the Credit Valley Conservation and TRCA Headwater Drainage Feature Guidelines (Finalized January 2014).	The entire property will be surveyed for the presence of HDFs.	Up to three site visits, between late March and August, 2019
Wetland vegetation monitoring	Following the TRCA Wetland Vegetation Monitoring Protocol.	Transects within the PSW habitat.	A single site visit per year for pre-construction (2019) and during construction (2021-2023); a single site visit every other year for 5 years post construction. It is assumed that construction will begin in 2021 and will take 3 years.

2.3 Part III: Criteria for Determining the Significance, Sensitivity and Rarity of Features Found On-site

The PPS (MMAH, 2014) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. Specifically related to this location is the requirement to identify natural heritage systems (NHS) in southern Ontario (Ecoregions 6E and 7E), Policy 2.1.3.

Eight types of natural heritage features are identified in Sections 2.1.4 and 2.1.5 of the PPS, as follows:

1. *Significant wetlands in Ecoregions 5E, 6E and 7E;*
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. Marys River);*
5. *Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River);*
6. *Significant wildlife habitat;*
7. *Significant areas of natural and scientific interest; and,*
8. *Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to Policy 2.1.4(b)*

Sections 2.1.6 and 2.1.7 identify two additional natural features where development and site alteration are not permitted:

1. *Fish habitat except in accordance with provincial and federal requirements; and,*
2. *Habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*

In accordance with the Natural Heritage Reference Manual (MNR, 2010), habitats of endangered and threatened species are identified and evaluated based on provincial criteria. Burnside will consult with the MNRF to ensure that the appropriate criteria are utilized, including species-specific habitat regulations and guidance material.

By contrast, the identification of candidate Significant Woodlands and Significant Wildlife Habitats and the area-specific criteria for evaluation of these features are undertaken at the local planning level. The Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study identifies criteria for evaluating Significant Woodlands and Significant Wildlife Habitats within the study area. In addition, the Significant Wildlife Habitat Ecoregional 6E Schedule (MNRF, 2015) provides ecoregional evaluation criteria for the evaluation of Significant Wildlife Habitat.

These criteria require detailed field investigations which are typically undertaken at the EIS stage. Beyond review of mapped features, full assessment of all potential significant features is premature at this stage. While this work plan is intended to aid in the completion of the Part A CEISMP report, in order to fully evaluate these features, detailed surveys are more suited to studies that will be required during the CEISMP stage (i.e., full wildlife assessment). Any known PPS protected features, and candidate features observed during the Environmental Field Study will be identified.

Additionally, local significance of flora and fauna will be based on:

- Species' status under the *Endangered Species Act, 2007.*
- Species' S-rank as provided on the NHIC database.
- Species' L-rank as provided on the TRCA website.
- Rarity for Peel Region as listed in The Distribution and Status of the Vascular Plants of the Greater Toronto Area (Varga *et al*., 2000).

Analysis and Recommendations

The Monitoring Plan will provide an analysis of impacts for the monitoring parameters.

Reporting

Reports will be provided for each of the three tasks as follows:

Task 1: Baseline Conditions Report

A single report will be prepared and submitted following the completion of Baseline Conditions surveys in 2019. It is expected that the Significant Wildlife Habitats (SWH) fieldwork and identification will be completed as part of the Part A CEISMP report; however, vegetation community boundaries and types will be verified and refined as needed as part of the collection of baseline conditions. The focus of the baseline conditions will be to screen for the presence of any potential SWH. Locations of Endangered and Threatened species, as well as concentrations of other significant species that may constitute SWH, will be documented using GPS at this stage. As stated above, any other known PPS protected features, and candidate features observed during the Environmental Field Study will also be documented using GPS.

It is also expected that water quality monitoring will be completed as part of the Part A CEISMP report.

Task 2: Surface Water – Headwater Drainage Feature Assessment Report

A single report will be prepared and submitted following the completion of HDF assessment in 2019.

Task 3: Wetland Monitoring (Vegetation and Amphibian Breeding Habitat) Report

A summary memo will be prepared yearly, following the completion of that field season's monitoring. Monitoring is to be completed for 1-year pre-development, 2 years during development, and for 3 years – every other year – post-development. These memos will summarize findings.

A final monitoring report will be submitted at the completion of the Wetland Monitoring Program.

All findings will be summarized in a report, complete with figures. The locations of all provincially rare species encountered will be recorded (i.e., using GPS) and included on the figures (excepting those classified by MNRF as *Restricted Species*). Locally rare species will also be recorded in the ELC unit in which they are found.

2.4 Part IV: Information Requests

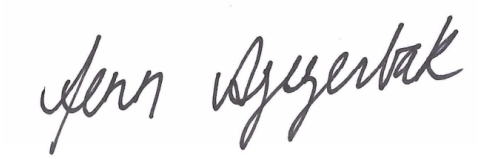
We kindly request the following information to assist in our study:

- A copy of any locally rare species lists, or comment on which locally rare species list is preferred, in order to assist with the assessment of species significance and rarity.
- Any additional records of natural features, flora, or fauna in the area. Digital mapping would be preferred.
- TRCA Regulation mapping, including a breakdown of the features contributing to the Regulation Limit (i.e., floodplain, steep slopes, etc.). Digital mapping would be preferred.

If you have any questions or comments regarding these Terms of Reference, do not hesitate to contact the undersigned.

Yours truly,

R.J. Burnside & Associates Limited



Lorraine Adderley, M.Sc., C.E.R.P.
Project Coordinator – Terrestrial Ecologist
LA:rm

Jennifer Szczerbak, B.Sc., EMPD
Senior Ecologist

Enclosure(s) Figure 1 – Study Area

April 8, 2019 (Revised March 7, 2019; April 8, 2019)
Project No.: 300043952.0000

cc: Ron Webb, Davis Webb LLP (enc.) (Via: Email)
Jane Deighton, DPG (enc.) (Via: Email)
Jason Afonso, Glen Schnarr & Associates Inc. (enc.) (Via: Email)
Carl Brawley, Glen Schnarr & Associates Inc. (enc.) (Via: Email)
Debra Kakaria, MacNaughton Hermsen Britton Clarkson Planning Limited (enc.) (Via: Email)
Dilip Jain, 2528061 Ontario Inc. (enc.) (Via: Email)
Marco Benigno, (enc.) (Via: Email)
Paramjeet Sandu, (enc.) (Via: Email)
Tom Baskerville, Coscorp Inc. (enc.) (Via: Email)
Lorena Niemi, R.J. Burnside & Associates Limited (enc.) (Via: Email)

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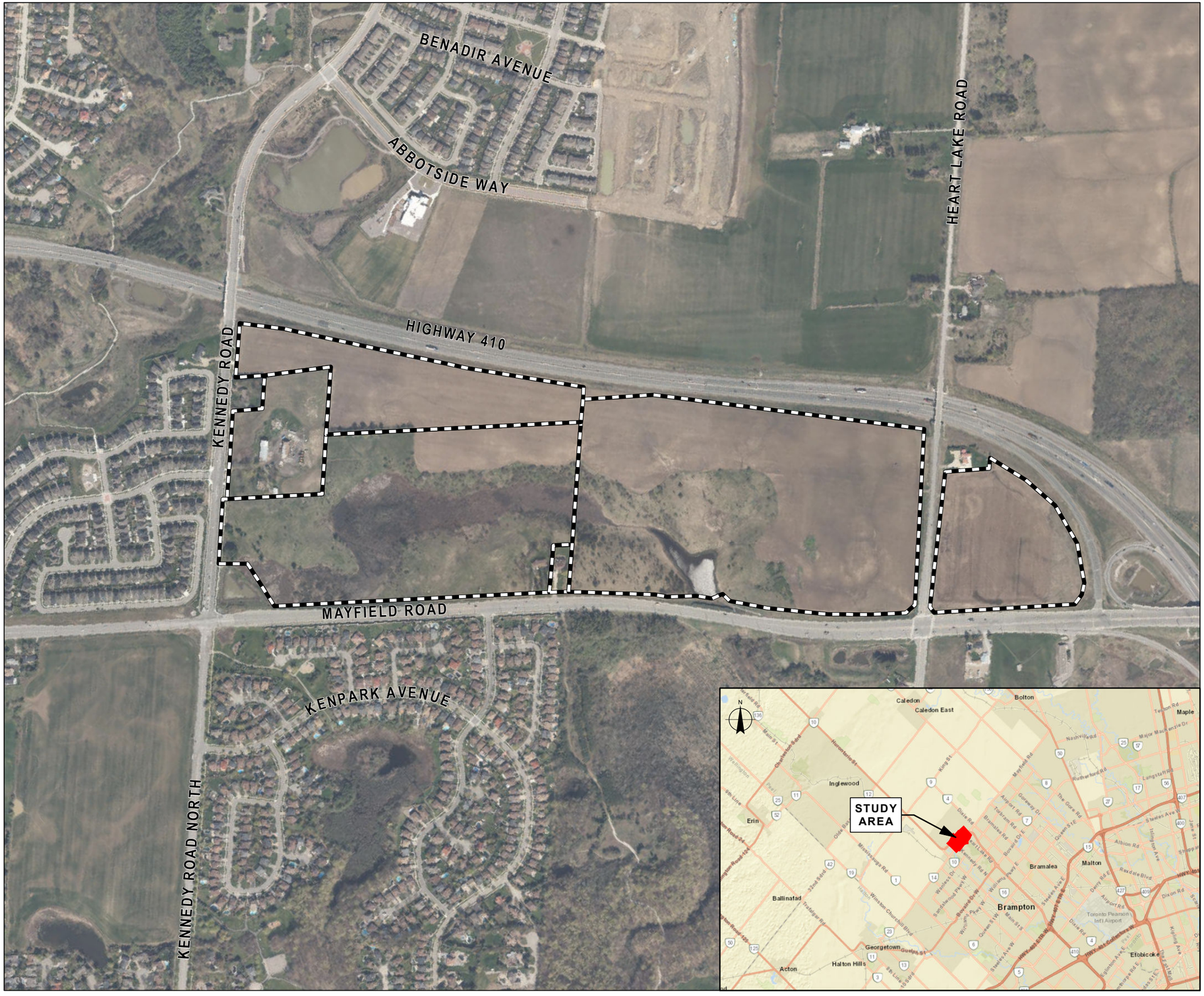

Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

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BURNSIDE

Client

SNELL'S HOLLOW LANDOWNER GROUP

Figure Title

SNELL'S HOLLOW SECONDARY PLAN

STUDY AREA

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Snell's Hollow TRCA Comment Response.

2.1 - The Provincial Policy Statement (PPS, 2014) and Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study should also be considered as part of the background information. In conjunction with the Region of Peel OP, please also consider the Greenlands System policies.

- PPS and P-CSWSWHS added to list of reviewed documents. Additional documents as applicable will be reviewed as a part of the environmental field study.
- Greenland System is noted in Table 1. This is a table of known designations. Policies related to those designations will be reviewed and summarized as a part of the Environmental Field Study.

Table 1: Applicable Environmental Policies - please ensure the PPS and Natural Heritage Reference Manual (NHRM) are incorporated into the table.

- Done

Task 1: Baseline Conditions - please prepare ELC mapping in support of the baseline conditions analysis.

- Sure (Extra work scope)

2.3 - Criteria for Determining the Significance, Sensitivity and Rarity of Features Found On-site - please ensure that the PPS and the full suite of significant features (i.e., valleylands, wetlands, woodlands, etc.) are evaluated. The work plan identified that no significant woodlands and wildlife habitat are within the Town OP. Please note that the identification and evaluation of Significant Woodlands and Significant Wildlife Habitat is typically not completed at a high-scale level such as the OP. The future CEISMP must evaluate this at the site level.

- We would typically do this type of detailed analysis at an EIS stage. We think this analysis, beyond review of mapped features, is premature at this stage. In order to fully evaluate these features a number of additional studies, more suited to the EIS level, are required (i.e. full wildlife assessment). Any known PPS protected features will be identified, however a targeted assessment is premature.

Typically the analysis of impacts and identification of mitigation measures is done at the CEISMP stage not the work plan stage. The work plan is intended to aid in the completion of Part A: Existing Conditions and Characterization of the CEISMP. Impacts and mitigation measures require an understanding of the future land uses and infrastructure within the study area. This stage of the process has not been initiated.

- All references to mitigation removed.

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Appendix B

Plant List

Appendix B: Snell's Hollow East Secondary Plan - Plant List
Project Number: 300043952.0000

Scientific Name	Common Name	COSEWIC[1]	SARA[1]	ESA[1]	G-Rank[1]	S-Rank[1]	Native/ Introduced	Greater Toronto Area (Varga et al. 2000)[3]	Flora Species Ranking of the TRCA Jurisdiction (2019)[2]
Acer negundo	Manitoba Maple	-	-	-	G5	S5	N	-	L+
Acer rubrum	Red Maple	-	-	-	G?	SE5	N	-	L4
Achillea millefolium	Common Yarrow	-	-	-	G5	SNA	I	-	L+
Actaea sp.	Baneberry	-	-	-				-	-
Agrimonia gryposepala	Common Agrimony	-	-	-	G5	S5	N	-	L5
Alisma triviale	Northern Water-plantain	-	-	-	G5	S5	N	-	L5
Alnus incana	Speckled Alder	-	-	-	G5	S5	N	-	L3
Arctium minus	Common Burdock	-	-	-	GNR	SNA	I	-	L+
Asclepias syriaca	Common Milkweed	-	-	-	G5	S5	N	-	L5
Betula alleghaniensis	Yellow Birch	-	-	-	G5	S5	N	-	L4
Betula papyrifera	Paper Birch	-	-	-	G5	S5	N	-	L4
Bidens cernua	Nodding Beggarticks	-	-	-	G5	S5	N	-	L5
Bidens frondosa	Devil's Beggarticks	-	-	-	G5	S5	N	-	L5
Bromus inermis	Smooth Brome	-	-	-	G5	SNA	I	-	L+
Calamagrostis canadensis	Bluejoint Reedgrass	-	-	-	G5	S5	N	-	L4
Carex cristatella	Crested Sedge	-	-	-	G5	S5	N	-	L5
Carex lacustris	Lake Sedge	-	-	-	G5	S5	N	-	L4
Carex vulpinoidea	Fox Sedge	-	-	-	G5	S5	N	-	L5
Carex sp.	Sedge	-	-	-	G5	S5	N	-	-
Centaurea jacea	Brown Knapweed	-	-	-	GNR	SNA	I	-	L+
Cichorium intybus	Chicory	-	-	-	GNR	SNA	I	-	L+
Cicuta bulbifera	Bulbous Water-hemlock	-	-	-	G5	S5	N	-	L5
Circaea canadensis ssp. canadensis	Canada Enchanter's Nightshade	-	-	-	GNR	S5	N	-	L5
Cirsium arvense	Canada Thistle	-	-	-	G5	SNA	I	-	L+
Cirsium vulgare	Bull Thistle	-	-	-	GNR	SNA	I	-	L+
Convolvulus arvensis	Field Bindweed	-	-	-	GNR	SNA	I	-	L+
Cornus stolonifera (formerly *C. sericea*)	Red-osier Dogwood	-	-	-	G5	S5	N	-	L5
Crataegus monogyna	English Hawthorn	-	-	-	G5	SNA	I	-	L+
Crataegus sp.	Hawthorn	-	-	-				-	-
Daucus carota	Wild Carrot	-	-	-	GNR	SNA	I	-	L+

Scientific Name	**Common Name**	**COSEWIC[1]**	**SARA[1]**	**ESA[1]**	**G-Rank[1]**	**S-Rank[1]**	**Native/ Introduced**	**Greater Toronto Area (Varga et al. 2000)[3]**	**Flora Species Ranking of the TRCA Jurisdiction (2019)[2]**
Dipsacus fullonum	Common Teasel	-	-	-	GNR	SNA	I	-	L+
Eleocharis palustris	Common Spikerush	-	-	-	G5?	S5	N	-	L3
Equisetum arvense	Field Horsetail	-	-	-	G5	S5	N	-	L5
Equisetum sp.	Horsetail	-	-	-	-	-		-	-
Erigeron sp.	Fleabane	-	-	-	-	-		-	-
Eurybia macrophylla	Large-leaved Aster	-	-	-	G5	S5	N	-	L5
Euthamia graminifolia	Grass-leaved Goldenrod	-	-	-	G5	S5	N	-	L5
Eutrochium maculatum	Spotted Joe Pye Weed	-	-	-	G5	S5	N	-	L5
Fragaria virginiana	Wild Strawberry	-	-	-	G5	S5	N	-	L5
Frangula alnus	Glossy Buckthorn	-	-	-	GNR	SNA	I	-	L+
Fraxinus nigra	Black Ash	-	-	-	G5	S3	N	-	L4
Fraxinus pennsylvanica	Green Ash	-	-	-	G5	S4	N	-	L5
Geum sp.	Avens	-	-	-	-	-		-	-
Hydrophyllum virginianum	Virginia Waterleaf	-	-	-	G5	S5	N	-	L5
Hypericum perforatum	Common St. John’s-wort	-	-	-	GNR	SNA	I	-	L+
Ilex verticillata	Common Winterberry	-	-	-	G5	S5	N	-	L3
Impatiens capensis	Spotted Jewelweed	-	-	-	G5	S5	N	-	L5
Inula helenium	Elecampane	-	-	-	GNR	SNA	I	-	L+
Iris versicolore	Harlequin Blue Flag	-	-	-	G5	S5	N	-	L3
Juglans nigra	Black Walnut	-	-	-	G5	S4?	N	-	L5
Lemna minor	Small Duckweed	-	-	-	G5	S5?	N	-	L5
Lolium perenne	Perennial Ryegrass	-	-	-	GNR	SNA	I	-	L+
Lonicera sp.	Honeysuckle	-	-	-	-	-		-	-
Lotus corniculatus	Garden Bird's-foot Trefoil	-	-	-	GNR	SNA	I	-	L+
Lycopus uniflorus	Northern Water-horehound	-	-	-	G5	S5	N	-	L5
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-	-	-	G5	S5	N	-	L4
Lythrum salicaria	Purple Loosestrife	-	-	-	G5	SNA	I	-	L+
Maianthemum canadense	Wild Lily-of-the-valley	-	-	-	G5	S5	N	-	L4
Malva sp.	Mallow	-	-	-	-	-		-	-
Matteuccia struthiopteris	Ostrich Fern	-	-	-	G5	S5	N	-	L5
Melilotus albus	White Sweet-clover	-	-	-	G5	SNA	I	-	L+
Oenothera biennis	Common Evening Primrose	-	-	-	G5	S5	N	-	L5
Onoclea sensibilis	Sensitive Fern	-	-	-	G5	S5	N	-	L5
Parthenocissus quinquefolia	Virginia Creeper	-	-	-	G5	S4?	N	-	L5

Scientific Name	**Common Name**	**COSEWIC[1]**	**SARA[1]**	**ESA[1]**	**G-Rank[1]**	**S-Rank[1]**	**Native/ Introduced**	**Greater Toronto Area (Varga et al. 2000)[3]**	**Flora Species Ranking of the TRCA Jurisdiction (2019)[2]**
Penstemon digitalis	Foxglove Beardtongue	-	-	-	G5	S4		Rare	L4
Phalaris arundinacea	Reed Canary Grass	-	-	-	G5	S5	N	-	L+?
Phleum pratense	Common Timothy	-	-	-	GNR	SNA	I	-	L+
Phragmites australis ssp. australis	European Reed	-	-	-	G5T5	SNA	I	-	L+
Pinus resinosa	Red Pine	-	-	-	G5	S5	N	Rare	L1
Pinus strobus	White Pine	-	-	-	G5	S5	N	-	L4
Pinus sylvestris	Scots Pine	-	-	-	GNR	SNA	I	-	L+
Plantago major	Common Plantain	-	-	-	G5	SNA	I	-	L+
Poa pratensis	Kentucky Bluegrass	-	-	-	G5	S5	I	-	L+
Populus tremuloides	Trembling Aspen	-	-	-	G5	S5	N	-	-
Potamogeton crispus	Curly-leaved Pondweed	-	-	-	G5	SNA	I	-	L+
Prunus serotina	Black Cherry	-	-	-	G5	S5	N	-	L5
Prunus virginiana	Choke Cherry	-	-	-	G5	S5	N	-	L5
Pteridium aquilinum	Bracken Fern	-	-	-	G5	S5	N	-	L4
Quercus macrocarpa	Bur Oak	-	-	-	G5	S5	N	-	-
Ranunculus acris	Tall Buttercup	-	-	-	G5	SNA	I	-	L+
Rhamnus cathartica	Common Buckthorn	-	-	-	GNR	SNA	I	-	L+
Rhus typhina	Staghorn Sumac	-	-	-	G5	S5	N	-	L5
Ribes triste	Swamp Red Currant	-	-	-	G5	S5	N	-	L3
Rosa sp.	Rose	-	-	-	-	-		-	L4
Rubus idaeus ssp. strigosus	Wild Red Raspberry	-	-	-	G5T5	S5	N	-	L5
Rubus pubescens	Dwarf Raspberry	-	-	-	G5	S5	N	-	L4
Rudbeckia hirta	Black-eyed Susan	-	-	-	G5	S5	N	-	L4
Rumex crispus	Curly Dock	-	-	-	GNR	SNA	I	-	L+
Sagittaria latifolia	Broad-leaved Arrowhead	-	-	-	G5	S5	N	-	L4
Salix alba	White Willow	-	-	-	G5	SNA	I	-	L+
Salix bebbiana	Bebb's Willow	-	-	-	G5	S5	N	-	L4
Salix discolor	Pussy Willow	-	-	-	G5	S5	N	-	L4
Salix eriocephala	Heart-leaved Willow	-	-	-	G5	S5	N	-	L5
Salix petiolaris	Meadow Willow	-	-	-	G5	S5	N	-	L4
Salix sp.	Willow	-	-	-	-	-		-	-
Solanum dulcamara	Bittersweet Nightshade	-	-	-	GNR	SNA	I	-	L+
Solidago altissima	Tall Goldenrod	-	-	-	G5	S5	N	-	L5
Solidago canadensis	Canada Goldenrod	-	-	-	G5	S5	N	-	L5

Scientific Name	**Common Name**	**COSEWIC[1]**	**SARA[1]**	**ESA[1]**	**G-Rank[1]**	**S-Rank[1]**	**Native/ Introduced**	**Greater Toronto Area (Varga et al. 2000)[3]**	**Flora Species Ranking of the TRCA Jurisdiction (2019)[2]**
Solidago gigantea	Giant Goldenrod	-	-	-	G5	S5	N	-	L5
Solidago sp.	Goldenrod	-	-	-	-	-		-	-
Sonchus arvensis	Field Sow-thistle	-	-	-	GNR	SNA	I	-	L+
Stuckenia pectinata	Sago Pondweed	-	-	-	G5	S5	N	-	L4
Symphyotrichum cordifolium	Heart-leaved Aster	-	-	-	G5	S5	N	-	L5
Symphyotrichum ericoides	White Heath Aster	-	-	-	G5	S5	N	-	L5
Symphyotrichum lanceolatum	White Panicled Aster	-	-	-	G5	S5	N	-	L5
Symphyotrichum lateriflorum	Calico Aster	-	-	-	G5	S5	N	-	L5
Symphyotrichum novae-angliae	New England Aster	-	-	-	G5	S5	N	-	L5
Symphyotrichum puniceum	Swamp Aster	-	-	-	G5	S5	N	-	L5
Taraxacum officinale	Common Dandelion	-	-	-	G5	SNA	I	-	L+
Thuja occidentalis	Eastern White Cedar	-	-	-	G5	S5	N	-	L5
Trifolium pratense	Red Clover	-	-	-	GNR	SNA	I	-	L+
Trifolium repens	White Clover	-	-	-	GNR	SNA	I	-	L+
Tripleurospermum inodorum	Scentless Chamomile	-	-	-	GNR	SNA	I	-	L+
Tsuga canadensis	Eastern Hemlock	-	-	-	G5	S5	N	-	L4
Typha latifolia	Broad-leaved Cattail	-	-	-	G5	S5	N	-	L4
Ulmus americana	American Elm	-	-	-	G5	S5	N	-	L5
Verbascum thapsus	Common Mullein	-	-	-	GNR	SNA	I	-	L+
Viburnum lantana	Wayfaring Viburnum	-	-	-	GNR	SNA	I	-	L+
Vicia cracca	Tufted Vetch	-	-	-	GNR	SNA	I	-	L+
Vicia sp.	Vetch	-	-	-	-	-		-	-
Viola sp.	Violet	-	-	-	-	-		-	-
Vitis riparia	Riverbank Grape	-	-	-	G5	S5	N	-	L5

Global ranking definitions:

G1 **Critically Imperiled -** At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 **Imperiled -** At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 **Vulnerable -** At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4 **Apparently Secure -** Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 **Secure -** Common; widespread and abundant.
GNR **Unranked** - Global rank not yet assessed.
? **Inexact Numeric Rank -** Denotes inexact numeric rank (e.g., G2?)

Subnational ranking definitions:

S1	**Critically Imperiled -** Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2	**Imperiled -** Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3	**Vulnerable -** Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	**Apparently Secure -** Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5	**Secure -** Common, widespread, and abundant in the nation or state/province.
SNA	**Not Applicable -** A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

TRCA Flora Species Ranking

L1-L3	species of regional conservation concern.
L4	species of conservation concern in urban area.
L5	species not of conservation concern at this time.
LX	species is extirpated from TRCA.
L+	introduced species, not native to TRCA.
L+?	species is probably introduced.

References:

[1]Natural Heritage Information Centre. 2018. Vascular Plant Species List (December 16, 2018). Downloaded on December 10, 2019.

[2]Toronto Region Conservation Authority. 2019. *Flora Species of the TRCA Jurisdiction*. Downloaded on December 18, 2019

[3]Varga, S., Leadbeater, D., Webber, J., Kaiser, J., Crins, B., Kamstra, J., Banville, D., Ashley, E., Miller, G., Kingsley, C., Jacobsen, C., Mewa, K., Tebby, L., Mosley, E., and E. Zajc. 2000. Distribution and Status of the Vascular Plants of the Greater Toronto Area. Ontario Ministry of Natural Resources Aurora District. 103 pp.

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Appendix C

Significant Wildlife Habitat Screening Ecoregion 6E Criteria

Region of Peel and Town of Caledon Significant Wildlife Habitat

Appendix C: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Table 1.1: Seasonal Concentration Areas of Animals						
Waterfowl Stopover & Staging Areas (Terrestrial) **<u>Rationale</u>**: Habitat important to migrating waterfowl.	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these ecosites.	Fields with sheet water during Spring (mid-March to May). • 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.	Low potential. Although CUM1 ecosites are present on the subject lands, there is no evidence of spring flooding.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	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, dependent on local site conditions and adjacent land use is the SWH. • 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.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Waterfowl Stopover & Staging Areas (Aquatic) **<u>Rationale:</u>**	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and SWM ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	Low potential. MAS3 and SWD6 ecosites are present within the study area, however this site is highly disturbed with intensive agriculture and surrounding busy roads and the ponds and marshes present are small and insignificant.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup	**Studies carried out & 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 Ecological Land Classification	Low potential. Targeted surveys were not carried out to verify the defining criteria. MAS3 and SWD6 ecosites are present within the Study Area, however this site is highly disturbed with intensive agriculture and surrounding busy roads and the ponds and marshes present are small and insignificant.

Appendix C: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.		• These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water).		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	(ELC) ecosites and a 100 m radius area is the SWH. • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are SWH. • 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 **Rationale**: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	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.	No potential. There is no shoreline habitat of lakes and rivers within the study area. Wetlands are present in the Study Area however this site is highly disturbed with intensive agriculture and the ponds and marshes present are small and insignificant.	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 Dunlin	**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".	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
					• **SWHMiST Index #8** provides development effects and mitigation measures.	
Raptor Wintering Area **<u>Rationale</u>**: Sites used by multiple species, a high number of individuals and used annually are most significant.	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; <u>Forest:</u> FOD, FOM, FOC. <u>Upland</u>: CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> 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.	No potential. Although FOM, CUM and SWD ecosites are present in the study area, these sites are small (less than 20 ha). In general, the study area is highly disturbed with intensive agriculture throughout. There is no open water present for Bald Eagle habitat.	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **<u>Special Concern:</u>** Short-eared Owl Bald Eagle	**Studies confirm the use of these habitats by:** • One or more Short-eared Owls or; One or more Bald Eagle 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.	Low potential. Targeted surveys were not carried out to verify the defining criteria. Although FOM, CUM and SWD ecosites are present in the study area, these sites are small (less than 20 ha). In general, the study area is highly disturbed with intensive agriculture throughout. There is no open water present for Bald Eagle habitat.
Bat Hibernacula **<u>Rationale</u>**:	**Bat Hibernacula may be found in these ecosites:**	• Hibernacula may be found in caves, mine shafts, underground	No potential. The ecosites listed are not found in the Study Area and the	Big Brown Bat Tri-coloured Bat	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200 m radius around the	No potential.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Bat hibernacula are rare habitats in all Ontario landscapes.	CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	foundations and Karsts. • Active mine sites should not be considered as SWH. • The locations of bat hibernacula are relatively poorly known.	hibernacula habitat listed is not present within the Study Area.		entrance of the hibernaculum for most development types and 1000 m for wind farms. • Studies are to be conducted during the peak swarming period (August to September). 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.	The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Bat Maternity Colonies **<u>Rationale:</u>** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	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	Low potential. Although the SWD ecosite is present in the study area within the PSW, this site is small (less than 10 ha). Older forest areas are not present in the study area.	Big Brown Bat Silver-haired Bat	• 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.	No potential. There are no forested ecosites greater than 10 ha present.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
		areas with at least 21 snags/ha are preferred.				
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.	Snapping and Midland Painted Turtles. **ELC Community Classes:** SW, MA, OA and SA **ELC Community Series:** FEO and BOO For 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 must 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.	Moderate potential. MA, SW and SA community classes are present in the study area. In particular, a pond is present that likely has a depth of 1 m and a soft substrate that could provide turtle wintering habitat.	Midland Painted Turtle **<u>Special Concern:</u>** Northern Map Turtle Snapping Turtle	• 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 turtles on warm, sunny days during the fall (September–October) or spring (March–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.	Confirmed. Ten Midland Painted Turtles were observed basking on Sept. 10, 2019 during ELC field studies on the natural pond (SAS1-1) towards the northeast end of the subject lands.
Reptile Hibernaculum **<u>Rationale</u>**: Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	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.	• 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	Low potential. Some potential exists within the Study Area where there may be animal burrows, or micro features on the landscape that go below the frost line, such as rock piles or slopes, rotting logs and the foundations of old buildings; there are 5 rural residential houses with foundations, some of which may	**<u>Snakes</u>**: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **<u>Special Concern</u>**: Milksnake Eastern Ribbonsnake	**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)	Low potential. Targeted surveys were not carried out to verify the defining criteria, however no incidental observations of the listed reptile species were made during field surveys.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
	Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and ecosites: FOC1 and FOC3.	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. • Five-lined Skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.	be suitable for reptile hibernacula.	**<u>Lizard: Special Concern:</u>** (Southern Shield population): Five-lined Skink	on sunny warm days in Spring (April/May) and Fall (September/October). • **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 near 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. • Presence of any active hibernaculum for Skink is significant. • SWHMiST Index #37 provides development effects and mitigation measures for five-lined Skink wintering habitat.	
Colonially - Nesting Bird Breeding Habitat (Bank & Cliff) **<u>Rationale</u>:** Historical use and number of	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns.	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed permitted aggregate area. • Does not include man-made	No potential. Natural features providing exposed bank or cliff habitat are not present in the Study Area.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	**Studies confirming:** • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
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.	**Habitat found in the following ecosites:** CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	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.			• 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.	
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **<u>Rationale:</u>** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	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.	Moderate potential. The SWD6 ecosite is present in the study area and natural features providing standing trees, shrubs and emergent vegetation are present in the wetlands on the subject lands.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	**Studies confirming:** • Presence of 2 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.	Moderate potential for Green Heron. The defining criteria for Significant Wildlife Habitat is not present in the study area. According to the Heart Lake PSW evaluation, a Great Blue Heron heronry has been previously recorded within the Heart Lake PSW Complex in Wetland #3 south of the study area. No Great Blue Heron heronries were observed by Burnside during field surveys within the wetlands located in the study area limits.
Colonially - Nesting Bird Breeding Habitat (Ground) **<u>Rationale:</u>** Colonies are important to	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. • Brewers Blackbird colonies are found	No potential. No islands or peninsulas associated with open water or marshy areas is present in the Study Area. Breeding records for Brewer's Blackbird are mainly restricted	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	**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. • Presence of 5 or more pairs for Brewer's Blackbird.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
local bird population, typically sites are only known colony in area and are used annually.	Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird). MAM1 – 6 MAS1 – 3 CUM CUT CUS	loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands.	to the north shore of Lake Huron and Georgian Bay, as well as Sudbury/Manitoulin Island and NW Ontario; no breeding records currently exist for Southern and Eastern Ontario.		• 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.	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 Erie or 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	No potential. The Study Area is greater than 5 km from Lake Ontario and the required field size is smaller than 10 ha in size.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	**Studies confirm:** • The presence of Monarch Use Days (MUD) during fall migration (August/October). 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. • **SWHMiST Index #16** provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		shelter are requirements for this habitat. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes.				
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	**All ecosites associated with these ELC Community Series:** FOC FOM FOD SWC SWM SWD	• Woodlots >10 ha in size and within 5 km of Lake Ontario. • If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat. • If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Ontario are more significant. • 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 5 km of Lake Ontario are Candidate SWH.	No potential. The Study Area is greater than 5 km from Lake Ontario.	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)	**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 (April/May) and fall (August/October) 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.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix C: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Deer Yarding Areas **<u>Rationale:</u>** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	**Note:** MNRF to determine this habitat. **ELC Community Series** providing a thermal cover component for a deer yard would include: FOM FOC SWM SWC **Or these ELC ecosites:** CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is	No potential. No deer yarding areas identified by the MNRF.	White-tailed Deer	**No Studies Required:** • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40 cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by MNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by MNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • MNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual". • Woodlots with high densities of deer due to artificial feeding are not significant.				
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid	**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 will typically be >100 ha in size. Woodlots <100 ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow	No potential. No deer winter congregation areas identified by the MNRF.	White-tailed Deer	**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 (January/February) when >20 cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
the impacts of winter conditions.		depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • 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. • Woodlots with high densities of deer due to artificial feeding are not significant.			• If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • **SWHMiST Index #2** provides development effects and mitigation measures.	
Table 1.2.1: 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.	No potential.		• 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. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area. The Niagara Escarpment is not present in the Study Area.
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	• 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	No potential.		• A sand barren area >0.5 ha in size. • Confirm any ELC Vegetation Type for Sand Barrens. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • **SWHMiST Index #20** provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
	(SBT1). Tree cover always ≤ 60%.	barren to tree covered, but less than 60%.				
Alvar **<u>Rationale;</u>** Alvars are extremely rare habitats in Ecoregion 6E.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **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.	• 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, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover. • Alvar is particularly rare in Ecoregion 6E where the only known sites are found in the western islands of Lake Erie.	No potential.		**Field studies that identify:** • An Alvar site > 0.5 ha in size. • 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 is exotic sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. • **SWHMiST Index #17** provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix C: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Old Growth Forest **<u>Rationale;</u>** Due to historic logging practices and land clearance for agriculture, old growth forest is rare in the Ecoregion 6E.	**Forest Community Series:** FOD FOC FOM SWD SWC SWM	• 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.	No potential.		**Field Studies will determine:** • If dominant trees species are >140 years old, then the area containing these trees is SWH. • 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 area containing the old growth characteristics. • **SWHMiST Index #23** provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Savannah **<u>Rationale:</u>** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	• A Savannah is a tallgrass prairie habitat that has tree cover between 25–60%.	No potential.		**Field studies confirm:** • 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. • One or more of the Savannah indicator species listed in Appendix N should be present. **Note**: Savannah plant spp. list from Ecoregion 6E should be used. • Area of the ELC ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • **SWHMiST Index #18** provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Appendix C: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
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 (ROW) 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.	No potential.		**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 6E should be used. • Area of the ELC ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • **SWHMiST Index #19** provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Other Rare Vegetation Communities **<u>Rationale:</u>** Plant communities that often contain rare species which depend on the habitat for survival.	• Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. • Any ELC ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	• Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	Low potential. Provincially rare vegetation communities were not identified during desktop assessment and background review.		• ELC ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. • The MNRF/Natural Heritage Information Centre (NHIC) will have up to date listing for rare vegetation communities. **Field studies should confirm:** • If an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH. • **SWHMiST Index #37** provides development effects and mitigation measures.	No potential. No rare vegetation communities were identified during ELC field surveys.
Table 1.2.2: Specialized Habitats for Wildlife considered Significant Wildlife Habitat						
Waterfowl Nesting Area **<u>Rationale;</u>**	**All upland habitats located adjacent to these wetland**	• A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a	Moderate potential. MAS3 is present in the study area in addition to SWD and	American Black Duck Northern Pintail Northern Shoveler Gadwall	**Studies confirmed:**	Low potential. According to the Heart Lake PSW evaluation, Mallard and Wood Duck

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	**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 (PSW).	wetland (>0.5ha) and any small wetlands (0.5ha) 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.	SWT ecosites. These ecosites are part of the Heart Lake Wetland PSW. Immediately adjacent to these ecosites are upland areas that are greater than 120 m wide.	Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	• 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.	breed in the Heart Lake Wetland PSW. However, targeted surveys were not carried out to verify the defining criteria. No incidental observations of the listed species were made during field surveys. Additionally, the wetland evaluation does not identify Wetland #1 as sustaining signficant waterfowl breeding areas.
Bald Eagle & Osprey Nesting, Foraging & Perching Habitat **<u>Rationale:</u>** Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations	**ELC Forest Community Series:** FOD FOM FOC SWD SWM and SWC (directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top of a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.	Low potential. While FOM and SWD ecosites are present in the study area, forested shorelines, islands and structures over water are not present in the study area. In addition, this site is highly disturbed with intensive agriculture and surrounding busy roads.	Osprey **Special Concern** Bald Eagle	**Studies confirm the use of these nests by**: • 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	Low potential. While FOM and SWD ecosites are present in the study area, forested shorelines, islands and structures over water are not present in the study area. In addition, this site is highly disturbed with intensive agriculture and surrounding busy roads. Targeted surveys were not carried out to verify the defining criteria, however no incidental observations of the listed species were made during field surveys.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
may be lost due to increasing shoreline development pressures and scarcity of habitat.		• Nests located on man-made objects are not to be included as SWH (e.g., telephone poles and constructed nesting platforms).			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. 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.	
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these are area sensitive habitats and are often used annually by these species.	May be found in all forested ELC ecosites. **May also be found in:** SWC SWM SWD and CUP3	• All natural or conifer plantation woodland/forest stands >30 ha with >10ha 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.	No potential. While forested ecosites and the SWD ecosite are present in the study area, the habitat criteria listed are not found in the study area.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	**Studies confirm:** • Presence of 1 or more active nests from species list is considered significant. • 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 200 m radius around the nest is the SWH.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the study area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat in the Study Area (within 120 m of the Project)	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)
		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.			• Broad-winged Hawk and Coopers Hawk– A 100 m 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.	
Turtle Nesting Areas **<u>Rationale:</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	**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 provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of	Moderate potential. MAS3 ecosites are present within the study area.	Midland Painted Turtle <u>Special Concern Species:</u> Northern Map Turtle Snapping Turtle	**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 30-100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100 m 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.	High potential. Ten Midland Painted Turtles were observed basking on Sept. 10, 2019 during ELC field studies on the natural pond (SAS1-1) towards the northeast end of the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
		marshes, lakes, and rivers are most frequently used.			• **SWHMiST 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.	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.	No potential. The study area is not located within the headwaters of a stream or river system.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	**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. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
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 populations.	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to	• Presence of a wetland, pond or woodland pool (including vernal pools) >500 m^2 (about 25 m diameter) 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 water in most years until mid-July are more likely to be	Low potential. While FOM and SWD ecosites are present in the study area, there are no ponds adjacent to a woodland. In addition, the study area is highly disturbed with intensive agriculture and surrounding busy roads.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	**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) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • 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	No potential. Targeted amphibian breeding call surveys were conducted in the Study Area. The following frog species were recorded: Wood Frog. None of the frog species listed were identified calling at Call Level Code 3 or with at least 20 individuals or egg masses at any station during the field studies in the ecosite type listed.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
	reduced risk to migrating amphibians.	used as breeding habitat.			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.	**ELC Community Classes:** SW MA FE BO OA and SA. Typically, these wetland ecosites will be isolated (>120 m) 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.	Low potential. While SW, MA and SA community classes and a pond >500 m^2 is present in the study area, it is found in a highly disturbed area with intensive agriculture surrounding it and roads nearby.	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	**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 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 Schedule. • **SWHMiST Index #15** provides development effects and mitigation measures.	No potential. Targeted amphibian breeding call surveys were conducted in the Study Area. The following frog species were recorded: American Toad and Green Frog. American Toad was recorded calling at Call Level Code 3, however no other species were recorded with Call Level Code 3. None of the recorded species were noted with at least 20 individuals or egg masses at any station during the field studies.
Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale</u>:** Large, natural blocks of mature	**All ecosites associated with these ELC Community Series:** FOC FOM	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30 ha.	No potential. No forests present in the Study Area meet the age and size criteria for significant.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler	**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	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	FOD SWC SWM SWD	• Interior forest habitat is at least 200 m from forest edge habitat.		Ovenbird Scarlet Tanager Winter Wren **Special Concern:** Cerulean Warbler Canada Warbler	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.	
Table 1.3: Habitat for Species of Conservation Concern considered Significant Wildlife Habitat						
Marsh Breeding Bird Habitat **<u>Rationale;</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	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.	Low potential. While SAS1, SW, MA and CUM1 ecosites are present in the study area, it is surrounded by intensive agriculture and roads.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	**Studies confirm:** • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes 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 and Bird Habitats: Guidelines for Wind Power Projects". • **SWHMiST Index #35** provides development effects and mitigation measures.	Low potential. While SAS1, SW, MA and CUM1 ecosites are present in the study area, it is surrounded by intenstive agriculture and roads. Targeted surveys were not carried out to verify the defining criteria, however no incidental observations of the listed species were made during field surveys.
Open Country Bird Breeding Habitat	CUM1 CUM2	• Large grassland areas (includes natural and cultural	No potential.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow	**Field Studies confirm:**	No potential.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
<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.		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.	While CUM1 ecosites are present in the study area, the habitat size criteria listed is not found in the study area.	Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	• 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 Index #32** provides development effects and mitigation measures.	The habitat size criteria for Significant Wildlife Habitat is not present in the study area.
Shrub/Early Successional Bird Breeding Habitat **<u>Rationale;</u>** This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	• Large field areas succeeding to shrub and thicket habitats >10 ha in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e., no row-cropping, haying or live-stock pasturing in the last 5 years).	No potential. The ecosites and habitat criteria listed for Significant Wildlife Habitat are not present in the study area.	**Indicator Spp:** Brown Thrasher Clay-coloured Sparrow **Common Spp.** Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	**Field Studies confirm:** • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as SWH. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the study area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
significantly over the past 40 years based on CWS (2004) trend records.		• 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.			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.	
Terrestrial Crayfish **<u>Rationale:</u>** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	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.	Moderate potential. MAS3, SWD, SWT and CUM1 ecosites are present in the study area and the Terrestrial Crayfish was observed by the TRCA in the general area (as noted in the PSW evaluation).	Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish (*Cambarus diogenes*)	**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.	Moderate potential. MAS3, SWD, SWT and CUM1 ecosites are present in the study area and the Chimney Crayfish was observed by the TRCA in the general area (as noted in the PSW evaluation) however crayfish burrows were not observed during Burnside field surveys.
Special Concern and Rare Wildlife Species	All plant and animal Element Occurrences (EO) within a 1 or 10 km grid.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or	Moderate potential. The Special Concern species Canada Warbler, Eastern Wood-pewee, Grasshopper	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the NHIC.	**Studies Confirm:** • Assessment/inventory of the site for the identified Special Concern or rare species needs	Confirmed.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
<u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	provincially Rare species; linking candidate habitat on the site needs to be completed to ELC ecosites.	Sparrow, Wood Thrush, Monarch and Snapping Turtle have been identified within a 10 km radius of the study area through background review of databases for the study area. Narrow-leaved Beard Moss (S2) and Western Chorus Frog (S3) were identified within a 10 km radius of the Study Area when an NHIC search and Ontario Reptile and Amphibian Atlas search were conducted for the area.		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 Index #37** provides development effects and mitigation measures.	Monarch, a Special Concern species, was observed in the Study Area during field investigations in 2019.
Table 1.4.1: 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.	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.	No potential.	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	• 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 15 m of vegetation on both sides of waterway or be up to 200 m wide of woodland habitat and with gaps <20 m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. • **SWHMiST Index #40** provides development effects and mitigation measures.	No potential. Since no confirmed significant Amphibian Breeding Habitat was identified as part of the field studies, no Amphibian Movement Corridors are considered present.

Appendix C: Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
Deer Movement Corridors **<u>Rationale:</u>** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. • A deer wintering habitat identified by the MNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges).	No potential. Since deer wintering habitat was not identified by the MNRF, there are no deer movement corridors within the Study Area.	White-tailed Deer	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200 m wide with gaps <20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway. • Shorter corridors are more significant than longer corridors, SWHMiST Index #39 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.
Table 1.5.1: Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E						
6E-14 Mast Producing Areas **<u>Rationale</u>:** The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is	**All Forested habitat represented by ELC Community Series**: FOM FOD	• Woodland ecosites >30 ha with mast-producing tree species, either soft (cherry) or hard (oak and beech). • Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. • Forested habitats need to be large enough to provide cover and protection for black bears.	No potential. Black bears are not present within the Study Area.	Black Bear	**All woodlands >30 ha with a 50% composition of these ELC Vegetation Types are considered significant:** FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	**Habitat Criteria**	**Presence of Candidate Habitat in the Study Area (within 120 m of the Project)**	**Wildlife Species**	**Defining Criteria**	**Presence of Confirmed Significant Wildlife Habitat in the Study Area (within 120 m of the Project)**
important for bear.					FOD6-5 SWHMiST Index #3 provides development effects and mitigation measures.	
6E- 17 **Lek** **<u>Rationale</u>:** Sharp-tailed grouse only occur on Manitoulin Island in Ecoregion 6E, Leks are an important habitat to maintain their population.	CUM CUS CUT	• The Lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. • Leks are typically a grassy field/meadow >15 ha with adjacent shrublands and >30 ha with adjacent deciduous woodland. Conifer trees within 500 m are not tolerated. • Grasslands (field/meadow) are to be >15 ha when adjacent to shrubland and >30 ha when adjacent to deciduous woodland. • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying). • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting.	No potential. Sharp-tailed Grouse are not present within the Study Area.	Sharp-tailed Grouse	• Studies confirming Lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significant. • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the Lek habitat. • SWHMiST cxlix Index #32 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present in the Study Area.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
A. Seasonal Concentration Areas					
A1. Deer Wintering Area	Yes, with threshold	Deer wintering areas in the Region of Peel and Town of Caledon will be assessed and mapped by OMNR staff. According to OMNR, mapping will not be based on the traditional assessment methodology. Instead, it will be based on a detailed assessment of historic and recent motor vehicle accident data for Caledon in association with local expert knowledge.	Yes (to be provided by OMNR)	Yes.	See Ecoregion 6E table.
A2. Colonial Bird Nesting Sites (e.g., heronry, gull colony)	Yes, with threshold	It is recommended that thresholds be based on the Significant Wildlife Habitat Technical Guide (OMNR 2000) and ORMCP TP2 (Queen's Printer for Ontario 2007a) supplemented by information from: • Atlas of the Breeding Birds of Ontario 2000-2005 (Cadman *eta.,* 2007) • Breeding Birds of Ontario Vols. 1 & 2 (Peck and James 1983, 1987) • Communications with OMNR and Conservation Authority staff. Therefore, it is recommended that any nesting colonies of the following species be considered SWH in the Region of Peel and Town of Caledon: Great Blue Heron, Great Egret, Black-crowned Night-Heron, and Black Tern. In addition, it is recommended that habitats that support the following number of nests/pairs be considered SWH in the Region of Peel and Town of Caledon: Green Heron, 2; Common Tern, 5; Northern Rough-winged Swallow, 5; Bank Swallow, 30; Cliff Swallow, 8; Barn Swallow, 3; Sedge Wren, 3; and Marsh Wren, 3. <u>Note 1</u>: Excluded areas include: a) actively used portions of recreational areas (e.g., sports fields, golf courses) and parks, and b) lands permanently transformed for human services or infrastructure (e.g., roads, buildings, piers, active pits and quarries). <u>Note 2</u>: If fewer than 5 naturally occurring Bank Swallow colonies exist in any of the jurisdictions within the Region of Peel (e.g., Town of Caledon), all colonies should be considered significant.	No	Yes.	See Ecoregion 6E table.
A3. Waterfowl Nesting Habitat	Yes, with threshold	The recommended threshold for Region of Peel and Town of Caledon are based on ORMCP TP2 (Queen's Printer for Ontario 2007a) but incorporate additions to the species list. Therefore, it is recommended that SWH be defined as waterfowl nesting areas that support: a) Any combination of 3 or more nesting pairs of: Wood Duck, Gadwall, American Wigeon, American Black Duck, Blue-winged Teal, Northern Shoveler, Northern Pintail, Green-winged Teal, Redhead, Hooded Merganser, Common Merganser, and Ruddy Duck. b) Any combination of 10 or more nesting pairs of listed species above, including Mallard.	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
		Note: Waterfowl nesting areas generally correspond with upland habitats adjacent to marsh, swamp and shallow water ELC community classes, and generally extend out as far as 120 from the wetland (> 0.5 ha) or a cluster of 3 or more smaller wetlands (< 0.5 ha) within 150 m of each other.			
A4i. Migratory Landbird Stopover Areas	Region of Peel – Yes, with threshold Town of Caledon No, not applicable	It is recommended that all Natural Areas be identified as SWH within: a) 2 km of Lake Ontario b) River and creek valleys within 5 km of Lake Ontario, and c) 500 m of a river valley, but within 5 km of Lake Ontario. Successional Communities are also to be identified as SWH if they are: • ≥5 ha in size and immediately on the lakeshore, or • ≥10 ha in size and within any of the zones (a, b, c) identified above. Natural Areas = all terrestrial and wetland communities as defined under the Ecological Classification (ELC) system (Lee *et al.* 1998), as well as cultural woodlands and plantations. Successional Areas = cultural savannahs, cultural thickets and cultural meadows. Excluded areas include: a) actively used portions of recreational areas (e.g., sports fields, golf courses) and parks, and b) lands permanently transformed for human services or infrastructure (e.g., roads, buildings, piers, active pits and quarries). Note 1: SWH designation is not intended to limit existing agricultural activities from continuing. Note 2: It is suggested that the City of Mississauga consider reviewing their Tree Permit By Law Number 474-05 to regulate the cutting of trees within 2 km of the lakeshore more rigorously.	Yes (sampling mapping to be provided to the Region)	Yes.	See Ecoregion 6E table.
A4ii. Migratory Bat Stopover Areas	Yes, without threshold	There is insufficient information currently available to suggest a threshold. However, in the not too distant future the OMNR Wind Resource Atlas http://www.ontariowindatlas.ca/) will indicate areas considered important to bat migration. These areas should be considered candidate SWH in Region of Peel and the Town of Caledon. Further field studies will be required to confirm their significance. In meantime, the protection of significant migratory bat stopover areas is probably accomplished by criterion A4i, at least along Lake Ontario.	No	No.	No potential. The recommended thresholds for Significant Wildlife Habitat are not present in the study area.
A4iii. Migratory Butterfly Stopover Areas	Region of Peel – Yes, without threshold Town of Caledon No, not applicable	There is insufficient information currently available to suggest a threshold. It is therefore recommended that the Region of Peel and Town of Caledon defer to the Significant Wildlife Habitat Technical Guide (OMNR 2000) approach, or guidelines for Eco-region 7E (in preparation by OMNR), until more data is gathered/analyzed. These areas are likely covered by criterion A4i along Lake Ontario. Note: According to CVC, migratory butterfly congregations have been observed along the Lake Ontario shoreline (e.g., Lakeside Park and Rattray Marsh) during the fall.	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
A4iv. Migratory Waterfowl Stopover and/or Staging (Terrestrial)	Yes, with threshold	ORMCP TP2 (Queen's Printer for Ontario 2007a) thresholds (but incorporating 4 additional species) are recommended for the Region of Peel and Town of Caledon: • annual aggregations (observed on a single day) of 100 individuals or more in any combination of the listed species. <u>Listed species include:</u> Wood Duck, Gadwall, American Wigeon, American Black Duck, Blue-winged Teal, Northern Shoveler, Northern Pintail, Green-winged Teal, or Ring-necked Duck. Note 1: Annual habitat use can be based on background information or field studies conducted over at least a two-year period. Note 2:· SWH designation is not intended to limit existing agricultural activities from continuing, or preventing built infrastructure (e.g., sewage lagoons) from functioning as required.	No	Yes.	See Ecoregion 6E table.
A4v. Migratory Waterfowl Stopover and/or Staging (Aquatic)	Yes, with threshold	ORMCP TP2 (Queen's Printer for Ontario 2007a) thresholds are recommended for mainland portions of the Region of Peel and Town of Caledon *(*i.e., annual aggregations of 100 or more individuals (observed during a single day), in any combination, included on the Mainland species list). Nearshore waters of Lake Ontario within the globally significant "The West End of Lake Ontario" Important Bird Area (IBA) should automatically be designated as SWH. However, for nearshore waters of Lake Ontario east of the IBA. It is recommended that areas that support annual aggregations of 250 or more individuals (observed during a single day), in any combination, included on the Nearshore species list be considered SWH. <u>Mainland Species List</u>: Wood Duck, Gadwall, American Wigeon, American Black Duck, Blue-winged Teal, Northern Pintail, Northern Shoveler, Green-winged Teal, Ring-necked Duck, Lesser Scaup, Bufflehead, Common Goldeneye, Hooded Merganser, Common Jvierganser. <u>Nearshore Species List:</u> Brant, Canvasback, Redhead, Greater Scaup, Lesser Scaup, King Eider, Common Eider, Harlequin Duck, Surf Scoter, White-winged Scoter, Black Scoter, Long-tailed Duck, Bufflehead, Common Goldeneye, Common Merganser, Red-breasted Merganser, Ruddy Duck, Homed Grebe, Red-necked Grebe. <u>Note 1</u>: Annual habitat use can be based on background information or field studies conducted over at least a two-year period. <u>Note 2</u>: SWH designation is not intended to limit existing agricultural activities from continuing or preventing built infrastructure (e.g., sewage lagoons) from functioning as required. <u>Note 3</u>: The nearshore waters of Lake Ontario are part of conservation authority jurisdiction under the *Conservation Authority Act* and in an agreement with DFO for development planning review including municipal activities and approvals.	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
A4vi. Migratory Shorebird Stopover Areas	Yes, with threshold	It is recommended that sites that support annual aggregations of ≥75 individuals (observed on a single day during migration), of any combination of species, be considered SWH: Note 1: A site is defined as (a) a 100 m reach of shoreline (centered at any location), or (b) a habitat patch 0.2 ha in size (centered at any location). This is roughly equivalent to a circle with a 25 m radius or square with 45 m sides. Note 2: The determination of annual habitat use can be based on background information or field studies conducted over at least a two-year period. Note 3: These thresholds should be examined in the future and revised if necessary by consulting with local naturalist clubs and/or the Ontario Field Ornithologists. Note 4: The designation of SWH is not intended to limit the ability of existing, normal agricultural uses from continuing, or preventing existing municipal infrastructure (e.g., sewage lagoons, piers, etc.) from functioning as required.	No	Yes.	See Ecoregion 6E table.
A5. Raptor Wintering Areas (i.e., used for feeding and/or roosting)	Yes, with threshold	Until information specific to the Region of Peel and Town of Caledon becomes available, it is recommended that the provincial guidelines presented in the Significant Wildlife Habitat Technical Guide (OMNR 2000) be used in both jurisdictions. Accordingly, it is recommended that open fields >20 ha in size adjacent to woodlands be considered candidate SWH. Open fields generally correspond with cultural meadows or abandoned agricultural lands. Smaller sites should also be considered if there is any evidence or reasonable possibility of regular winter raptor activity. Confirmed sites should be occupied at least 60% of winters (almost 2 out of every 3 years), and based on suggestions made by OMNR staff, include 2 or more species and at least 10 individuals of the following species: Northern Harrier, Red-tailed Hawk, Rough-legged Hawk, or American Kestrel. Refer to Section 6.5.10 to see how occurrence data can be collected. Note 1: Any wintering sites used by Short-eared Owl (designated Special Concern in Ontario and Canada) should also be designated SVVH. Note 2: SWH designation is not intended to limit the ability of existing, normal agricultural uses from continuing.	No	Yes.	See Ecoregion 6E table.
A6. Snake Hibernacula	Yes, with threshold	It is recommended that sites that support the following conditions should be considered SWH in the Region of Peel and Town of Caledon. Thresholds are based on ORMCP TP2 (Queen's Printer for Ontario 2007a) and supplemented by Ontario Herpetofaunal Atlas data. • 10 or more Eastern Gartersnakes, or • 5 or more or DeKay's Brownsnakes, or • 2 or more of the following species: Ring-necked Snake, Smooth Greensnake, Northern Watersnake, and Red-bellied Snake, or • 2 or more of the above species. Note 1: Foundations of buildings in active use should be exempt. Any significant hibemacula associated with buildings/structures should however be considered for protection through some type stewardship or mitigation measures.	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
		Note 2: Significant snake hibemacula associated with existing municipal infrastructure should be managed in such a way that maintains the function of the facility but reduces its potential impact.			
A7. Bat Maternal Roosts and Hibernacula	Yes, with threshold	Until information specific to the Region of Peel and Town of Caledon becomes available, it is recommended that the provincial guidelines presented in the Significant Wildlife Habitat Technical Guide (OMNR 2000) be used in both jurisdictions. Therefore, the following numbers of bats should be considered significant at maternity colonies and winter roosts, respectively: Big Brown Bat, 30, 30; Little Brown Bat 100, 50; Eastern Pipistrelle, I0, 20; Silver-haired Bat, I0, NIA; Long-eared Bat, I0, 20; Small-footed Bat, 10, all sites. However, with the discovery of White Nose Syndrome in neighbouring New York State in 2007, OMNR staff must be contacted to see if more restrictive thresholds are warranted. If so, these should supersede those in the Significant Wildlife Habitat Technical Guide (OMNR 2000). Note: The Natural Heritage Information Centre (OMNR) will be providing hibemacula habitat mapping in the future. However, due to its sensitive nature, specific location information will not be available. It is possible that larger patches will be shown on the MNR Wind Resource Atlas representing candidate SWH. It must also be understood that many hibemacula have not been found, therefore any known cave or crevice ecosites or old mine shafts should be considered candidate SWH and evaluated as such.	No	Yes.	See Ecoregion 6E table.
A8. Bullfrog Concentration Areas	Yes, but will be covered by criterion B8ii	The thresholds recommended for the ORM (OMNR, 2007) will be incorporated in criterion B8ii (Amphibian breeding habitat-non-forested sites). That is, any sites supporting breeding Bullfrogs in the Region of Peel and Town of Caledon should be considered SWH.	Yes, but will be part of criterion B8ii	No.	No potential. The recommended thresholds for Significant Wildlife Habitat are not present in the study area. In addition, amphibian call surveys were conducted at the project site and no Bullfrogs were heard calling.
A9. Wild Turkey Winter Range	No, see text in Section 6.5.14	No threshold will be recommended. Wild Turkey is no longer of conservation concern in Ontario, the Region of Peel or Town of Caledon.	Not required	No.	There is no recommended threshold for this criterion due to the Wild Turkey no longer being a species of conservation concern, therefore it does not need to be assessed for Significant Wildlife Habitat.
A10. Turkey Vulture Summer Roosting Areas	Yes, without threshold	None. Insufficient information currently available to suggest a threshold.	No	No.	No potential. The recommended thresholds for Significant Wildlife Habitat are not present in the study area (see Section 6.5.15 for details on habitat criteria).

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
B. Rare Vegetation Communities or Specialized Habitats for Wildlife					
B1. Rare Vegetation Communities	Yes, with threshold	• All communities ranked as S1, S2 or S3 by NHIC (as per Bakowsky 1996) • Targeted vegetation communities ranked S3S4, S4 or S5 in Ecodistricts 6E-7 and 7E-4 in the Great Lakes Conservation Blueprint (Henson and Brodribb 2005), or identified as rare on the ORM in the ORMCP TP2 (Queen's Printer for Ontario 2007a): • Dry-Fresh White Pine-Red Pine Coniferous Forest Type (FOCI-2) • Dry-Fresh White Pine-Sugar Maple Forest Ecosite (FOM 2-2) • Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1) • Moist-Fresh Hemlock-Sugar Maple Mixed Forest Type (FOM 6-1) • Dry-Fresh Red Oak Deciduous Forest Type (FODI-1) • Dry-Fresh White Oak Deciduous Forest Type (FODI-2) • Dry-Fresh Mixed Oak Deciduous Forest Type (FOD 1-4) • Dry-Fresh Oak-Hickory Deciduous Forest Type (FOD 2-2) • Dry-Fresh Hickory Deciduous Forest Type (FOD 2-3) • Fresh Sugar Maple-Black: Maple Deciduous Forest (FOD 6-2) • Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6) • White Cedar-Conifer Organic Swamp Type (SWC3-2) • Willow Organic Thicket Swamp Type (SWT3-2) • All bog and fen wetland communities (considered rare in the Region of Peel and Town of Caledon). Note 1: The S3S4, S4 and S5 ranked woodland ELC Vegetation communities listed above are also captured by the significant woodlands criteria for significant communities (see Section 5.1.15). Note 2: The minimum size for rare vegetation communities is 0.5 ha.	No (available mapping from NHIC and conservation authorities incomplete)	Yes.	See Ecoregion 6E table.
B2. Forests Providing a High Diversity of Habitats	Yes, but will be covered by significant woodlands	It is assumed that all forests providing a high diversity of habitats (as described in the Significant Wildlife Habitat Technical Guide (OMNR 2000) will be captured by the suite of significant woodlands criteria (e.g., size/interior, proximity to a watercourse, and presence of significant habitats and/or species) even though the diversity criterion itself has not been recommended. Note: See Sections 5.3 and 6.5.17 of this report for more details.	Possible at coarse ELC Community series level.	No.	No potential. The recommended thresholds for Significant Wildlife Habitat are not present in the study area.
B3. Old-Growth or Mature Forest Stands	Yes, but will be covered by significant woodlands	It is assumed that all old-growth and mature forests will be captured by the significant woodlands criteria for old-growth and size. Note: See Sections 5.3.3.5 and 6.5.18 of this report for more details.	No	Yes.	See Ecoregion 6E table.
B4. Foraging Areas with Abundant Mast	Yes, with threshold	It has been assumed that most forests providing foraging areas with abundant mast *(i*.e., nuts like acorns and fruit bearing shrubs) will be captured by the significant woodlands criterion for size/interior, as well as the criterion for old growth (see Section 5.3.1 - 5.3.3). To capture some areas that may not be captured as significant woodlands, we are also recommending any ELC community that is: • FOD I (Dry-Fresh Oak Deciduous Forest Ecosite), • FOD 2 (Dry-Fresh Oak-Maple-Hickory Deciduous Forest Ecosite) or	Potentially once ELC Ecosite mapping is completed for the Region of Peel	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
		• FOD 9 (Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite) also be considered SWH under this criterion. Note: See Sections 5.3 and 6.5.19 of this report for a more comprehensive rationale.			
B5. Highly Diverse Areas	Yes, with threshold	The top 5% most diverse habitat patches in the Region of Peel (a) in the Rural System (i.e., the Town of Caledon) and (b) in the Urban System (i.e., the Cities of Brampton and Mississauga). Diversity was determined by the number of ELC community types (at the Community Series level) per habitat patch. Habitat patches were defined as continuous natural areas (i.e., all woodland - FOD, FOC, FOM; wetland - MA, SW, FE; and successional community polygon types - CUT, CUS, CUP, CUW) not separated by arterial or collector roads or built-up areas by more than 20 m gaps. Note: Cultural meadows (CUM) were excluded because of the difficulty in distinguishing them from active agricultural areas in air photo interpretation. All agricultural areas (AGR) were excluded as well.	Yes (sample mapping provided to the Region of Peel)	No.	No potential. The recommended thresholds for Significant Wildlife Habitat are not present in the study area.
B6. Cliffs and Caves	Yes, with threshold	Any cliff, talus, crevice or cave community (per ELC, Lee *et. al.*, 1998) ranked as S1, S2 or S3 by NHIC. Note 1: No minimum size threshold is recommended. Note 2: Areas where quarry licenses are active are excluded.	No (existing mapping from NHIC is incomplete)	Yes.	See Ecoregion 6E table.
B7. Seeps and Springs	Yes, with threshold	Site specific confirmation of presence through any of the following: • Visual confirmation of surface discharge or springs • Groundwater investigations or detailed vegetation assessments *(e.g.,* confirmed presence of plant species known to be associated with seepage areas in southern Ontario such as *Carex scabrata).* • Areas with red or rust coloured stains on the soil surface (these are usually precipitates of iron hydroxides indicating areas of groundwater discharge). • Locating patches of ground that are free of ice and snow in winter and where there is evidence of seepage or springs, or where there are previously confirmed records for seeps or springs. • Presence of marl *(i.e.,* precipitates of carbonates in solution where groundwater pathways go through areas of concentrated dissolved solids and come to the surface) The above site analysis needs to be completed in conjunction with evidence collected through background or current site-specific studies that concludes the seep or spring provides habitat for or otherwise supports other SWH criteria (as identified in this study). • e.g., Deer Wintering Areas, Wild Turkey Winter Range, Rare Vegetation Communities (mostly indirectly), Highly Diverse Areas, Amphibian Breeding Habitat (indirectly), and Habitat for Species of Conservation Concern. Note: In addition to protection of the specific seep or spring zone, there needs to be consideration for protection of the hydrologic dynamics within the groundwater catchment area in the Official Plan policies and/or supporting guidelines.	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
B8i. Amphibian Breeding Habitat Forested Sites (e.g., vernal pools)	Yes, with threshold	Based mostly on standards developed for the ORM (OMNR, 2007), it is recommended that sites that support the following conditions be considered SWH in the Region of Peel and Town of Caledon. • Breeding populations of 2 or more listed species in Group A with a combined total of at least 40 individuals present. • A combined total of at least 30 individuals from any species listed in Group B (i.e., species that tend to behave more like vernal pool obligates, at least in Peel Region). • All breeding populations of Four-toed Salamander regardless of number of individuals Group A: Red-spotted Newt, Blue-spotted Salamander, Jefferson Salamander complex 'hybrids' (where the Blue-spotted Salamander genome dominates), Spotted Salamander, unidentified members of the *Ambystoma* salamander genus, Gray Treefrog, Spring Peeper, and Wood Frog. Group B: Blue-spotted Salamander, unidentified members of the Jefferson Salamander complex or 'hybrids' where the Blue-spotted Salamander genome dominates, and Wood Frog. In addition, management recommendations in "Conserving Pool-breeding Amphibians ... " (Calhoun and Klemens 2002) should be followed (e.g., protect and maintain pool hydrology and water quality). Note 1: It is assumed that for every male frog heard calling a female frog is also present. That is, if 5 male frogs are heard calling, it is assumed 10 individuals are present. Note 2: In order to be sure how many individuals are present, field surveys must be conducted in a seasonally appropriate manner. Timing is critical. Refer to Section 6.5.23 for more information. Note 3: Larvae/egg masses numbers cannot reliably reveal how many individuals are present at a site. Documenting adults at the right time of year, under the right weather conditions, and using the right methodology should be the priority. Refer to Section 6.5.23 for more information. Note 4: The Great Lakes-St. Lawrence/Canadian Shield population of the Western Chorus Frog, whose geographic range includes the Region of Peel, was designated Threatened by COSEWIC in April 2008. It is addressed under Criterion C1.	No	Yes.	See Ecoregion 6E table.
B8ii. Amphibian Breeding Habitat Non-Forested Sites (e.g., marshes)	Yes, with threshold	Based mostly on standards developed for the ORM (OMNR, 2007), it is recommended that sites that support the following conditions be considered SWH in the Region of Peel and Town of Caledon. • Breeding populations of 2 or more listed species in Group A with a combined total of at least 40 individuals present. • A combined total of at least 30 individuals from any species listed in Group B (i.e., species that tends to behave more like vernal pool obligates, at least in Peel Region). • All breeding populations of Bullfrog regardless of number of individuals • All breeding populations of Mudpuppy regardless of number of individuals	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
		In addition, wetland hydrology and water quality must be maintained. Protection must also be extended to adjacent upland habitats to appropriately accommodate the terrestrial portion of their life cycles. The size of the area protected must reflect the habitat requirements of the listed species present. Group A: Red-spotted Newt, Blue-spotted Salamander, Jefferson Salamander complex 'hybrids' (where the Blue-spotted Salamander genome dominates), Spotted Salamander, unidentified members of the *Ambystoma* salamander genus, American Toad, Gray Treefrog, Spring Peeper, Green Frog, Pickerel Frog, Northern Leopard Frog, Mink Frog and Wood Frog. Group B: Blue-spotted Salamander, unidentified members of the Jefferson Salamander complex or 'hybrids' where the Blue-spotted Salamander genome dominates, and Wood Frog. Note 1: It is assumed that for every male frog or toad heard calling a female frog is also present. That is, if 5 male frogs or toads are heard calling, it is assumed 10 individuals are present. Note 2: In order to be sure how many individuals are present, field surveys must be conducted in a seasonally appropriate manner. Timing is critical. Refer to Section 6.5.24 for more information. Note 3: Larvae/egg masses numbers cannot reliably reveal how many individuals are present at a site. Documenting adults at the right time of year, under the right weather conditions, and using the right methodology should be the priority. Refer to Section 6.5.24 for more information. Note 4: The Great Lakes-St. Lawrence/Canadian Shield population of the Western Chorus Frog, whose geographic range includes the Region of Peel, was designated Threatened by COSEWIC in April 2008. It is addressed under Criterion C1.			
B 9. Turtle Nesting Habitat and Turtle Overwintering Areas	Yes, with threshold	It is recommended that the thresholds developed for the ORM (OMNR, 2007), i.e., breeding or overwintering presence of 5 or more pairs/individuals of Snapping Turtle or Midland Painted Turtle, apply to the Region of Peel and Town of Caledon. It is also recommended that the documentation required be expanded to include turtle nests, not just pairs. Note: Snapping Turtle was designated Special Concern nationally in December 2008. It's may receive similar SAR status in Ontario in 2009. Northern Map Turtle was removed from the list since it is designated Special Concern in Ontario and is therefore included under criterion C2.	No	Yes.	See Ecoregion 6E table.
B10. Habitat for Area-Sensitive Forest Interior Breeding Bird Species	Yes, with threshold	The recommended threshold is based on: 1. an analysis of the habitat requirements of area-sensitive forest interior species occurring in Peel, as well as forest interior patch size, and 2. the presence of species listed in the ORMCP TP2 (Queen's Printer for Ontario 2007a). Therefore, it is recommended that mature forests (i.e., greater than 60 years of age) with interior patch size ≥4 ha be considered SWH in the Region of Peel and Town of Caledon. In addition, habitats in either jurisdiction (including plantations) that support 3 or more	Yes, forest interior patch size information is available, but age may need confirmation. Also, site-specific survey work required to confirm whether smaller forest fragments exceed species thresholds.	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
		listed species with probable or confirmed breeding evidence should be considered significant. Listed Species include: Hairy Woodpecker, Pileated Woodpecker, Red-breasted Nuthatch, Brown Creeper, Winter Wren, Veery, Northern Parula, Black-throated Blue Warbler, Black-throated Green Warbler, Blackburnian Warbler, Black-and-white Warbler, Ovenbird, and Scarlet Tanager. Note 1: Whip-poor-will, Yellow-bellied Sapsucker, and Blue-headed Vireo were removed from the list since they also occur along forest edges and openings. Hairy Woodpecker, Pileated Woodpecker, Brown Creeper, Winter Wren, and Black-throated Blue Warbler were added to the list. Note 2: Small inclusions of younger forest should not be excluded when analyzing forest interior patch size.			
B11. Habitat for Open Country and Early Successional Breeding Bird Species	Yes, with threshold	Open country habitats ≥10 ha, not actively farmed for ≥ 5 years and with confirmed habitat utilization by: • at least 4 area-sensitive species from Group A, or • 3 area-sensitive species from Group A and 4 or more species from Group B. Group A: Bobolink, Eastern Meadowlark, Grasshopper Sparrow, Northern Harrier, Savannah Sparrow, Upland Sandpiper, Western Meadowlark. Group B: American Kestrel, Brown Thrasher, Clay-colored Sparrow, Eastern Bluebird, Eastern Kingbird, Field Sparrow, Horned Lark, Sedge Wren, Vesper Sparrow, Willow Flycatcher.	No	Yes.	See Ecoregion 6E table.
B12. Habitat for Wetland Breeding Bird Species	Yes, with threshold	ORMCP TP2 (Queen's Printer for Ontario 2007a) thresholds are recommended for the Region of Peel and Town of Caledon: 5 nesting pairs of any combination of species from Group A, or 4 nesting pairs of any combination of species from Group B. Group A: Common Loon, Pied-billed Grebe, American Bittern, Virginia Rail, Common Moorhem, Sora, American Coot, Sandhill Crane, Wilson's Snipe, Wilson's Phalarope, Black Tern, Marsh Wren, and Sedge Wren. Group B: Black Tern, Marsh Wren, and Sedge Wren.	No	Yes.	See Ecoregion 6E table.
B13i Raptor Nesting Habitat (Raptors associated with wetlands, ponds, and rivers)	Yes, with threshold	ORMCP TP2 (Queen's Printer for Ontario 2007a) thresholds are recommended for the Region of Peel and Town of Caledon: the presence of one or more active nests of Northern Harrier or Osprey. Note: Short-eared Owl was removed from the list of species considered since it is designated Special Concern in Ontario and Canada. It is included under criterion C2 and C3.	No	Yes.	See Ecoregion 6E table.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
B13ii Raptor Nesting Habitat (Raptors associated with woodands habitats)	Yes, with threshold	ORMCP TP2 (Queen's Printer for Ontario 2007a) thresholds are recommended for the Region of Peel and Town of Caledon, (i.e., the presence of one or more active nests from listed species). Listed species include: Sharp-shinned Hawk, Cooper's Hawk, Northern Goshawk, Red-shouldered Hawk, Broad-winged Hawk, Northern Saw-whet Owl, and Long-eared Owl. Note: Eastern Screech-Owl was left off the list because of its common status.	No	Yes.	See Ecoregion 6E table.
B14. Mink, River Otter, Marten, and Fisher Denning Sites	Yes, with threshold	Based on available distribution and occurrence data, it is recommended that the following supporting habitats be considered SWH: • All River Otter, Marten and Fisher den sites (i.e., a min. 10 x 10 m area around the den site); • Mink den sites in natural areas with low levels of disturbance (i.e., a min. 10 x 10 m area around the den site) With respect to Mink and River Otter, it is also recommended that as much wetland and undeveloped, undisturbed shoreline is protected as possible by establishing a 30 m no-development buffer from the shoreline for a distance of up to 500 m in either direction upstream and downstream for Mink and 2 km in either direction upstream and downstream for River Otter. For Fisher, it is recommended that as many large blocks of contiguous mid-aged to mature forest as possible surrounding the den site is protected. Note: Marten is not found in the planning area.	No	No.	No potential. According to the Ontario Fur Managers Federation, Mink prefer den sites dominated by coniferous trees such as Spruce, Balsam and Cedar. This habitat is not found within the study area. According to the Atlas of the Mammals of Ontario (Dobbyn, 1994), River Otter, Marten and Fisher species ranges are found north of Lake Simcoe and are therefore not present within the study area.
B15. Mineral Licks	No, not applicable	No thresholds are suggested as this criterion is primarily meant for Moose and not considered applicable to the Region of Peel or Town of Caledon.	No	No.	No potential. The recommended thresholds for Significant Wildlife Habitat are not present in the study area.
C. Habitat for Species of Conservation Concern Criteria					
C1. Species Identified as Nationally Endangered or Threatened by COSEWIC which are not listed as Endangered or Threatened under Ontario's Endangered Species Act.	Yes, with threshold	The habitat for any species identified to be nationally Endangered or Threatened by COSEWIC that is not identified as an Endangered or Threatened species on the Species at Risk in Ontario (SARO) List under Ontario's *Endangered Species Act* should be designated as SWH. As of April 2009, species in this category that occur or have occurred within the Region of Peel or Town of Caledon include: Rapids Clubtail, Western Chorus Frog, Common Nighthawk, Chimney Swift, Red-headed Woodpecker, Olive-sided Flycatcher, Golden-winged Warbler, Canada Warbler, and Lake Sturgeon. Requirements for habitat protection to be determined on a case-by-case basis in consultation with OMNR.	Specific point locations cannot be mapped due to data sensitivity; generalized 1 km squares can be mapped.	No.	No potential. Although the Western Chorus Frog has the potential to occur in the study area, it was not observed during amphibian call surveys at this site. No other species that meet this criterion have the potential to occur in the study area.

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
		Note: Does not include species that have been designated Threatened or Endangered by OMNR. These species are protected under Ontario's *Endangered Species Act* and Section 2.1.3 (significant habitat of endangered and threatened species) of the Provincial Policy Statement (2005).			
C2. Species Identified as Special Concern based on Species at Risk in Ontario List that is Periodically updated by OMNR.	Yes, with threshold	Per the Significant Wildlife Habitat Technical Guide (OMNR 2000), the habitat for any species designated Special Concern according to the Species at Risk in Ontario List should be identified and protected as SWH. Habitat requirements would need to be determined on a case-by-case basis. Note: Species of conservation concern do not include species that have been designated Threatened or Endangered by OMNR. These species are protected under Ontario's *Endangered Species Act* and Section 2.1.3 (significant habitat of endangered and threatened species) of the Provincial Policy Statement (2005).	Specific point locations cannot be mapped due to data sensitivity; generalized 1 km squares can. In addition, some species (e.g., snakes) cannot be named to protect the location of their habitat.	Yes.	See Ecoregion 6E table.
C3. Species that are listed as Rare (S1-S3) or Historical in Ontario based on records kept by the NHIC.	Yes, with threshold	Per the Significant Wildlife Habitat Technical Guide (OMNR 2000), habitat for any species listed as S1, S2 and S3 (based on the records kept by the NHIC), should be I identified and protected as SWH. Habitat requirements would need to be determined on a case-by-case basis.	Specific point locations cannot be mapped due to data sensitivity; generalized 1 km squares can be mapped.	Yes.	See Ecoregion 6E table.
C4. Species whose populations appear to be experiencing substantial declines in Ontario.	Yes, without threshold	It is recommended that "substantial declines" be defined as significant declines at the p <0.10 (90%) confidence level. Breeding Birds Upon careful review of existing information sources such as the Breeding Bird Survey (BBS), Forest Bird Monitoring Program (FBMP), Marsh Monitoring Program (MMP), and the recently completed Atlas of the Breeding Birds of Ontario, the consultant team did not feel comfortable putting forward a threshold. Each had deficiencies or biases. Other Wildlife Groups Calling frog and toad population trend data gathered as part of the Marsh Monitoring Program, Frogwatch Ontario, Amphibian Road Call Count, and Backyard Frog Survey, could be utilized if deemed suitable. There is no Ontario-wide population trend data available for other wildlife groups in Ontario.	No	No.	No potential. Although there is an NHIC record for Narrow-leaved Beardmoss (S2) in the study area, this is a historical record from 1939 and there has been no record of this species since then.
C5. Species that have a high percentage of their global population in Ontario and are Rare or Uncommon in the Regional Municipality of Peel/Town of Caledon.	Yes, without threshold	An adequate analysis of what species should be considered needs to be undertaken before a threshold can be recommended for the Region of Peel or Town of Caledon.	No	No.	Confirmed. According to the TRCA fauna list (2019), the Wood Frog (L2) is a regionally rare species and was heard calling during amphibian surveys within the study area. The American Woodcock (L3) is also a regionally rare species and was heard calling within the study area during amphibian surveys. Midland Painted Turtle (L3) is also a

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
					regionally rare species and was observed during field investigations in the SAS1-1 pond (see Figure 2). Regionally rare plants (rare in the Region of Peel) observed in the study area include the Foxglove Beardtongue (*Penstemon digitalis*) and Red Pine (*Pinus resinosa*).
C6. Species that are Rare within the Regional Municipality of Peel/Town of Caledon, even though they may not be Provincially Rare.	Plants - Yes, with threshold Wildlife - Yes, without threshold	Plants: It is recommended that Varga *et. al.,* 2005 be used to determine what species are rare in the Region of Peel and Town of Caledon. Wildlife: It is recommended that a composite TRCA/CVC list be prepared. However, CVC only has a list of species of conservation concern for birds, and that list is dated. Note: In addition, the significant species lists in Appendix A of the ORMCP TP6 should apply to areas on the ORM and should be considered during development of a wildlife list.	No	No.	Plants: Confirmed. According to Varga et al (2000), the Foxglove Beardtongue and Red Pine are rare within the Region of Peel. See Appendix B for more details. Wildlife: Confirmed. According to the TRCA fauna list (2019), the Wood Frog (L2) is a regionally rare species and was heard calling during amphibian surveys within the Study Area. The American Woodcock (L3) is also a regionally rare species and was heard calling within the study area during amphibian surveys. Midland Painted Turtle (L3) is also a regionally rare species and was observed during field investigations in the SAS1-1 pond (see Figure 2).

Significant Wildlife Habitat (SWH) Criteria	Recommended for Peel and/or Caledon?	Recommended Thresholds (where applicable)	Can it be mapped on a jurisdictional-wide level with existing information?	Ecoregion 6E Criteria? (Y/N)	Presence of Candidate/Confirmed Habitat in the Study Area (within 120 m)
C7. Species that are subjects of Recovery Programs	Yes	This criterion applies to species that are designated as Threatened, Endangered or Extirpated by COSEWIC but not Special Concern, Threatened or Endangered in Ontario. In the Region of Peel or Town of Caledon as of April 2009, this applies to: Rapids Clubtail, the Great Lakes/St. Lawrence- Canadian Shield population of Western Chorus Frog, Common Nighthawk, Whip-poor-will, Chimney Swift, Olive-sided Flycatcher, and Canada Warbler. Habitats that support any of these species in the Region or Town should be considered SWH. In addition, if any other species are subject to other recovery programs (such as Black Duck), habitats for these species should also be considered SWH. Note: COSEWIC and OMNR websites should be checked regularly to ensure that the list of species that qualify for protection under criterion C7 is up-to-date.	No	No.	No potential. Although the Western Chorus Frog has the potential to occur in the study area, it was not observed during amphibian call surveys at this site. No other species that meet this criterion have the potential to occur in the study area.
C8. Species considered important to the Region of Peel/Town of Caledon, based on recommendations from a Local Conservation Advisory Committee.	Yes	No list of species is being recommended since no Conservation Advisory Committee currently exists in Peel or Caledon. However, this criterion is recommended should a list of species ever be developed for the Region or Town. Note: The term 'Conservation Advisory Committee' was taken verbatim from the Significant Habitat Technical Guide (OMNR 2000). It generically describes a committee with membership of knowledgeable naturalists familiar with conditions and biota in the jurisdiction. Some Environmental Advisory Committees possibly fall into this category although typically their role is to review planning submissions and they may not have the necessary field knowledge, or mandate to develop such specific lists. It is expected that a Conservation Advisory Committee would be aware of and consult status lists prepared by local conservation authorities but would have the knowledge base to refine the use of such lists.	No	No.	There has not been a list of species developed yet therefore the Significant Wildlife Habitat for this criterion cannot be determined.
D. Animal Movement Corridors					
Includes amphibian and White-tailed Deer movement corridors as well as more general animal and plant movement corridors.	Yes	Thresholds for this criterion need to be developed in accordance with the Region's Greenlands System framework for both the Region of Peel and Town of Caledon and should incorporate three scales of corridors, as follows: • Primary (e.g., Niagara Escarpment) • Secondary (e.g., major river valleys) • Tertiary corridors (e.g., hedgerows) Note: While primary and secondary corridors can likely be identified and mapped at the municipal wide scale, tertiary corridors will likely need to be identified through site-specific studies, although guidelines for their identification could be addressed in policy.	Yes, but without thresholds	Yes.	See Ecoregion 6E table.
ACRONYMS USED IN TABLE: COSEWIC ~Committee on the Status of Endangered Wildlife in Canada; COSSARO ~Committee on the Status of Species at Risk in Ontario; CVC ~Credit Valley Conservation; NHIC ~Natural Heritage Information Centre; ORM ~Oak Ridges Moraine; O.MNR ~Ontario Ministry of Natural Resources; ORMCP TP2 ~Oak Ridges Moraine Conservation Plan Technical Paper 2- Significant Wildlife Habitat (Queen's Printer for Ontario 2007a); ORMCP TP6 ~ Oak Ridges Moraine Conservation Plan Technical Paper 6- Identification of Significant Portions of Habitat for Endangered, Rare and Threatened Species (Queen's Printer for Ontario 2007b)					

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix D

Agency Correspondence and Background Records

Nadine Price

From: Varga, Steve (MNRF) <steve.varga@ontario.ca>
Sent: Tuesday, February 05, 2019 11:11 AM
To: Lorraine Adderley
Subject: RE: Heart Lake PSW report
Attachments: Heart Lake W.C._Evaluation.pdf; Heart Lake W.C._B&W November_09 (24x30).pdf; Brampton Buried Esker2013.pdf; Heart Lake Wetland Complex #1 Map_3728 Mayfield Rd.pdf; Heart Lake WC_TRCA Letter Nov2012.pdf; Heart Lake Wetland Complex_Map Roll # 21241300070420000000.pdf; Heart Lake W.C._Letter TRCA 2012.pdf

Hi Lorraine

Enclosed as requested is the Heart Lake Wetland Complex evaluation and accompanying map and the Earth Science Area of Natural and Scientific Interest(ANSI) report for the Brampton Buried Esker ANSI. As well, enclosed are the updates to Wetland No. 1.

All the best
Steve Varga
District Management Biologist
Ministry of Natural Resources and Forestry
Aurora District
905-713-7370
steve.varga@ontario.ca

From: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Sent: February 1, 2019 5:35 PM
To: Varga, Steve (MNRF) <steve.varga@ontario.ca>
Subject: Re: Heart Lake PSW report

Thanks! See you then.

Have a great weekend.

Lorraine

Sent from my iPhone

Lorraine Adderley, MSc, CERP
Project Coordinator - Terrestrial Ecologist

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 705-797-4354

On Feb 1, 2019, at 16:21, Varga, Steve (MNRF) <steve.varga@ontario.ca> wrote:

> Hi Lorraine
>
> That would be fine. Come up to the 4th floor of 50 Bloomington and use the phone to get buzzed in.
>
> Steve

Steve Varga
District Management Biologist
Ministry of Natural Resources and Forestry
Aurora District
905-713-7370
steve.varga@ontario.ca

From: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Sent: February 1, 2019 4:20 PM
To: Varga, Steve (MNRF) <steve.varga@ontario.ca>
Cc: Nadine Price <Nadine.Price@rjburnside.com>
Subject: Re: Heart Lake PSW report

How about Tuesday February 5 at 10 am?

Lorraine

Sent from my iPhone

Lorraine Adderley, MSc, CERP
Project Coordinator - Terrestrial Ecologist

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 705-797-4354

On Feb 1, 2019, at 16:16, Varga, Steve (MNRF) <steve.varga@ontario.ca> wrote:

> Hi all
>
> I'm in the next 2 weeks except for Feb. 13. I'm in from 9 to 5. Give me a day and time and I will give the clerk at the door a heads up that you are coming.
>
> All the best
> *Steve Varga*
> *District Management Biologist*
> *Ministry of Natural Resources and Forestry*
> *Aurora District*
> *905-713-7370*
> steve.varga@ontario.ca
>
> ---
>
> **From:** Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
> **Sent:** February 1, 2019 2:06 PM
> **To:** Varga, Steve (MNRF) <steve.varga@ontario.ca>
> **Cc:** Nadine Price <Nadine.Price@rjburnside.com>; Heaton, Mark (MNRF) <mark.heaton@ontario.ca>
> **Subject:** Heart Lake PSW report
>
> Hi Steve,
>
> I hope you are doing well. Is there any day in the next two weeks where we can arrange a time for me to come to the MNRF Aurora district to photo copy the below mentioned PSW and ANSI reports.

Mark Heaton directed me to contact you in this regard, if there is someone else who I should be contacting to make these arrangements, please let me know.

Kind regards,

Lorraine Adderley

Lorraine Adderley, MSc, CERP
Project Coordinator - Terrestrial Ecologist
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From: Lorraine Adderley
Sent: Wednesday, January 23, 2019 10:26 AM
To: Varga, Steve (MNRF) <steve.varga@ontario.ca>
Cc: Nadine Price <Nadine.Price@rjburnside.com>
Subject: RE: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)
Importance: High

Hi Steve,

I am contacting you to arrange a time when I can come to the MNRF Aurora District office to photocopy copies of the following reports:

Heart Lake Provincially Significant Wetland (PSW) Complex wetland evaluation report
Heart Lake Forest & Bog Life Science ANSI report
Brampton Buried Esker Earth Science ANSI report

These reports will provide essential background information for the Snell's Hollow Secondary Plan monitoring program that our team is developing with the intent of beginning in April 2019. Will you please respond with your availability over the next few weeks?

Kind regards,

Lorraine Adderley

From: Heaton, Mark (MNRF) <mark.heaton@ontario.ca>
Sent: Tuesday, January 22, 2019 3:38 PM
To: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Cc: Nadine Price <Nadine.Price@rjburnside.com>; Varga, Steve (MNRF) <steve.varga@ontario.ca>
Subject: RE: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)

Hello Lorraine

Reports are hardcopy. Please contact Steve Varga of this office to view the reports.

Regards

Mark Heaton
OMNRF Aurora

From: ESA Aurora (MNRF)
Sent: January 22, 2019 9:30 AM
To: 'Lorraine Adderley' <Lorraine.Adderley@rjburnside.com>
Cc: Nadine Price <Nadine.Price@rjburnside.com>
Subject: RE: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)

Hello Lorraine

Species list is for all of Caledon.

Will check to see if these reports are digital or hard copy only.

Regards

Mark Heaton
OMNRF Aurora

From: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Sent: January 21, 2019 3:20 PM
To: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>
Cc: Nadine Price <Nadine.Price@rjburnside.com>
Subject: RE: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)

Hello,

Thank you for the response and the update to the MNRF Aurora district's information request process.

I am assuming that the list of Caledon species is those species known to the MNRF Aurora district to exist in the town of Caledon. Please clarify, as the guide provided does not explain what this data means.

Unfortunately, the guide provided does not explain how to obtain PSW and ANSI reports. As a part of our background information study into the pertinent Natural Heritage Features at the previously mentioned site, we are asking for a copy of the **Heart Lake Provincially Significant Wetland (PSW) Complex wetland evaluation report** as well as the **Heart Lake Forest & Bog Life Science ANSI report** and the **Brampton Buried Esker Earth Science ANSI report.** I understand that I may have to arrange to come to the Aurora District office in order to photo copy these reports. Please provide a contact person who I may arrange a time with to do this.

Kind regards,

Lorraine Adderley

Lorraine Adderley, MSc, CERP
Project Coordinator - Terrestrial Ecologist
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Office: +1 800-265-9662 Direct: +1 705-797-4354

From: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>
Sent: Monday, January 21, 2019 2:46 PM
To: Nadine Price <Nadine.Price@rjburnside.com>
Cc: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Subject: RE: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)

Natural Heritage Information Request Response

Thank you for your request for information on natural heritage features. In order to provide the most efficient service possible, the attached *Natural Heritage Information Request Guide* has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Lands Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. In order to ensure access to reliable and up to date information, the attached list provides a summary of species at risk that have been observed, or may potentially be present, at a geographic township / municipal level.

This information will assist in scoping the necessary field assessments for an area if development or site alteration is proposed. This information is not meant to circumvent the responsibility of the proponent to undertake species and / or habitat surveys. Surveys or additional site level assessment are often required to confirm presence or absence of natural heritage features and values. Environmental consulting firms have the professional and technical expertise to assess sites for natural heritage features and can gauge the potential for such features to exist.

Absence or lack of information for a given geographic area does not necessarily mean the absence of natural heritage features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. In addition, new species may be listed and new natural heritage features may be defined over time. For these reasons, the Ministry cannot provide a definitive statement on the presence, absence or condition of natural heritage features in all parts of Ontario.

Thank you for your inquiry.

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: January 17, 2019 11:51 AM

To: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>
Cc: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Subject: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)

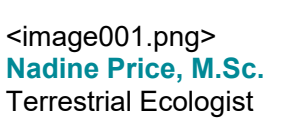
Good morning,

Please find attached an information request pertaining to the Snell's Hollow Secondary Plan project, located in the Town of Caledon. In addition to the information request form, we are asking for a copy of the Heart Lake Provincially Significant Wetland (PSW) Complex wetland evaluation report as well as the Heart Lake Forest & Bog Life Science ANSI report and the Brampton Buried Esker Earth Science ANSI report if possible. I am happy to travel to your office to make a photocopy of these reports if this is the best way to get copies.

If you have any questions, please feel free to contact me directly at 289-545-1070.

Thanks,

Nadine



R.J. Burnside & Associates Limited
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Office: +1 800-265-9662 Direct: +1 289-545-1070
www.rjburnside.com

Nadine Price

From: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>
Sent: Monday, January 21, 2019 2:46 PM
To: Nadine Price
Cc: Lorraine Adderley
Subject: RE: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)
Attachments: TOWN_OF_CALEDON.xlsx; InfoRequestGuide_2018-12-18-FINAL.pdf

Natural Heritage Information Request Response

Thank you for your request for information on natural heritage features. In order to provide the most efficient service possible, the attached *Natural Heritage Information Request Guide* has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Lands Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. In order to ensure access to reliable and up to date information, the attached list provides a summary of species at risk that have been observed, or may potentially be present, at a geographic township / municipal level.

This information will assist in scoping the necessary field assessments for an area if development or site alteration is proposed. This information is not meant to circumvent the responsibility of the proponent to undertake species and / or habitat surveys. Surveys or additional site level assessment are often required to confirm presence or absence of natural heritage features and values. Environmental consulting firms have the professional and technical expertise to assess sites for natural heritage features and can gauge the potential for such features to exist.

Absence or lack of information for a given geographic area does not necessarily mean the absence of natural heritage features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. In addition, new species may be listed and new natural heritage features may be defined over time. For these reasons, the Ministry cannot provide a definitive statement on the presence, absence or condition of natural heritage features in all parts of Ontario.

Thank you for your inquiry.

From: Nadine Price <Nadine.Price@rjburnside.com>
Sent: January 17, 2019 11:51 AM
To: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>
Cc: Lorraine Adderley <Lorraine.Adderley@rjburnside.com>
Subject: Information request - Snell's Hollow Secondary Plan, Town of Caledon (300043952)

Good morning,

Please find attached an information request pertaining to the Snell's Hollow Secondary Plan project, located in the Town of Caledon. In addition to the information request form, we are asking for a copy of the Heart Lake Provincially Significant Wetland (PSW) Complex wetland evaluation report as well as the Heart Lake Forest & Bog Life Science ANSI report and the Brampton Buried Esker Earth Science ANSI report if possible. I am happy to travel to your office to make a photocopy of these reports if this is the best way to get copies.

If you have any questions, please feel free to contact me directly at 289-545-1070.

Thanks,

Nadine

BURNSIDE

Nadine Price, M.Sc.
Terrestrial Ecologist

R.J. Burnside & Associates Limited
1465 Pickering Parkway, Suite 200, Pickering, Ontario L1V 7G7
Office: +1 800-265-9662 Direct: +1 289-545-1070
www.rjburnside.com

Ontario

Aurora MNRF
Information Request Form

Name:	Nadine Price
Company Name:	R.J. Burnside & Associates Ltd.
Proponent Name:	Snell's Hollow Landowners Group
Phone Number:	289-545-1070
Email Address:	nadine.price@rjburnside.com
Project Name:	Snell's Hollow Secondary Plan
Property Location:	Kennedy Road and Mayfield Road
Township:	Town of Caledon
Lot & Concession:	Pt. Lot 18, Con. 2 East of Centre Road, Chinguacousy township

UTM Coordinates: Easting (X) 595675.55 m Northing (Y) 4844654.84 m

Brief Description of Undertaking: Secondary Plan Study for the purpose of a mixed-use developme

Have you previously contacted someone at MNRF for information on this site? ☐ Yes ☑ No

If yes, when and who?

Provide a map of accurate scale to illustrate footprint/study area of the proposed activity in relation to the surrounding landscape (e.g. property boundaries, roads, waterbodies, natural features, towns, transmission corridors, and other human landmarks). Use of aerial photography is strongly encouraged. Include scale, north arrow and legend.

ATTACHMENTS - I have attached a:

☐ Picture ☑ Map ☐ Other

REQUEST - I would like to request the following information for the property identified above:
**Requires an appointment and remittance of fees. See Information Request Guideline for details.*

☑ *Fish Dot Information (fish and other aquatic species found in a particular area of a watercourse)

☑ Species at Risk

☑ Other PSW and ANSI reports

For additional natural heritage information please visit Land Information Ontario | Ontario.ca

Please forward the completed form to: esa.aurora@ontario.ca
Or send by mail:
Aurora District, Ministry of Natural Resources and Forestry
50 Bloomington Rd Aurora, ON L4G 0L8

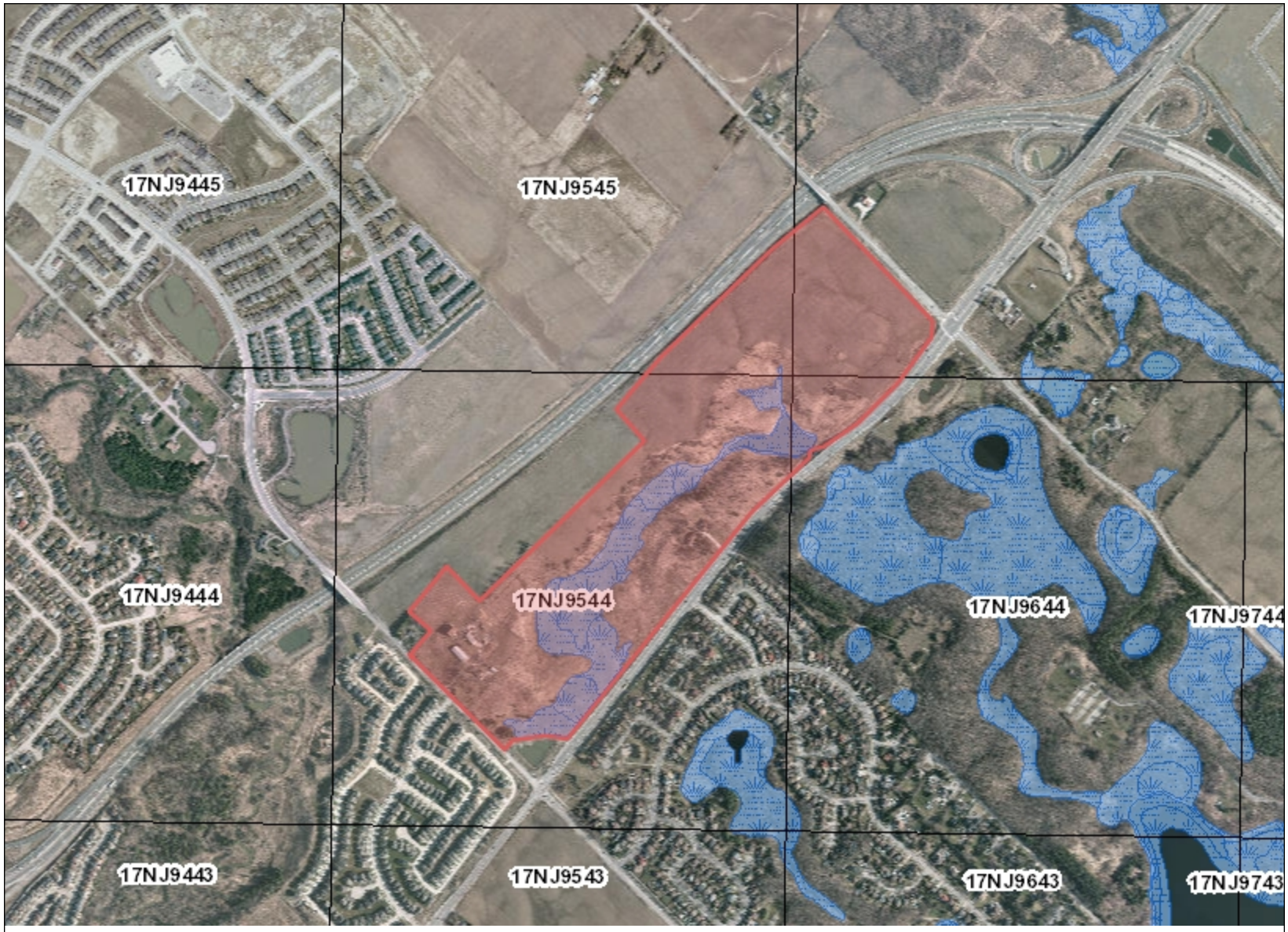
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

300043952 Snell's Hollow Secondary Plan NHIC map

Notes: Enter map notes



Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion

Wetland
- Provincially Significant Wetland Evaluated
- Non - Provincially Significant Wetland Evaluated
- Unevaluated Wetland

Area of Natural Heritage & Scientific Interest (ANSI)
- Provincially Significant Life Science ANSI
- Provincially Significant Earth Science ANSI

Greenbelt Plan
- Boundary
- River Valley Connections

Land Use Designations
- Protected Countryside
- Towns and Villages
- Hamlets
- Urban River Valley
- Specialty Crop Area

Niagara Escarpment Plan (NEP)
- Boundary
- Parks and Open Space System

Land Use Designations
- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Rural Area
- Mineral Resource Extraction Area
- Escarpment Recreation Area
- Urban Area
- Minor Urban Centre

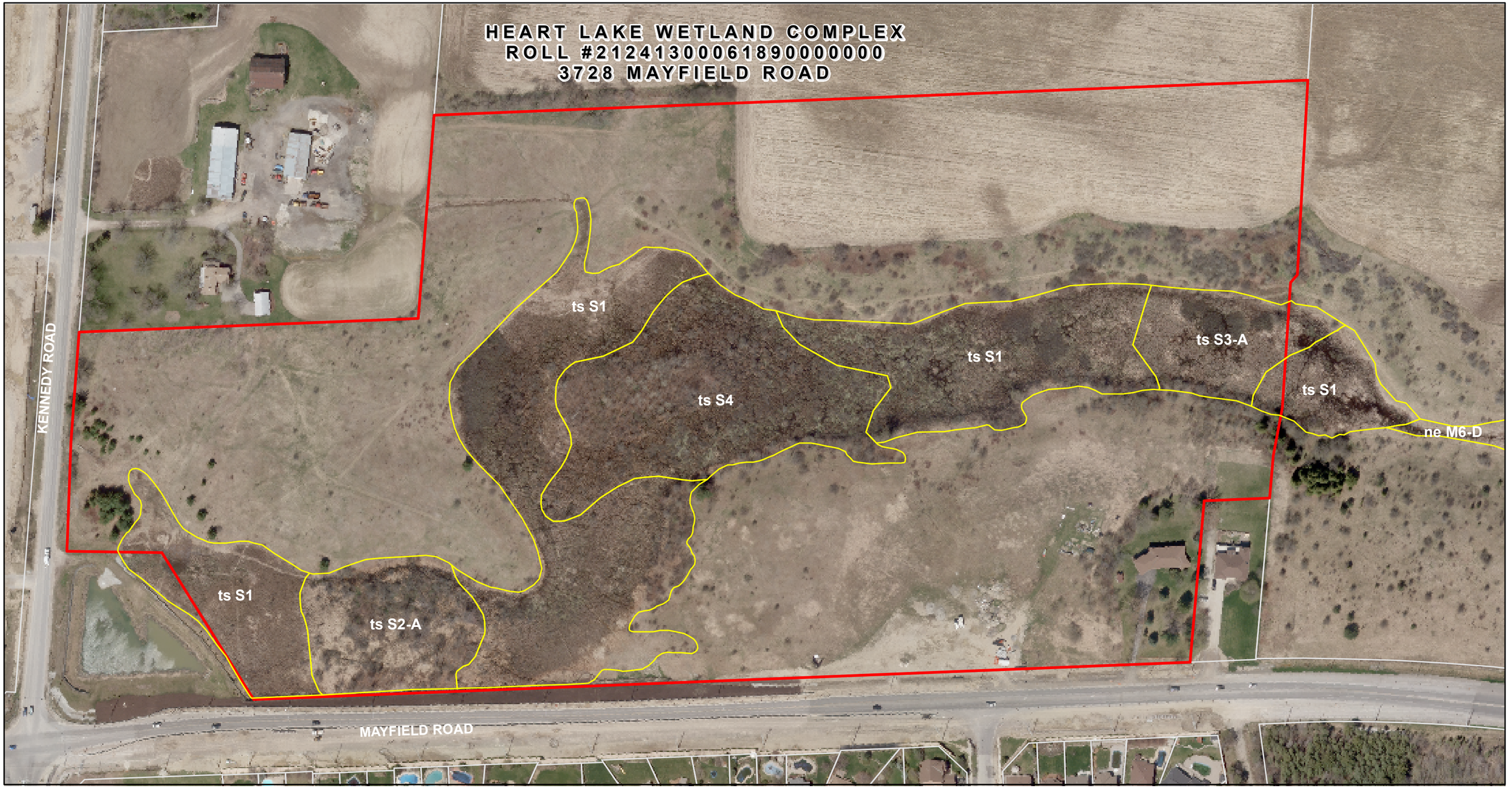
Oak Ridges Moraine Conservation Plan (ORM)
- Boundary

Land Use Designations
- Natural Core Area
- Natural Linkage Area
- Countryside Area
- Rural Settlement
- Palgrave Estates Residential Community
- Settlement Area

0.7 0 0.33 0.7 Kilometers

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

HEART LAKE WETLAND COMPLEX
ROLL #21241300061890000000
3728 MAYFIELD ROAD



Ontario

Scale 1:2,000 (approx.)

0 25 50 100 150 200 Metres

Legend

- MNR Evaluated Wetland
- Subject Lands
- MNR Identified Wetlands
- Parcel Fabric
- c S17 Wetland Vegetation Community

FILE #: 2012-56-ST

PUBLICATION

© Queen's Printer for Ontario
Printed in Ontario, Canada
November, 2012.

Cartography by Aurora District Geomatics.

Universal Transverse Mercator (6 degree) projection, Zone 17. North American Datum 1983

SOURCE OF INFORMATION

Information provided by the Ministry of Natural Resources district office in Aurora.
Ministry of Natural Resources - Aurora District 50 Bloomington Road West, Aurora, ON L4G 3G8

Base information derived from the Ontario Base Map, 1983 at a scale of 1:10,000 and the Natural Resources Values Information System (NRVIS).

NOTE

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should be viewed as illustrative only. Do not rely on it as being a precise indicator of routes, locations of features, nor as a guide to navigation.

For detailed information on natural features such as their location, size or status, the individual files held by the Aurora district office of the Ministry of Natural Resources should be consulted.

HEART LAKE WETLAND COMPLEX
ROLL # 21241300070420000000

Ontario

Scale 1:1,250 (approx.)

0 15 30 60 90 120 Metres

Legend

- MNR Evaluated Wetland
- Subject Lands
- Parcel Fabric

c S17 Wetland Vegetation Community

PUBLICATION

Cartography by Aurora District Geomatics.

Universal Transverse Mercator (6 degree) projection, Zone 17.
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[THE DIFFERENCE IS OUR PEOPLE]

Appendix E

Background Review of Potential Species at Risk and Species of Conservation Concern 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[5]	Habitat Present in the Study Area?
Birds								
Bank Swallow (Source: OBBA, MNRF)	*Riparia riparia*	S4B	THR	THR	THR	1	Prefers open habitats including, farmland, lake/river shorelines, grasslands, and wetlands. Nests in exposed earthen banks along shorelines and in artificial sites such as gravel pits.[6]	No suitable breeding habitat present on subject property. Limited habitat may be present in greater study area.
Barn Swallow (Source: OBBA, OMNR, MNRF)	*Hirundo rustica*	S4B	THR	THR	THR	1	Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, and wetlands. Nests inside or on exterior of buildings; under bridges and in road culverts; on rock faces, and in caves, etc.[7]	Suitable breeding habitat present on subject property (barn structures). (See Figure 2 of this report.) Foraging habitat present over the open areas of the subject property (i.e., agricultural fields and meadows). Suitable habitat present in greater study area.
Bobolink (Source: NHIC, OBBA, MNRF)	*Dolichonyx oryzivorus*	S4B	THR	THR	THR	1	Generally, prefers 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. Positively associated with high grass-to-forb ratios; moderate litter depth; tolerate wetter portions of fields compared to Eastern Meadowlark (EAME) and more likely to nest closer to field centres rather than field margins. Lower tolerance to presence of patches of bare ground. Appear to prefer larger fields than EAME.[8]	Marginal habitat present on subject property; more suitable breeding habitat likely present in greater study area.
Canada Warbler (Source: MNRF)	*Cardellina canadensis*	S4B	SC	THR	THR	1	Generally, prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.[6]	Marginal breeding habitat present in the protected PSW on the subject property.
Cerulean Warbler (Source: MNRF)	*Setophaga cerulea*	S3B	THR	END	END	1	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests.[6]	No suitable breeding habitat present in 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[5]	Habitat Present in the Study Area?
Chimney Swift (Source: OBBA, MNRF)	*Chaetura pelagica*	S4B, S4N	THR	THR	THR	1	Historically nested in large hollow trees, other tree cavities and cracks in cliffs. Currently, most are found in developed areas in large, uncapped chimneys. Proximity to lakes is also a preferred habitat feature as they will forage for flying insects close to water.[6]	Possible breeding habitat present on the subject lands and in greater study area. Chimneys are present on the subject property. Suitable habitat present in greater study area.
Eastern Meadowlark (Source: OBBA, MNRF)	*Sturnella magna*	S4B	THR	THR	THR	1	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.[8]	Suitable breeding habitat present on the subject property and in greater study area.
Eastern Wood-Pewee (Source: NHIC, OBBA, MNRF)	*Contopus virens*	S4B	SC	SC	SC	1	Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without.[6]	Suitable breeding habitat present in the protected PSW on the subject lands and Mixed Forest ecosite (FOM). Suitable habitat present in greater study area.
Grasshopper Sparrow (Source: OBBA, MNRF)	*Ammodramus savannarum*	S4B	SC	SC	SC	1	Prefers drier, sparsely vegetated grasslands, particularly rough or unimproved pastures with scattered forb and shrub growth, at least 30 ha in size. It will occasionally also use cultivated hayfields and cereal crops.[6]	Marginal breeding habitat may be present (cultivated meadow) on subject property and greater study area.
Least Bittern (Source: OBBA, MNRF)	*Ixobrychus exilis*	S4B	THR	THR	THR	1	Most frequently found in marshes of at least 5 ha, although much smaller marshes, including sites such as cattail stands along creeks and farm ponds partially filled with cattail, may be used occasionally. Breeding sites typically dominated by cattail, but also sometimes bulrush, grasses, horsetail, and willow. Nests usually close to edge of a stand of vegetation or near openings such as muskrat trails, although may be as far as 45 m from open water.[6]	Possible breeding habitat present in the protected PSW on the subject property. Suitable breeding habitat may be present in greater study area.
Wood Thrush (Source: NHIC, OBBA, OMNR, MNRF)	*Hylocichla mustelina*	S4B	SC	THR	THR	1	Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understorey are usually prerequisites for site occupancy.[6]	No suitable breeding habitat present on subject property. Suitable breeding habitat may be present in greater 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[5]	Habitat Present in the Study Area?
Insects								
Monarch (Source: R.J. Burnside, MNRF)	*Danaus plexippus*	S2N, S4B	SC	END	SC	1	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars (larvae) feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery.[9]	Confirmed. Observed six individuals during field surveys in ecosite CUM1-1 adjacent to natural pond at east end of subject property (ecosite SAS1 1) (see Figure 2). Milkweed and Monarch caterpillars feeding on the Milkweed were also observed in this habitat on site (host plant for Monarch larvae). Suitable habitat also present in greater study area.
Mammals								
Eastern Small-footed Myotis (Source: R.J. Burnside, MNRF)	*Myotis leibii*	S2S3	END	END	No status	No schedule	Overwintering habitat: Caves and abandoned mines. According to the Recovery Strategy for the Eastern Small-footed Myotis in Ontario, summer / roosting habitats used by the species in Ontario are poorly understood, but elsewhere in its range it primarily roosts in open, sunny rocky habitats, and, occasionally, in buildings. Summer roosts for this species are believed to be located in close proximity to their hibernacula (i.e., less than 100 m). The species' preference for rocky habitats in summer may limit an individual's home range to those rocky areas which also contain hibernacula (i.e., karst areas and Canadian Shield areas containing abandoned mines with adits).[12]	No suitable overwintering habitat present on subject property or greater study area. No suitable roosting habitat present on subject property or greater study area. No targeted acoustic surveys were conducted for this species.
Little Brown Myotis (Source: R.J. Burnside, MNRF)	*Myotis lucifugus*	S4	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally	No suitable overwintering habitat present on subject property or greater study area Roosting habitat may be present based on presence of snags, Maple trees, barns and

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[5]	Habitat Present in the Study Area?
							found in trees (25-44 cm dbh).[11]	houses found on subject property. No targeted acoustic surveys were conducted for this species.
Northern Myotis (Source: R.J. Burnside, MNRF)	*Myotis septentrionalis*	S3	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)[11]	No suitable overwintering habitat present on subject property or greater study area. Roosting habitat may be present based on presence of snags, Maple trees, barns and houses found on subject property. No targeted acoustic surveys were conducted for this species.
Tri-colored Bat (Source: R.J. Burnside, MNRF)	*Perimyotis subflavus*	S3?	END	END	END	1	Overwintering habitat: Deepest parts of caves and mines where temperature is the least variable. Maternal Roosts: Less is known about roosts of Tri-colored Bats. Most roost sites found within forested habitats. May roost in clumps of dead foliage and lichens. In more anthropogenically modified landscapes, maternity roosts may be barns or similar human-made structures.[11]	No suitable overwintering habitat present on subject property or greater study area. Roosting habitat may be present based on presence of snags, Maple trees, barns and houses found on subject property. No targeted acoustic surveys were conducted for this species.
Plants								
Butternut (Source: NHIC, MNRF, Burnside)	*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 Basswood, Black Cherry, Beed, Black Walnut, Elm, Hemlock, Hickory, Oak, Red Maple, Sugar Maple, Poplar, White Ash and Yellow Birch. In Ontario, they can be found throughout southern Ontario, south of the Canadian Shield.[9]	Suitable habitat present on the subject property and greater study area. A Butternut or hybrid was identified during ELC field surveys in a hedgerow adjacent to the agricultural field, but hybridity has not been confirmed.
Narrow-leaved Beard Moss (Source: NHIC)	*Elodium paludosum*	S2	NAR	NAR	NAR	No schedule	On soil or rotting logs or bark of tree bases in swampy woods, fields or brush.[14]	Suitable habitat may be present on subject property or greater study area. None identified during field surveys in 2019. NHIC record is historical (from 1939).
Reptiles and Amphibians								

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[5]	Habitat Present in the Study Area?
Blanding's Turtle (Source: MNRF)	*Emydoidea blandingii*	S3	THR	END	THR	1	Generally, occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.[13]	Suitable habitat present on subject property and greater study area, however none have been confirmed through the MNRF PSW Wetland Evaluation (2009) or through a recent turtle population study in the Heart Lake wetland complex (Dupuis-Désormeaux et al. 2019.).
Eastern Milksnake (Source: ORAA, OMNR)	*Lampropeltis triangulum*	S4	No status	SC	SC	1	Habitat generalist. Found in wide variety of habitats, from open woodlands, bogs, swamps, woodland edges, marshes, lakeshores, old fields, pastures, farmyards, parks, gardens. Often in or near farm outbuildings, barns, and sheds, and are attracted to piles of rocks, logs, firewood, or building materials, or any place that offers shelter to snakes and their prey (rodents).[10]	Suitable habitat present on subject property and greater study area.
Eastern Musk Turtle (Source: Dupuis-Désormeaux et al 2019)	*Sternotherus odoratus*	S3	SC	SC	SC	1	Inhabit a wide variety of permanent waters, including ponds, lakes, marshes, sloughs, and rivers. Most common in clear lakes or ponds with marl, sand, or gravel bottoms and a moderate growth of aquatic plants. Prefer slow current. Highly aquatic and rarely wander far from water. Typically nests within 45 m of water.[15]	Suitable habitat present on subject property and confirmed in greater study area. A study done by Dupuis-Désormeaux et al (2019) in the Heart Lake wetland complex found a single individual in Heart Lake (Wetland #3 south of the subject property).
Midland Painted Turtle (Source: ORAA, OMNR, Dupuis-Désormeaux et al 2019, Burnside)	*Chrysemys picta marginata*	S4	NAR	SC	NAR	No schedule	Generally, prefers waterbodies such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation.[10]	Confirmed. Suitable habitat present and confirmed on the subject property. Ten observed incidentally during field surveys basking in ecosite SAS1-1 (see Figure 2). This species has also been confirmed within the greater Heart Lake Wetland PSW.
Northern Map Turtle (Source: Dupuis-Désormeaux et al 2019)	*Graptemys geographica*	S3	SC	SC	SC	1	Highly aquatic. Inhabit slow moving water in larger lakes, rivers, reservoirs, oxbow sloughs, and open marshes, including some of the bays and inlets of the Great Lakes themselves with	Suitable habitat present on the subject property and confirmed in the greater study area. A study done by Dupuis-Désormeaux et al (2019) in the Heart Lake

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[5]	Habitat Present in the Study Area?
							soft mud to sand, gravel, or marl bottom substrates. Less common in smaller lakes and streams; juveniles may reside in small ponds. Require high-quality water that supports the female's mollusc prey.[15]	wetland complex found a single individual in Heart Lake (Wetland #3 south of the subject property).
Snapping Turtle (Source: ORAA, MNRF, Dupuis-Désormeaux et al 2019)	*Chelydra serpentina*	S3	SC	SC	SC	1	Generally, inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.[9]	Suitable habitat present on the subject property and confirmed in greater study area. A study done by Dupuis-Désormeaux et al (2019) in the Heart Lake wetland complex found a population present in the study area.
Western Chorus Frog (Source: ORAA, OMNR)	*Pseudacris maculata*	S3	NAR	THR	THR	1	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas. Breeds in almost any fishless pond with at least 10 cm of water, including quiet, shallow, temporary waterbodies with vegetation that is submerged or protrudes from the water, especially in rain-flooded meadows and ditches, and in temporary ponds on floodplains.[10]	Suitable habitat present on the subject property and greater study area. None observed during amphibian call surveys in 2019. Western Chorus Frog has been reported for the greater study area (ORAA Square 17NJ94).

** Sources: Natural Heritage Information Centre (NHIC) database of records searched on January 17, 2019 (1- 1x1 km^2 Squares: 17NJ9544, 17NJ9545, 17NJ9644); Ontario Breeding Bird Atlas (2001-2005) searched on January 17, 2019 (Square 17NJ94); Ontario Reptile and Amphibian Atlas (ORAA) searched on January 17, 2019 (Square 17NJ94); MNRF SAR List for Town of Caledon, provided on January 21, 2019 (MNRF Aurora District); OMNR Aurora District, Provincially Significant Heart Lake Wetland Complex, November 2000; Dupuis-Désormeaux et al (2019), *A turtle population study in an isolated urban wetland complex in Ontario reveals a few surprises*; R.J. Burnside & Associates (Burnside) observations in 2019.

[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]**Sources:**

[6]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
[7]Species at Risk Public Registry http://www.sararegistry.gc.ca
[8]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.
[9]MNRF SARO List Species Descriptions (http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CSSR_SARO_LST_EN.html)
[10]Ontario Nature Reptile and Amphibian Atlas (https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/species/)
[11]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.
[12]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.
[13]MNRF. 2018. City of Niagara Falls Species at Risk Table. Guelph District.
[14]McKnight, K.B. et al. 2013. Common Mosses of the Northeast and Appalachians. Princeton University Press. Princeton, New Jersey.
[15]Harding, J.H., 1997. Amphibians and Reptiles of the Great Lakes Region. The University of Michigan Press. Ann Arbor, Michigan.

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Technical Memorandum – 2019 Headwater Drainage Feature Assessment

Date:	March 12, 2020	**Project No.:**	300043952.0000
Project Name:	Snell's Hollow East Secondary Plan		
Client Name:	Snell's Hollow East Landowners Group		
Submitted To:	Snell's Hollow Landowner's Group c/o Glenn Schnarr & Associates Inc. (GSAI)		
Submitted By:	Matthew Moote, H.B.Sc., CAN-CISEC-IT, Aquatic Ecologist		
Reviewed By:	Camden Jermey, B.Sc., P.Biol, R.P. Bio, CAN-CISEC, Aquatic Ecologist / Project Coordinator		

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the Snell's Hollow East Landowners Group to undertake a Headwater Drainage Feature (HDF) Assessment for a development, located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the "subject property"). The subject property is in the Town of Caledon (Town) and within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town of Caledon, in the proposed Snell's Hollow East Secondary Plan area. The site is bound by Highway 410 to the north, Heart Lake Road to the east, Mayfield Road to the south and Kennedy Road to the west (Figure 1). The subject property contains portions of the Heart Lake Provincially Significant Wetland (PSW) Complex, which drains beneath Mayfield Road towards Heart Lake Conservation Area to the south. The existing land use is agricultural in the uplands, with meadows on the slopes and ridges adjacent to the PSW unit.

As outlined in the Terms of Reference (TOR) dated April 8, 2019, the need for a surface water - headwater drainage feature (HDF) assessment was identified as part of the baseline monitoring plan. It is our understanding that the establishment of meaningful baseline conditions will contribute to the Secondary Plan study that began in early 2019.

2.0 Background and Desktop Review

Burnside has reviewed the following data sources for an understanding of what features existed historically.

- Recent and historical aerial photography (Google);
- Ontario Base Mapping;
- TRCA Hillshade LIDAR;
- Ages Consulting Limited: Clearbrook Headwater Features Assessment (2012);
- Ministry of Natural Resources and Forestry (MNRF): Make a Map: Natural Heritage mapping to identify MNRF mapped natural heritage features on the subject property (MNRF, 2019);
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk (SAR) mapping; and
- MNRF Aquatic Resource Area (ARA) data.

Based on this review, we have identified that there is an Unnamed Tributary to Heart Lake which flows from west to east through the subject property and enters a ponded area at the eastern boundary of the site. It was stated in a report completed by Ages Consulting Limited that this ponded area contains an overflow outlet structure which restricts fish movements but maintains a permanent pool. Brook stickleback (*Culaea inconstans*), Brown bullhead (*Ameiurus nebulosus*), Central mudminnow (*Umbra limi*) and Golden shiner (*Notemigonus crysoleucas*) are all noted in the MNRF ARA mapping as historically being observed within the feature.

The DFO aquatic SAR and MNRF mapping do not indicate that aquatic SAR have been historically observed on the subject property. The MNRF natural heritage mapping indicates that a portion of the Heart Lake PSW Complex (Wetland No. 1) is present on the subject property.

3.0 Field Methodology

A total of three HDF surveys were completed based on the protocol outlined in the *Evaluation, Classification and Management of Headwater Drainage Features Guideline* (The Guideline) (TRCA and CVC, 2014) and supporting guidance provided in the *Ontario Stream Assessment Protocol* (OSAP) *Section 4: Modules 10 and 11*. Accessibility to sites within the subject property enabled adaptation to a reach based approach primarily utilizing OSAP S4:M11. A background review of existing TRCA Hillshade LIDAR, hydrolayer mapping, and satellite imagery were utilized to identify potential HDF features from desktop. Each potential HDF location was investigated during the initial site visit on April 9 to 11, 2019, with subsequent monitoring visits completed at sites based on observations from previous visits.

Since HDFs can vary significantly on a seasonal basis, multiple site visits are needed to correctly assess their hydrology and riparian conditions. Headwater drainage features were evaluated through a series of visits in April, May and August 2019 to capture varying conditions throughout the year (TRCA, 2014). Table 1 provides a summary of field investigation dates and recommended sampling periods.

Table 1: Recommended Timing and Field Investigation Dates

Site Visit	Guidelines Assessment Period	Field Investigation Date
1	Spring Freshet (Early April to mid-April)	April 9 to 11, 2019
2	Late April to May	May 27, 2019
3	July to August	August 26, 2019

Following field investigations, findings of the HDF evaluations were then translated into a classification of the HDF, with respect to the hydrology, terrestrial and fish habitat, and the riparian vegetation conditions of the features.

4.0 HDF Classification and Management Recommendations

The majority of features on the subject property were found in actively tilled agricultural fields with poor definition and lacking natural channel vegetation. Overall, 12 potential drainage networks were investigated (H1-H12) throughout the subject property (Figure 1). All the drainage networks, except for H3, flow, partially or wholly, through cultivated agricultural fields. Of the 33 reaches within these networks 20 were classified as ‘No Management Concern’, 12 as ‘Mitigation’ and one as ‘Conservation’, based on the management decision matrix provided in Figure 2 of The Guideline.

Table 2: Reach Based Headwater Drainage Feature and Habitat Classifications

HDF Reach	Hydrology	Modifiers	Riparian Classification	Fish and Fish Habitat	Terrestrial Habitat	Management Recommendation
H1-R1	Limited Function	n/a	Limited Function	Contributing Function	Limited Function	**No Management Required**
H1-R2	Limited Function	Property limit	Valued Function	Contributing Function	Limited Function	**No Management Required**
H2-R1	Valued Function	n/a	Valued Function	Valued Function Functions	Valued Function	**Conservation**
H2-R2	Contributing Function	Industrial / Development Activities	Limited Function	Contributing Functions	Limited Function	**Mitigation**
H2-R3	Valued Function	Industrial / Development Activities	Limited Function	Contributing Functions	Limited Function	**Mitigation**
H2-R4	Valued Function	Industrial / Development Activities	Valued Function	Contributing Function	Limited Function	**Mitigation**
H3	Limited Function	n/a	Valued Function	Contributing Function	Limited Function	**Mitigation**
H4-R1	Limited Function	Agricultural practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H4-R2	Limited Function	Agricultural Practices	Valued Function	Contributing Function	Limited Function	**No Management Required**
H4-R3	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H5	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H6	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H7-R1	Limited Function	n/a	Valued Function	Contributing Function	Limited Function	**No Management Required**
H7-R2	Limited function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H8-R1	Limited Function	n/a	Limited Function	Contributing Function	Limited Function	**No Management Required**
H8-R2	Contributing Function	n/a	Limited Function	Contributing Function	Limited Function	**Mitigation**
H8-R3	Contributing Function	n/a	Limited Function	Contributing Function	Limited Function	**Mitigation**

HDF Reach	Hydrology	Modifiers	Riparian Classification	Fish and Fish Habitat	Terrestrial Habitat	Management Recommendation
H8-R4	Contributing Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**Mitigation**
H8-R5	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H8-R6	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H8-R7	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H8-R8	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H9-R1	Limited Function	n/a	Valued Function	Contributing Function	Limited Function	**Mitigation**
H9-R2	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H9-R3	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H10-R1	Limited Function	n/a	Valued Function	Contributing Function	Limited Function	**Mitigation**
H10-R2	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H10-R3	Contributing Function	Suspected tile drain outlet	Limited Function	Contributing Function	Limited Function	**Mitigation**
H10-R4	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H11-R1	Limited Function	n/a	Valued Function	Contributing Function	Limited Function	**Mitigation**
H11-R2	Limited Function	Agricultural Practices	Limited Function	Contributing Function	Limited Function	**No Management Required**
H12-R1	Limited Function	n/a	Valued function	Contributing Function	Limited Function	**Mitigation**
H12 – R2	Limited Function	Agricultural Practices	Limited Function	Contributing function	Limited Function	**No Management Required**

1 = features with no flow with sandy or gravelly soils; 2 = sampling not required in unconnected wetlands;
3 = classification not required if no alteration is proposed

Most features were dry, contained standing water, or were minimally flowing (i.e., less than 0.5 L/s) during the April assessment, with all features dry by the August assessment. Features H1, H4, H5, H6, H7 and H8 are primarily isolated and do not directly convey water to fish habitat or the PSW. Feature H1 flows out of the subject property and down the road embankment, between the subject property and Highway 410.

The H2 feature is located south of the industrial / commercial site along the western boundary of the subject property. The feature originates immediately downstream of the access driveway, with no culvert or surface conveyance mechanism to upstream habitat observed during the assessments. Reach R4 was categorized as having swale feature characteristics with limited riparian function and contained standing water during both the April and May site visits. Substrate sorting and defined bed and banks were not observed. The flow featured standing water in April and May and it was dry in August. Reach R3 is marginally defined and conveys drainage along the margin of the agricultural land and industrial complex. Reach R2 contains an undefined channel and lack of riparian habitat, which is anticipated to be a result of frequent tilling and agricultural practices. Minimal erosional power (i.e., sediment transport) and flow was observed through this reach during the spring assessments, with no water present under summer baseflow conditions. Reach R-1 is a tributary to Heart Lake with a defined natural channel and narrow supporting riparian vegetation buffer that contained water during the April and May site visits, but it was dry during the August assessment. It flows through an area featuring meadow riparian lands and eventually discharges to the ponded area described in Section 2.0.

No surface connectivity was observed between the H4 and H3 features during the field investigations. H4 originates along a fence line and drains eastward, eventually infiltrating and becoming indiscernible. The entirety of H4 lacks definition and was observed to pond and infiltrate at the downstream limit of the feature. H3 flows entirely within the meadow area, eventually discharging to the PSW.

Features H5, H6 and H7 are all located in cropped agricultural lands. H5 is a small channel which conveys flows to the roadside ditch on Heart Lake Road. It was dry during all site visits with primary function to convey surface sheet flow following precipitation events. H6 is an isolated feature that does not convey flows to the downstream network. H7 conveys drainage parallel to the roadside ditch embankment, adjacent to the Highway 410 off-ramp. All three features within this parcel were undefined, lacked riparian vegetation, contained standing water during the spring site visits but were dry during the August site visit.

Feature H8 flows through cropped lands and contained either standing water, minimal flows and dry conditions during the April and May site visits. During the August visit it was completely dry. Field investigations generally corroborated findings outlined in the 2013 HDF assessment, completed by Ages Consultants Ltd., as no surface connectivity to fish habitat or the downstream network was observed for the H8 drainage network.

Features H9, H10, H11 and H12 potentially flow into the PSW. They all originate in cultivated agricultural fields and flow into a meadow ecotype associated with the downgradient PSW complex. Based on review of the LIDAR mapping and the aerial photography, it was anticipated that a tile drain outlet was present at H10-R3, however none were observed during the field visits. A channel or depression through which H10, H11and H12 would flow to the PSW, or the tributaries of Heart Lake, was not discernible during the field investigations.

A potential wetland is located in the southwestern section of the subject lands, between Kennedy Road and the industrial property. This wetted area is bound by a driveway to the south, the industrial property to the east, and an agricultural field to the northwest. Surface connectivity between this area and the downstream network (i.e., H2-R4), was not identified during the 2019 site visits. Analysis of Region of Peel historical mapping indicates that the industrial lands, driveway and wetted area have been in place since at least 1964, with historical land use consistent with existing conditions. Potential channelization or surface conveyance between the wetland is not evident through aerial imagery review. As outlined in The Guideline (TRCA/CVC, 2014), unconnected wetlands (i.e., wetlands that do not have an obviously surface water outlet draining to downstream) and not captured within the HDF assessment and management recommendation framework. As such, it is recommended that management considerations for this feature is determined through subsequent investigations such as hydrogeological investigations, amphibian breeding call surveys and ELC mapping during the 2020 field season.

5.0 Conclusion

In conclusion, 12 potential HDF networks were investigated during 2019 field season. These HDF networks were sub-categorized into 33 separate reaches and classified following the HDF Guideline (TRCA/CVC, 2014). In total, 22 are considered ‘No Management Concern’, meaning they do not require any specific management considerations. Ten of the reaches were classified as ‘Mitigation’, suggesting they should be replicated or enhanced through enhanced lot level conveyance measures (e.g., vegetated bioswales), Low Impact Development (LID) storm water treatment designs, or house foundation pump discharge points to maintain water balance input downstream, but do not necessarily need to be retained on the landscape. Feature H2-R1 is a defined watercourse identified on the MNRF ARA mapping, which contains seasonal fish habitat, and was classified as Conservation. Features that are classified as conservation should be avoided or enhanced to maintain their function.

R.J. Burnside & Associates Limited

Matthew Moote, H.B.Sc., CAN-CISEC-IT
Aquatic Ecologist

MM:js

Enclosure(s) Figure 1.0: Headwater Drainage Features

cc: Adam Miller, Senior Planner, TRCA (enc.) (Via: Email)
Margherita Bialy, Community Planner, Policy, Town of Caledon (enc.) (Via: Email)

- Reach Break
- Conservation
- Mitigation
- No Management Required
- Provincially Significant Heart Lake Wetland Complex (MNRF)
- Study Area

Sources:

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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

HEADWATER DRAINAGE FEATURES

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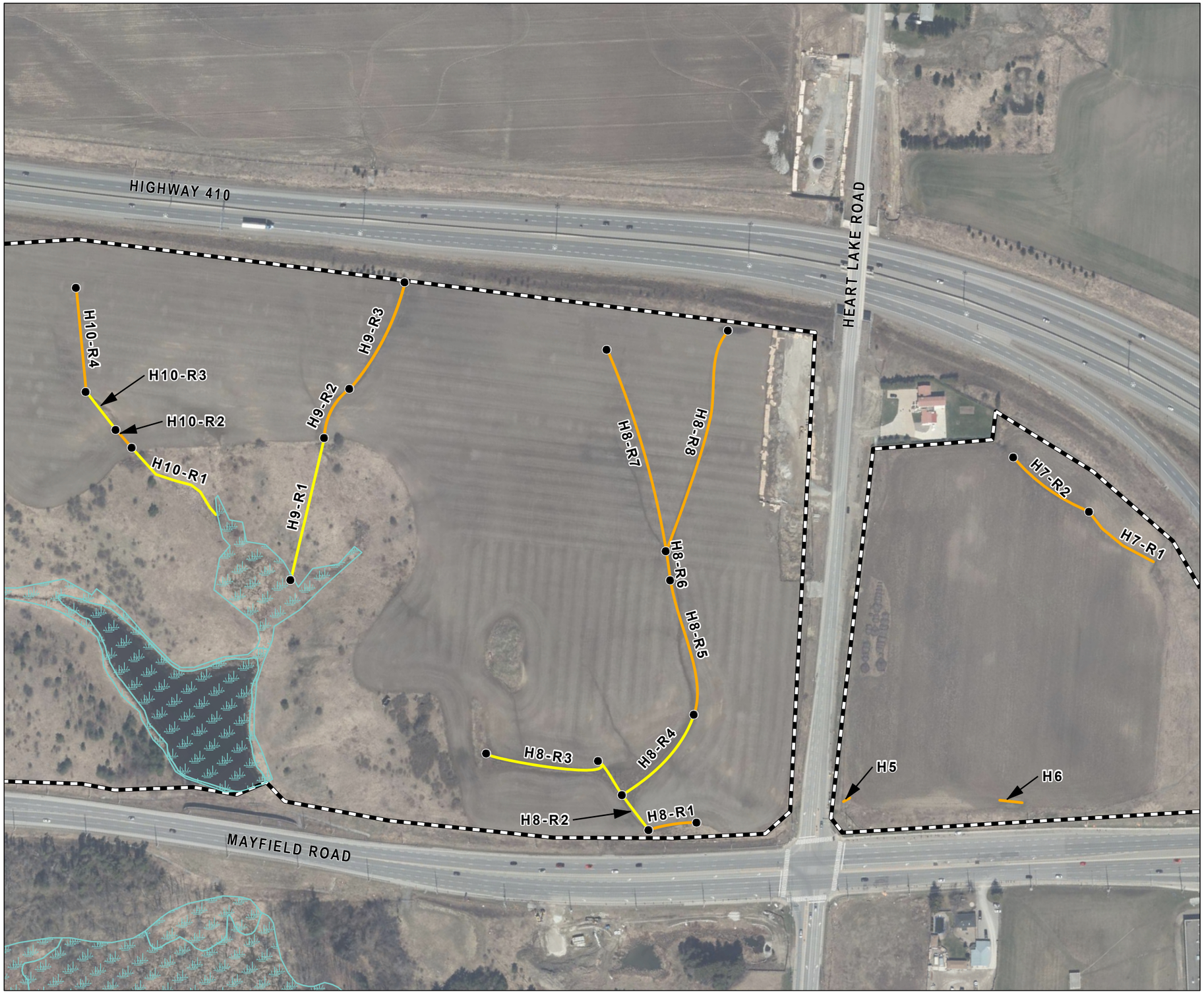

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Snell's Hollow East Secondary Plan Annual Wetland Monitoring Report – Year 1 (2019)

Snell's Hollow East Landowners Group
c/o Glenn Schnarr & Associates Inc.
700-10 Kingsbridge Garden Circle
Mississauga ON L5R 3K6

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January 22, 2020 (revised August 19, 2020)
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0	Yes	Yes	Town of Caledon

Record of Revisions

Revision	Date	Description
0	January 22, 2020	Initial Submission to Snell's Hollow East Landowners Group c/o GSAI
1	August 19, 2020	Final Submission addressing TRCA Comments

R.J. Burnside & Associates Limited

Report Prepared By:

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Report Reviewed By:

Hannah Maciver, B.E.S.
Project Coordinator/Ecologist

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Appendices

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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.

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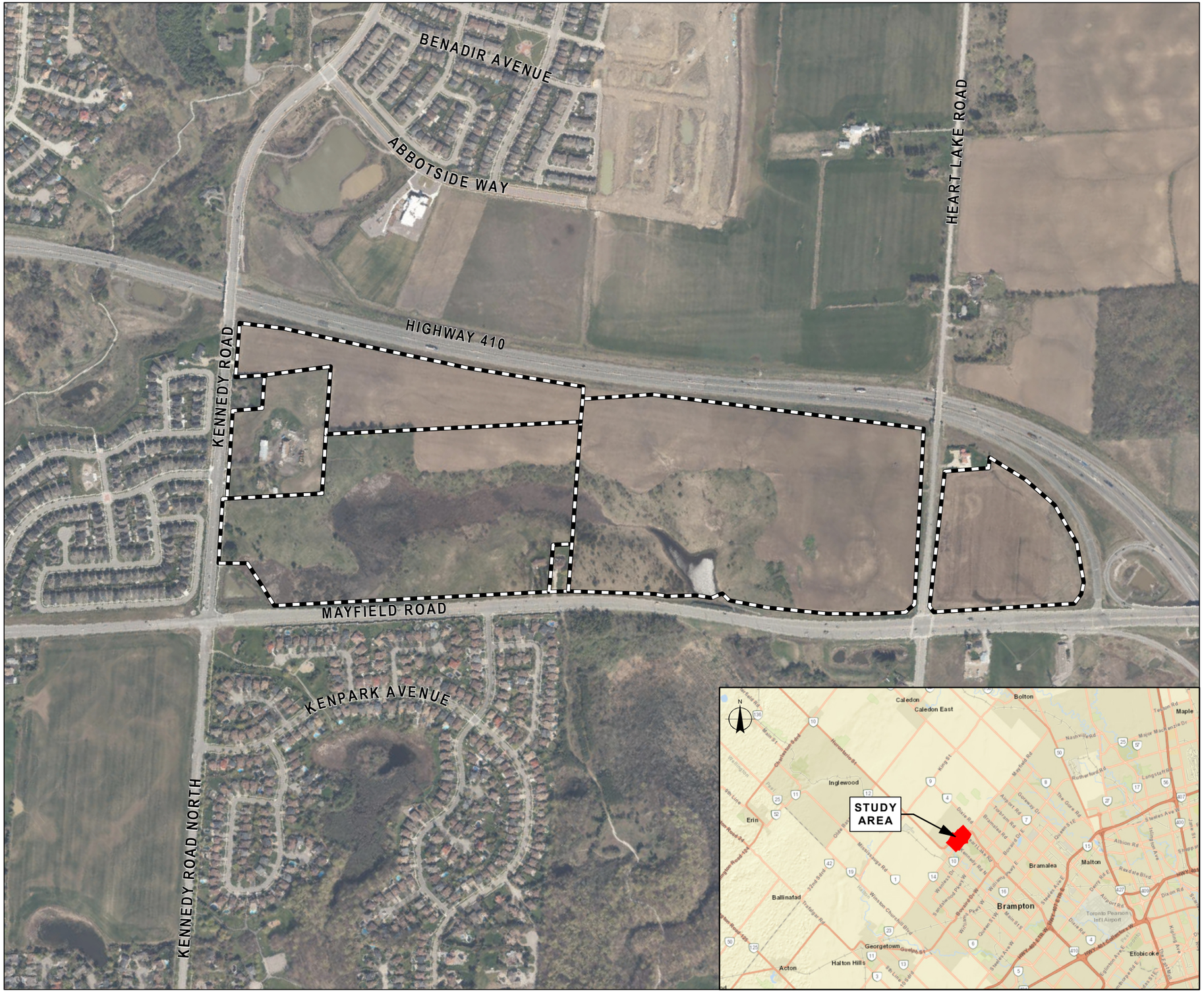
1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the Snell's Hollow East Landowners Group to undertake an Environmental Field Study and Baseline Monitoring Program for a development located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the "subject property"). The subject property is in the Town of Caledon (Town) and within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town of Caledon, in the proposed Snell's Hollow East Secondary Plan area. The site is bounded by Highway 410 to the north, Heart Lake Road to the east, Mayfield Road to the south and Kennedy Road to the west (Figure 1).

As outlined in the Terms of Reference (TOR) dated April 8, 2019, the need for a Baseline Monitoring Program for the portion of the Heart Lake Provincially Significant Wetland (PSW) Complex (Wetland No. 1) that is present on the subject property was identified by the Town, the Region of Peel (Region) and the TRCA (grouped together and referred to as the Agencies). Wetland monitoring is to be completed for 1-year pre-development, 2 years during development, and for 3 years - every other year-post-development.

To satisfy these requirements, Burnside ecologists began collecting data on site in 2019 to establish monitoring parameters to help identify and assess the characteristics of the existing wetland located within the subject property. The purpose of this report is to present the results obtained from the first year of wetland monitoring conducted in 2019, described below. Burnside also completed vegetation community identification (Ecological Land Classification), identification of significant wildlife habitat and a review of relevant background natural heritage information and documentation. This information is summarized in the Snell's Hollow East Secondary Plan Baseline Conditions Report - 2019 (Burnside, 2019).



Study Area

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SNELL'S HOLLOW LANDOWNER GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

STUDY AREA

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2.0 Wetland Monitoring Program Methodology

2.1 Background

The upland portions of the subject property primarily consist of rural residences and farm buildings, actively cultivated fields, cultural meadows, and woodland inclusions. A large portion of the subject property contains a Significant Valleyland system associated with the Unnamed Tributary of Spring Creek and the Heart Lake PSW Complex which drains beneath Mayfield Road towards Heart Lake Conservation Area to the south.

The Heart Lake Wetland Complex is composed of 40 ecologically linked wetland features that are located along the border shared between the City of Brampton and the Town of Caledon. The wetland is located on the headwater reaches of the Spring Creek subwatershed of the Etobicoke Creek watershed; most of the wetlands are hydrologically linked by watercourses within the complex (OMNR, 2009). The complex extends approximately 1 km north of Mayfield Rd south towards Bovaird Drive and is centered along Heart Lake Road. It is situated on and around the Brampton Esker, a feature that is comprised of kettle lakes, kettle peatlands and kettle wetlands. These features are rare within the Greater Toronto Area (GTA) and more typical of the Oak Ridges Moraine. As per the Heart Lake Wetland Complex evaluation (OMNR, 2009), each wetland within the complex has been numbered for referencing and reporting purposes. The largest wetland in the complex and an additional 14 smaller wetlands are contained within the Heart Lake Conservation Area, owned and managed by the TRCA.

Wetland No. 1 is located north of the Heart Lake Conservation Area, along Mayfield Road in between Kennedy Road and Heart Lake Road and is located wholly within the subject property limits. This wetland is approximately 7.53 ha in size. Water generally flows from the southeast to the northwest before crossing Mayfield Road and continuing southwest within Heart Lake Conservation Area. The wetland is bounded by Mayfield Road and cultured meadows to the southeast, agricultural fields to the northwest and northeast, and Kennedy Road to the southwest. A residential property also backs onto the wetland, extending from Mayfield Road towards the center of the wetland boundary. According to correspondence between the Ministry of Natural Resources (MNR) and the TRCA, boundary refinements of Wetland No. 1 and wetland boundary staking was conducted by the Aurora District MNRF staff and staff from the TRCA in 2011 and 2012. Additional vegetation communities were also noted during the wetland staking exercise. The updated wetland boundary limits were digitized and finalized in November 2012 (Varga, February 21, 2012, and Varga, November 23, 2012).

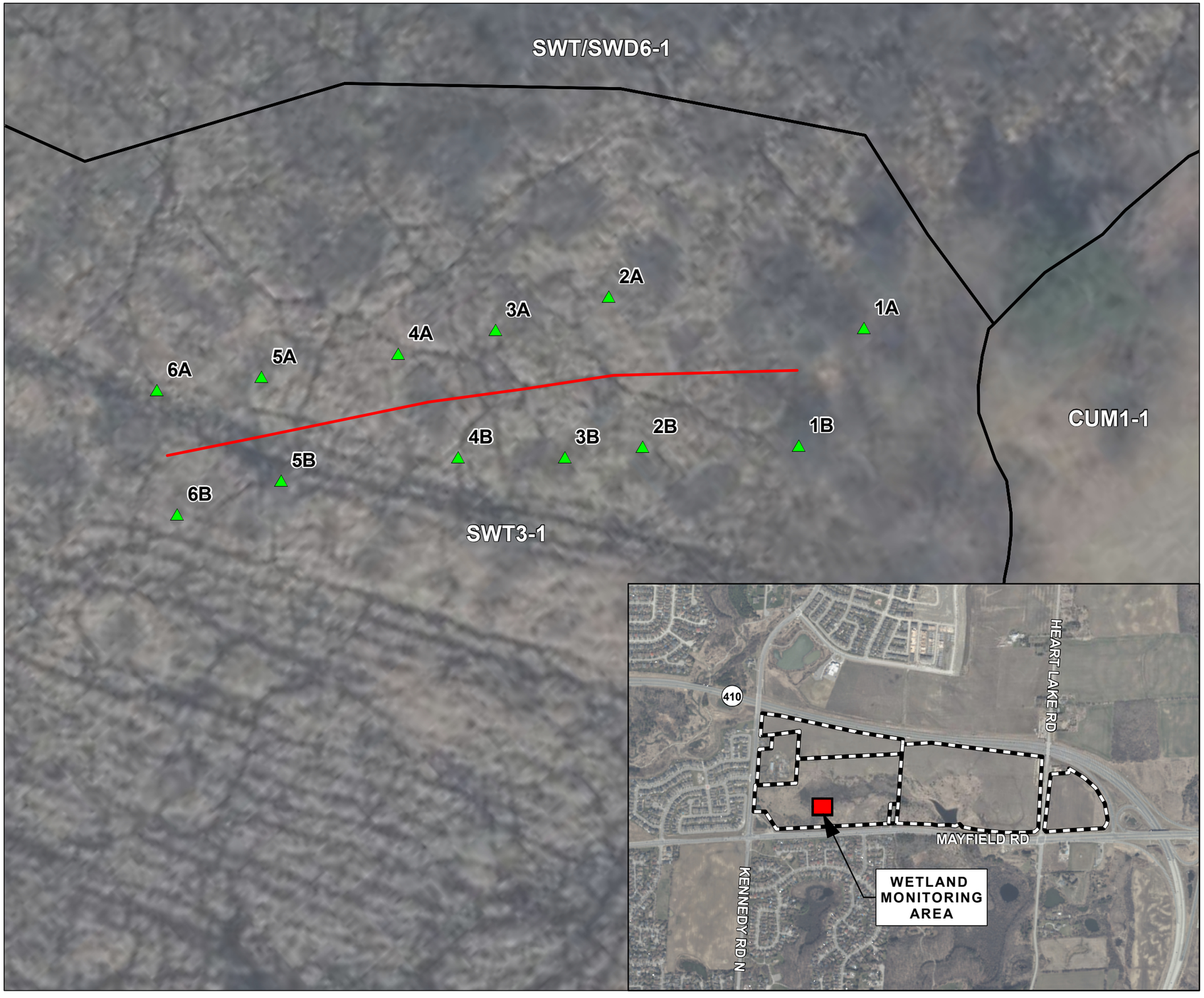
2.2 Wetland Vegetation Monitoring

Methodology for the wetland vegetation monitoring survey was based on the TRCA's Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program (January 2016).

On July 4, 2019, Burnside ecologists established a transect within an Alder Organic Thicket Swamp Type (SWT3-1) vegetation community that is part of Wetland No. 1, beginning at the edge of the wetland and extending towards its centre (refer to Figure 2). The wetland edge was determined by using methods outlined in the Ontario Wetland Evaluation Systems whereby the outer wetland boundary is drawn where 50% of the plant community consists of upland plant species (OWES Training and Certification, Nipissing University, June 2017). Once the transect was established, six centroids were established by installing wooden stakes at 10 m intervals along the transect beginning at the wetland edge. Effort was made to place six 2 m x 2 m woody plant subplots and 1 m x 1 m ground vegetation at 5 m southeast and 5 m northwest of each centroid. A wooden stake was installed in the center of each woody plant subplot and numbered to allow for subsequent visits to investigate the same locations. A GPS point was taken at each centroid and subplot, and a photograph was taken of each subplot for documentation purposes. For photos of each subplot, see Appendix A.

At each woody vegetation subplot, tree and shrub species were recorded per species by percent composition. Similarly, at each ground vegetation subplot, non-woody vegetation species (i.e., herbaceous, graminoid and grasses) were recorded and percent composition was estimated. This is a slight deviation from the TRCA's Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program to allow surveyors to capture all vegetation species within a subplot for a more complete botanical inventory. Soil analysis and depth to ground water was assessed at each centroid by using a soil auger to burrow a hole and acquire a soil profile sample. Following excavation of the hole and reasonable time to fill in with water, ground water level was determined by measuring the distance from the soil surface to the top of water. If applicable, the depth of organics was measured and recorded.

Once plant species within each subplot were identified, a Coefficient of Wetness (CO) was used to assess soil saturation levels. The CO defines the estimated probability for which a species is likely to grow in wetland or upland soils. Values between -5 and 5 are assigned to each species; -5 signifies a species most likely to be found in wetland soils and 5 signifies a species that is most likely to be found in dry, upland soils. Table 1 below defines CO values:



Vegetation Subplot

Transect Line

ELC Boundary

Study Area

ELC Descriptions
CUM1-1: Dry-Moist Old Field Meadow
SWD6-1: Red Maple Organic Deciduous Swamp
SWT: Thicket Swamp
SWT3-1: Alder Organic Thicket Swamp

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 310.49°	Scale Factor: 0.99960

Grid North

0 5 10 15 20
Metres

BURNSIDE

Client

SNELL'S HOLLOW LANDOWNER GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

WETLAND MONITORING

Drawn	Checked	Date	Figure No.
HN	SR	2020/01/07	3
Scale		Project No.	
H 1:300		300043952	

File Path: \\elmogis\Project\300\043952 (Snell's Hallow)\Map\Carto\043952 Wetland Monitoring.mxd Print Date: 2020/01/07 Time: 04:49 PM

Table 1: Definition of Coefficient of Wetness values[1]

Wetland Category	Symbol	Coefficient of Wetness	Definition
Upland	UPL	5	Occurs almost never in wetlands under natural conditions (estimated <1% probability).
Facultative Upland	FACU	3	Occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1%-33% probability).
Facultative	FAC	0	Equally likely to occur in wetlands or non-wetlands (estimated 34%-66% probability).
Facultative Wetland	FACW	-3	Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67%-99% probability).
Obligate Wetland	OBL	-5	Occurs almost always in wetlands under natural conditions (estimated >99% probability).

The CO for each plant species was obtained by using the University of Michigan Flora Online website (found online at: https://michiganflora.net/search.aspx).

For the purposes of this report, a prism sweep was not conducted as part of this survey. Should the project move forward with a development plan, a prism sweep should be completed prior to the beginning of site alteration.

2.3 Amphibian Monitoring

Burnside staff conducted amphibian breeding call surveys following the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada (BSC), during the 2019 breeding season. Surveys were conducted on April 24, May 15, and June 21, 2019 by qualified ecologists, to detect potential early, mid and late season amphibian breeding activity in Central Ontario.

Survey stations were chosen to provide information on potential amphibian breeding sites within representative wetland communities located throughout the subject property. Surveys were conducted at four stations (see Figure 3).

The Marsh Monitoring Program guidelines state that three call surveys should be completed when nighttime air temperatures are greater than 5°C, 10°C and 17°C, respectively, and when wind strength is less than 19 km/h (≤3 on the Beaufort Scale). Conditions during the surveys are outlined in Table 2 below.

[1] Table taken from *Floristic Quality Assessment: Development and Application in the State of Michigan (USA)* (Masters, et al., 1997) and modified for the purposes of this report.

Amphibian Monitoring Station

Provincially Significant Heart Lake Wetland Complex (MNRF)

Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

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Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 310.49°	Scale Factor: 0.99960

Grid North

0 100 200 300 400 500

Metres

BURNSIDE

Client

SNELL'S HOLLOW LANDOWNER GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

AMPHIBIAN MONITORING STATIONS

Drawn	Checked	Date	Figure No.
HN	NP	2020/01/07	2
Scale		Project No.	
H 1:6,000		300043952	

File Path: \\elmogis\Project\300\043952 (Snell's Hallow)\Map\Carto\043952 Amphibian Monitoring.mxd Print Date: 2020/01/07 Time: 04:46 PM

Table 2: Details of Amphibian Breeding Call Surveys Conducted by Burnside Staff

April 24, 2019	**Amphibian Breeding Call Survey #1**
Time (24h): 21:15	Air Temp (°C): 6.8
Sky Code[1]: 1	Wind Scale[2]: 2
May 15, 2019	**Amphibian Breeding Call Survey #2**
Time (24h): 21:27	Air Temp (°C): 12.5
Sky Code[1]: 1	Wind Scale[2]: 1
June 21, 2019	**Amphibian Breeding Call Survey #3**
Time (24h): 21:55	Air Temp (°C): 19
Sky Code[1]: 0	Wind Scale[2]: 2

[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 (0-2 km/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).

3.0 Wetland Monitoring Program Results

3.1 Wetland Vegetation Monitoring

Baseline vegetation and soil condition data was collected by Burnside ecologists on July 4, 2019. Given the significant slope from the upland habitat towards the wetland, the wetland edge was determined to be close to water's edge of the wetland. Therefore, the first two subplots, 1A and 1B, were dry and the remaining subplots contained at least some standing water.

Soil Assessment

Soil assessment took place in subplots 1A and 1B only as water was at or above soil in the remaining subplots along the transect. In both subplots, soil was dug to a depth of 90 cm. Water was present at 90 cm in subplot 1A and 60 cm in subplot 1B. No organics were present in either subplot. It was also noted that mottles were present at 35 cm, and gley was noted at 50 cm. Mottles and gley can act as significant indicators of soil saturation. Mottles indicate short periods of soil saturation and then oxidation (e.g., during periods of high rain or melting snow that are likely to occur in the spring). Gley indicates prolonged soil saturation or permanent ground water elevation. Using in-situ field testing techniques, soil texture was determined to be clay/loam.

Vegetation Assessment

A total of 23 vegetation species were identified in the subplots located along the transect, three of which were woody species and the remaining 20 were nonwoody/ground vegetation. All subplots were dominated by (i.e., greater than 50% composition by area) Facultative Wetland and Wetland Obligate species that have a CO between -3 and -5. Subplots 1A and 1B have the greatest number of plant species, all of which have a CO that ranges between 0 and -5. Subplot 6B was also found to have the same range in CO, however, only one species, Sensitive Fern (*Onoclea sensibilis*), has a CO of -3 and one species Bittersweet Nightshade (*Solanum dulcamara*) has a CO of 0. All other subplots contain species that are Facultative Wetland and Wetland Obligate species with a CO of -3 or -5 respectively. Subplots 3B, 4A and 5B were found to contain only Wetland Obligate species with a CO of -5. This shows that soil saturation levels and water retention throughout the transect are high, particularly in between Subplots 2A/2B and 5A/5B.

Broad-leaved Cattail (*Typha latifolia*) was the dominant species in all subplots, except 1A and 1B. Little evidence of the invasive Narrow-leaved Cattail (*Typha angustifolia*) or its hybrid form, *Typha x* glauca, was found within the subplots. However, *Typha x glauca* can be difficult to identify and may require genetic testing to confirm presence/absence. Purple Loosestrife (*Lythrum salicaria*), an aggressive invasive species that is native to Europe and Asia, was found in subplots 2A, 2B, 3B, 4A, 4B, 5B, 6A, and 6B. In all subplots where it was found, it's percent composition by area was

found to be moderately low (20% composition by area) to low (3% to 15% composition by area). Another aggressive invasive species, Reed Canary Grass (*Phalaris arundinacea subsp. aundinacea)* was found in moderate amounts in subplot 1B (45% compositions by area) and low amounts in subplots 5A and 6B (3% to 5% composition by area). Both Purple Loosestrife and Reed Canary Grass are escaped cultivars that were introduced to North America in the 1800s. Once established, they create dense stands and/or mats that crowd out native plant species leading to a reduction in plant diversity. They pose a threat to Ontario's wetland ecosystems, including marshes, fens, floodplains and wet prairies, as well as the wildlife that relies on those ecosystems for critical stages in their lifecycle (Anderson, 2012 and Warne, 2016).

Tufted Loosestrife (*Lysimachia thyrsiflora*), a native species that is rare within Peel Region (CVC, 2002) was found in low amounts (5% to 15% composition by area) in subplots 2B, 3A, 3B, and 5B.

A summary of the results for each transect can be found in the sections below. Unless otherwise noted, all common names were derived from the Database of Vascular Plants of Canada (VASCAN) website.

Subplot 1A

Subplot 1A is located at the edge of the wetland, approximately 5 m north of the centroid of the transect. At the time of the survey, it was characterized by tall shrubs and thick understory growth. The subplot was dominated by tall non-woody vegetation, including Bluejoint Reedgrass (*Calamagrostis canadensis*) and Sensitive Fern, both of which are native to Ontario. The CO of the plants found within the subplot ranged from 3 to -5. This was expected as this subplot was located at the edge of the wetland, which was determined by estimating the point at which 50% of the vegetation was comprised of wetland indicator species. A summary of the subplot 1A survey results can be found in Table 3.

Table 3: Summary of Vegetation Species Present in Subplot 1A

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Speckled Alder	*Alnus incana*	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Sensitive Fern	*Onoclea sensibilis*	-3	25	Native
Virginia Creeper	*Parthenocissus quiquefolia*	3	7	Native
Tall Buttercup	*Ranunculus acris*	0	5	Introduced

Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Field Horesetail	*Equisetum arvens*	0	3	Native
Red Clover	*Trifolium pratense*	3	5	Introduced
Fox Sedge	*Carex vulpinoidea*	-5	5	Native
Common Agrimone	*Agrimonia gryposepala*	3	5	Native
Violet	*Viola sp.*		10	
Bluejoint Reedgrass	*Calamagrostis canadensis*	-5	35	Native

Subplot 1B

Subplot 1B is located at the edge of the wetland, approximately 5 m south of the centroid of the transect. The subplot contained thick ground vegetation which was dominated by Reed Canarygrass) and Bluejoint Reedgrass. Tall trees surrounded the subplot and provided some shade to the area. Only one woody vegetation species was found within the subplot: Common Buckthorn (*Rhamnus cathartica*). The CO of the plants found within the subplot ranged from 3 to -5. A summary of the subplot 1B survey results can be found in Table 4.

Table 4: Summary of Vegetation Species Present in Subplot 1B

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Common Buckthorn	*Rhamnus cathartica*	0	100	Introduced
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Aster	*Aster sp.*	N/A	5	
Virginia Creeper	*Parthenocissus inserta*	3	5	Native
Field Horesetail	Equisetum arvens	0	1	Native
Bluejoint Reedgrass	Calamagrostis canadensis	-5	30	Native
Reed Canary Grass[1]	*Phalaris arundinacea subsp. aundinacea*	-3	45	Introduced
Violet	*Viola sp.*		5	
Broad-leaved Cattail	*Typha latifolia*	-5	5	Native

Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Bittersweet Nightshade	*Solanum dulcamara*	0	2	Introduced
Crested Sedge	*Carex cristatella*		2	Native

1 Name derived from the Ontario Invasive Plant Council document: Invasive Reed Canary Grass (Phalaris arundinacea subsp. arundinacea) Best Management Practices in Ontario (Anderson, 2012).

Subplot 2A

Subplot 2A contained dense ground vegetation that was dominated by Broad-leaved Cattail. No woody vegetation species were found in the subplot. The diversity of plant species is lower compared to subplots 1A and 1B as Cattails have begun crowding the area. Wetland obligate species dominated the subplot. Given the presence of water at the surface, saturation levels are expected to be very high. One facultative species (found in both wetlands and uplands) with a CO of 0 was found in the ground vegetation subplot; Bittersweet Nightshade. This species, and Purple Loosestrife, an aggressive invasive species, were the only two introduced species found within the subplot and together made 18% of species composition. The remaining three species are native to Ontario but made 82% of species composition due to the density of cattails. The CO of the plants found within the subplot ranged from 0 to -5. Water was visible at the surface at the time of the survey. A summary of the subplot 2A survey results can be found in Table 5.

Table 5: Summary of Vegetation Species Present in Subplot 2A

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	75	Native
Bittersweet Nightshade	*Solanum dulcamara*	0	8	Introduced
Purple Loosestrife	*Lythrum salicaria*	-5	10	Introduced
Harlequin Blueflag	*Iris versicolor*	-5	5	Native
Bulbet-bearing Waterparsnip	*Cicuta bulbifera*	-5	2	Native

Subplot 2B

Similar to Subplot 2A, Subplot 2B was densely vegetated and dominated by the native Broad-leaved Cattail. And again, due to the density of cattails, diversity of species was low with only four species found within the subplot. One species with a CO of 0, Bittersweet Nightshade, was found within this subplot. The remaining three species were wetland obligate species with a CO of -5. 75% of the vegetation found within the subplot was native due again to the density of cattail species, while 25% was introduced. No woody vegetation species were found within the subplot. Water was visible at the surface at the time of the survey. A summary of the subplot 2B survey results can be found in Table 6.

Table 6: Summary of Vegetation Species Present in Subplot 2B

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	70	Native
Bittersweet Nightshade	*Solanum dulcamara*	0	5	Introduced
Purple Loosestrife	*Lythrum salicaria*	-5	20	Introduced
Tufted Loosestrife	*Lysimachia thyrsiflora*	-5	5	Native

Subplot 3A

Subplot 3A did not contain introduced plant species at the time of the survey. As per subplot 2A and 2B, Broad-leaved cattails were the dominant ground vegetation species in subplot 3A, occupying 80% of the 1 m x 1 m plot. Common Winterberry (Ilex verticillate) was found growing on a mound in the northern corner of the 2 m x 2 m plot. It was the only woody vegetation species identified within the subplot. The CO of the plants found within the subplot ranged from -3 to -5. Water was visible at the surface at the time of the survey. A summary of the subplot 3A survey results can be found in Table 7, below.

Table 7: Summary of Vegetation Species Present in Subplot 3A

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Common Winterberry	*Ilex verticillata*	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	80	Native
Tufted Loosestrife	*Lysimachia thyrsiflora*	-5	15	Native
Northern Water-plantain	*Alisma triviale*	-5	5	Native

Subplot 3B

Subplot 3B was found to be dominated by wetland obligate, ground vegetation species, namely Broad-leaved Cattail. No woody vegetation species were found within this subplot. Only three plant species were identified in this subplot. Among those identified, Purple Loosestrife was the only introduced species, though it is an aggressive invasive species. The remaining two species, Broad-leaved Cattail and Tufted Loosestrife, are native to Ontario. Water was visible at the surface at the time of the survey. A summary of the subplot 3B survey results can be found in Table 8Table 7.

Table 8: Summary of Vegetation Species Present in Subplot 3B

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	85	Native
Purple Loosestrife	*Lythrum salicaria*	-5	8	Introduced
Tufted Loosestrife	*Lysimachia thyrsiflora*	-5	7	Native

Subplot 4A

Only two species were identified in subplot 4A: Broad-leaved Cattail and Purple Loosestrife. Both species tend to proliferate quickly and form dense colonies that crowd out other plant Subplot 4A species therefore it is not surprising that no other species were found in this subplot. Both species are wetland obligate species with a CO of -5. Broad-leaved Cattail are native to Ontario, while Purple Loosestrife is an aggressive invasive species. However, Broad-leaved Cattails were still found to be dominating the subplot with a composition of 80%. Water was visible at the surface at the time of the survey. A summary of the subplot 4A survey results can be found in Table 9.

Table 9: Summary of Vegetation Species Present in Subplot 4A

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	80	Native
Purple Loosestrife	*Lythrum salicaria*	-5	20	Introduced

Subplot 4B

Three species were found in subplot 4, two of which were ground vegetation species (Broad-leaved Cattail, Purple Loosestrife). Both ground vegetation species are wetland obligate species with a CO of -5. Broad-leaved cattail was the dominant species in the 1 m x 1 m ground vegetation plot. Only one woody vegetation species individual, Common Winterberry, was found within the subplot. It is a facultative wetland species with a CO of -3. Water was visible at the surface at the time of the survey. A summary of the subplot 4B survey results can be found in Table 10 below.

Table 10: Summary of Vegetation Species Present in Subplot 4B

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Common Winterberry	*Ilex verticillata*	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	80	Native
Purple Loosestrife	*Lythrum salicaria*	-5	20	Introduced

Subplot 5A

Subplot 5A saw an increase in species diversity compared to the adjacent 4A subplot with six species in total. One ground vegetation species found within the subplot, Marsh Fern (*Thlypteris palustris*), is a Facultative Wetland species with a CO of -3. The remaining ground vegetation species are wetland obligate species with a CO of -5. Common Winterberry was the only woody vegetation species found within the 2 m x 2 m woody vegetation plot. Water was visible at the surface at the time of the survey. A summary of the subplot 5A survey results can be found in Table 11.

Table 11: Summary of Vegetation Species Present in Subplot 5A

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Common Winterberry	*Ilex verticillata*	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	75	Native
Reed Canary grass	*Phalaris arundinacea subsp. arundinacea*	-5	3	Introduced
Harlequin Blueflag	*Iris versicolor*	-5	10	Native
Bulbet-bearing Waterparsnip	*Cicuta bulbifera*	-5	2	Native
Marsh Fern	*Thelypteris palustris*	-3	10	Native

Subplot 5B

Three ground vegetation species were found within subplot 5B, all of which are wetland obligate species with a CO of -5. As per the majority of subplots, Broad-leaved Cattail was the dominant species, encompassing 80% of the 1 m x 1 m ground vegetation plot. The remaining two species, Purple Loosestrife and Tufted Loosestrife, occupied 15% and 5% of the plot respectively. Water was visible at the surface at the time of the survey. No woody vegetation species were found within the 2 m x 2 m plot. A summary of the subplot 5B survey results can be found in Table 12.

Table 12: Summary of Vegetation Species Present in Subplot 5B

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	80	Native
Purple Loosestrife	*Lythrum salicaria*	-5	15	Introduced
Tufted Loosestrife	*Lysimachia thyrsiflora*	-5	5	Native

Subplot 6A

Subplot 6A was densely vegetated and dominated by Broad-leaved Cattails. Two species found identified in the subplot are facultative wetland species with a CO of -3. The remaining three species are wetland obligate species with a CO of -5. Only one, Purple Loosestrife, is an introduced species and it occupied 3% of the subplot at the time of the survey. Water was visible at the surface at the time of the survey. No woody vegetation species were identified within the 2 m x 2 m plot. A summary of the subplot 6A survey results can be found in Table 13, below.

Table 13: Summary of Vegetation Species Present in Subplot 6A

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	85	Native
Purple Loosestrife	*Lythrum salicaria*	-5	3	Introduced
Bulbet-bearing Waterparsnip	*Cicuta bulbifera*	-5	2	Native
Sensitive Fern	*Onoclea sensibilis*	-3	5	Native
Marsh Fern	*Thelypteris palustris*	-3	5	Native

Subplot 6B

Seven ground vegetation species were found in Subplot 6B. Broad-leaved cattail was found to be the dominant species, occupying 60% of the 1 m x 1 m plot. Two introduced species were identified; Purple Loosestrife and Bittersweet Nightshade. The remaining plant species are native to Ontario. The CO of the plants found within the subplot ranged from 0 to -5. No woody vegetation species were identified within the 2 m x 2 m plot. A summary of the subplot 6B survey results can be found in Table 14, below.

Table 14: Summary of Vegetation Species Present in Subplot 6B

Woody Vegetation (2 m x 2 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Common Name	**Scientific Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Broad-leaved Cattail	*Typha latifolia*	-5	60	Native
Purple Loosestrife	*Lythrum salicaria*	-5	15	Introduced
Bulbet-bearing Waterparsnip	*Cicuta bulbifera*	-5	1	Native
Sensitive Fern	*Onoclea sensibilis*	-3	5	Native
Marsh Fern	*Thelypteris palustris*	-3	10	Native
Bittersweet Nightshade	*Solanum dulcamara*	0	4	Introduced
Reed Canarygrass	*Phalaris arundinacea subsp. arundinacea*	-5	5	Introduced

3.2 Amphibian Monitoring

Three species, Wood Frog (*Lithobates sylvaticus)*, American Toad (*Anaxyrus americanus*) and Green Frog (*Lithobates clamitans*) were documented calling within the wetland stations on the first, second and third field visits. Results of the surveys are provided below in Table 15.

Table 15: Summary of Amphibian Survey Results

Station ID	Easting	Northing	Calls Heard	Common Name	Scientific Name	Call Code[1]
April 24, 2019						
1	17T 595248	4844311	Yes	Wood Frog	*Lithobates sylvaticus*	1
2	17T 595474	4844194	No	-	-	N/A
3	17T 595693	4844549	Yes	Wood Frog	*Lithobates sylvaticus*	1
4	17T 596068	4844844	No	-	-	N/A
May 15, 2019						
1	17T 595248	4844311	No	-	-	N/A
2	17T 595474	4844194	Yes	American Toad	*Anaxyrus americanus*	2
3	17T 595693	4844549	Yes	Wood Frog	*Lithobates sylvaticus*	1
4	17T 596068	4844844	Yes	American Toad	*Anaxyrus americanus*	3
June 21, 2019						
1	17T 595248	4844311	No	-	-	N/A
2	17T 595474	4844194	Yes	Green Frog	*Lithobates clamitans*	1
3	17T 595693	4844549	No	-	-	N/A
4	17T 596068	4844844	Yes	Green Frog	*Lithobates clamitans*	1

[1]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.

A total of five Wood Frogs, an undetermined number of American Toads, and six Green Frogs were heard calling at the different stations on the subject property during the 2019 breeding season. All three species are ranked as “secure” (S5) in Ontario. According to TRCA’s scoring and local ranking of fauna species in their jurisdiction, American Toad and Green Frog have a local rank of “L4” meaning they are a “Species of Urban Concern”; they occur throughout the region but could show declines if urban impacts are not mitigated effectively. Wood Frog has a local rank of “L2” meaning it is a “Species of Regional Conservation Concern”; they are somewhat more abundant and generally less sensitive than L1 species.

4.0 Incidental Observations

Incidental observations of wildlife were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

MNRFs provincial ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. Four species observed incidentally are listed as secure (S5) or apparently secure (S4) in Southern Ontario. One species, Monarch (Danaus plexippus) is listed as Imperiled – Nonbreeding (S4N) and Apparently Secure - Breeding (S4B) Refer to Table 16 for a summary of incidental observations.

Table 16: Summary of Incidental Wildlife Observations on the Subject Property

Common Name	Scientific Name	Number Observed on Subject Property	S-Rank	SARO status	Comments
Birds					
Great Blue Heron	*Ardea herodias*	1	S4	-	Observed in shallow aquatic wetland (SAS1-1) in the northeast area of the subject property.
Red-winged Blackbird	*Agelaius phoeniceus*	1	S4	-	Observed during transect monitoring survey.
Mammals					
American Beaver	*Castor canadensis*	2	S5	-	Observed in shallow aquatic wetland (SAS1-1) in the northeast area of the subject property.
Herpetofauna					
Midland Painted Turtle	*Chrysemys picta marginata*	10	S4	-	Observed in shallow aquatic wetland (SAS1-1) in the northeast area of the subject property.
Lepidoptera					
Monarch	*Danaus plexippus*	6	S2N, S4B	Special Concern	Observed adults and larva in cultural field adjacent to shallow aquatic wetland in the northeast area of the subject property.

All species except Monarch are wetland specialists and rely on wetlands for at least one lifecycle process (i.e., foraging, breeding, rearing, etc.).

5.0 Conclusions

Burnside ecologists conducted wetland monitoring surveys during the spring and summer of 2019 to establish baseline monitoring conditions for the Snell's Hollow East Secondary Plan.

During initial data collection along the wetland transect, wetland facultative and wetland obligate species were found to dominate all subplot, except subplots 1A and 1B. Water was visible at the surface in all subplots, except again in subplots 1A and 1B. A soil assessment within at the fist centroid (0 m) found water at 60 cm below soil surface and mottles and gley at 35 cm and 50cm respectively. This data suggests that soil saturation levels within the wetland were elevated throughout the transect at the time of the survey.

Amphibian call surveys were completed in the spring and summer of 2019. A total of three amphibian species were heard calling at various stations throughout the subject property. Although all three species are common in Ontario, both American Toad and Green Frog are "Species of Urban Concern" and Wood Frog is a "Species of Regional Conservation Concern". Appropriate mitigation measures should be implemented during the construction and development phase in order to ensure that no negative impacts to these local populations occur.

The data collected during these surveys are to be used to assess the impacts of construction on the existing wetland and re-examine mitigation and impact prevention methods during and after development. Should the project move forward to a development phase, follow up surveys are to be completed for 2 years during construction, and for 3 years – every other year – post-development.

6.0 References

Anderson, H. (2012). *Invasive Reed Canary Grass (Phalaris arundinacea subsp. arundinacea) Best Management Practices in Ontario.* Peterborough, ON: Ontario Invasive Plant Council.

Masters, L. A., Herman, K. D., Penskar, M. R., Reznicek, A. A., Wilhelm, G. S., & Brodowicz, W. W. (1997). *Floristis Quality Assessment: Development and Application in the State of Michigan (USA).* Lansing, MI: Michigan Department of Natural Resources, Wildlife Division, Natural Heritage Program.

Ministry of Natural Resources and Forestry. (June, 2019). *Ontario Wetland Evaluation System Training and Certification.* Nipissing University, North Bay: MNRF.

Ontario Ministry of Natural Resources. (2009). *Provincially Significant Heart Lake Wetland Complex.* Aurora District: OMNR.

Toronto Region Conservation Authority. (January, 2016). *Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program.* Toronto: TRCA.

Varga, S. (2012, February 21). Re: Update to the Provincially Signficant Heart Lake Wetland Complex. MNR Aurora District. E-mail correspondence.

Varga, S. (2012, November 23). Update to a Portion of the Provincially Significant Heart Lake Wetland Complex. MNR Aurora District. E-mail correspondence.

Warne, A. (2016). *Purple Loosestrive (Lythrum salcaria) Best Management Practices in Ontario.* Peterborough, ON: Ontario Invasive Plant Council.

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Appendix A

Wetland Vegetation Subplot Photos

Photo 1: Subplot 1A

Photo 2: Subplot 1B

Photo 3: Subplot 2A

Photo 4: Subplot 2B

Photo 5: Subplot 3A

Photo 6: Subplot 3B

Photo 7: Subplot 4A

Photo 8: Subplot 4B

No photo taken of subplot 5A

Photo 9: Subplot 5A

Photo 10: Subplot 5B

Photo 11: Subplot 6A

Photo 12: Subplot 6B

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Snell's Hollow East Secondary Plan Annual Wetland Monitoring Report – Year 2 (2020)

Snell's Hollow East Landowners Group
c/o Glenn Schnarr & Associates Inc.
700-10 Kingsbridge Garden Circle
Mississauga ON L5R 3K6

Snell's Hollow East Secondary Plan Annual Wetland Monitoring Report – Year 2 (2020)

Snell's Hollow East Landowners Group
c/o Glenn Schnarr & Associates Inc.
700-10 Kingsbridge Garden Circle
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March 2021
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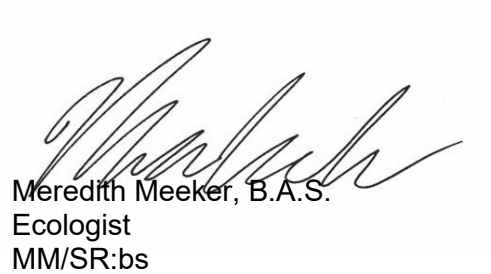
Record of Revisions

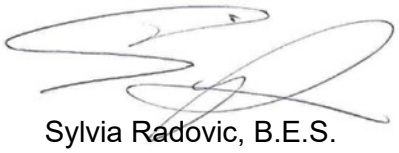
Revision	Date	Description
0	February 19, 2021	Draft Submission to Snell's Hollow East Landowners Group c/o GSAI
1	March 2, 2021	Initial Submission to TRCA for Review

R.J. Burnside & Associates Limited

Report Prepared By:

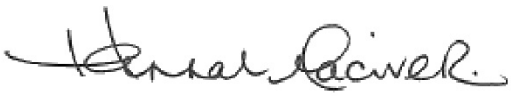


Meredith Meeker, B.A.S.
Ecologist
MM/SR:bs



Sylvia Radovic, B.E.S.
Ecologist

Report Reviewed By:



Hannah Maciver, B.E.S.
Project Coordinator/Ecologist
HM:bs

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Tables

Figures

Appendices

Disclaimer

1.0 Introduction

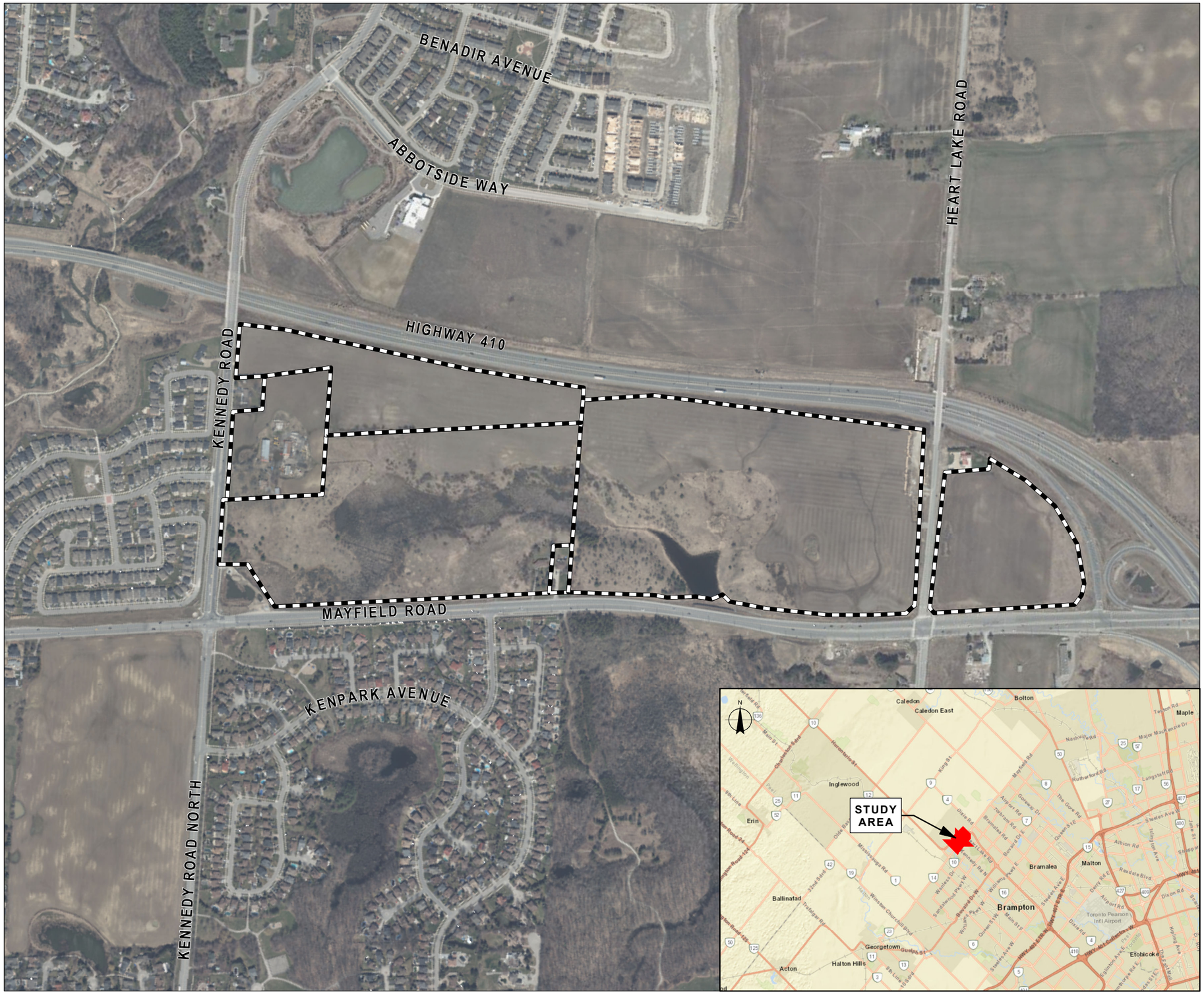
R.J. Burnside & Associates Limited (Burnside) has been retained by the Snell's Hollow East Landowners Group to undertake an Environmental Field Study and Baseline Monitoring Program for a development located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the "subject property"). See Figure 1. The subject property is in the Town of Caledon (Town) and within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town of Caledon, in the proposed Snell's Hollow East Secondary Plan area. The site is bounded by Highway 410 to the north, Heart Lake Road to the east, Mayfield Road to the south, and Kennedy Road to the west (Figure 1).

As outlined in the Terms of Reference (TOR) dated April 8, 2019, the need for a Baseline Monitoring Program for the portion of the Heart Lake Provincially Significant Wetland (PSW) Complex (Wetland No. 1) that is present on the subject property was identified by the Town, the Region of Peel (Region) and the TRCA (grouped together and referred to as the Agencies). Wetland monitoring was to be completed for 1-year pre-development, 2 years during development, and for 3 years – every other year post-development. Burnside Ecologists began collecting data on-site in 2019[1]. Due to changes in project schedule and agency requests, an additional year of pre-construction monitoring was completed in 2020.

The purpose of this report is to present the results obtained from the second year of wetland monitoring conducted in 2020, described below. This report also provides a preliminary year-over-year comparison of monitoring results between 2019 and 2020.

[1] Please refer to Annual Wetland Monitoring Report Year 1 (2019) dated January 22, 2020 (Revised August 19, 2020). R.J. Burnside & Associates Ltd.



Study Area

Sources:

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

STUDY AREA

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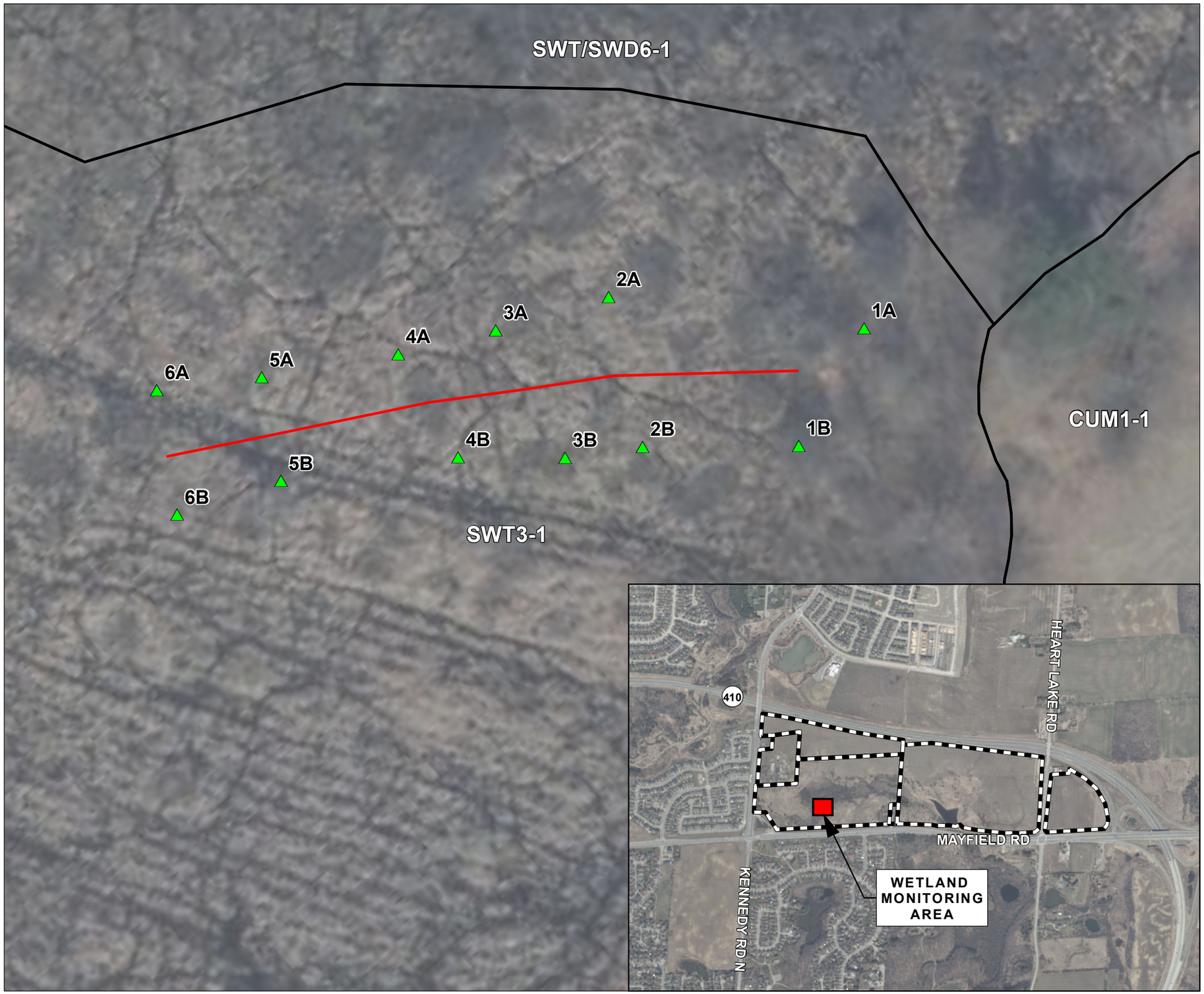
2.0 Wetland Monitoring Program Methodology

2.1 Wetland Vegetation Monitoring

Methodology for the wetland vegetation monitoring survey was based on the TRCA's *Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program* (January 2016). Please refer to the Year 1 Report for a detailed description of the methodology (Burnside, 2020). See Figure 2.



Vegetation Subplot

Transect Line

ELC Boundary

Study Area

ELC Descriptions
CUM1-1: Dry-Moist Old Field Meadow
SWD6-1: Red Maple Organic Deciduous Swamp
SWT: Thicket Swamp
SWT3-1: Alder Organic Thicket Swamp

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

WETLAND MONITORING

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2.2 Amphibian Monitoring

Burnside staff conducted amphibian breeding call surveys following the *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians* (Bird Studies Canada, 2008), during the 2020 breeding season. Surveys were conducted on April 6, May 15, and June 17, 2020 by Qualified Ecologists, to detect potential early, mid and late season amphibian breeding activity in Central Ontario.

Survey stations were chosen in Year 1 (2019) to provide information on potential amphibian breeding sites within representative wetland communities located throughout the subject property. Surveys were conducted at four stations. See Figure 3.

The Marsh Monitoring Program guidelines state that three call surveys should be completed when nighttime air temperatures are greater than 5°C, 10°C, and 17°C, respectively, and when wind strength is less than 19 km/h (≤3 on the Beaufort Scale). Conditions during the surveys are outlined in Table 1 below.

Amphibian Monitoring Station

Provincially Significant Heart Lake Wetland Complex (MNRF)

Study Area

Sources:

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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

AMPHIBIAN MONITORING STATIONS

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Table 1: Details of Amphibian Breeding Call Surveys Conducted by Burnside Staff

April 6, 2020	**Amphibian Breeding Call Survey #1**
Time (24h): 20:37	Air Temp (°C): 10-9.3
Sky Code[1]: 2	Wind Scale[2]: 2
May 15, 2020	**Amphibian Breeding Call Survey #2**
Time (24h): 21:09	Air Temp (°C): 11.5-10.7
Sky Code[1]: 1	Wind Scale[2]: 2
June 17, 2020	**Amphibian Breeding Call Survey #3**
Time (24h): 21:34	Air Temp (°C): 20.3-18
Sky Code[1]: 0	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, 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 (0-2 km/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).

3.0 Wetland Monitoring Program Results

3.1 Wetland Vegetation Monitoring

Baseline vegetation and soil condition data was collected by Burnside Ecologists on July 4, 2019. Monitoring in Year 2 was performed on July 14, 2020. Given the significant slope from the upland habitat towards the wetland, the wetland edge was determined to be close to water's edge of the wetland. Therefore, the first two subplots, 1A and 1B, were dry and the remaining subplots contained at least some standing water. See Appendix A for wetland subplot photos (please note that a photographic record for Subplot 5A is not available).

Once plant species within each subplot were identified, a Coefficient of Wetness (cw) was used to assess soil saturation levels. The cw defines the estimated probability for which a species is likely to grow in wetland or upland soils. Values between -5 and 5 are assigned to each species; -5 signifies a species most likely to be found in wetland soils and 5 signifies a species that is most likely to be found in dry, upland soils. Table 2 below defines cw values.

Table 2: Definition of Coefficient of Wetness Values[2]

Wetland Category	Symbol	Coefficient of Wetness	Definition
Upland	UPL	5	Occurs almost never in wetlands under natural conditions (estimated <1% probability).
Facultative Upland	FACU	3	Occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1% to 33% probability).
Facultative	FAC	0	Equally likely to occur in wetlands or non-wetlands (estimated 34% to 66% probability).
Facultative Wetland	FACW	-3	Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67% to 99% probability).
Obligate Wetland	OBL	-5	Occurs almost always in wetlands under natural conditions (estimated >99% probability).

Soil Assessment

Soil assessment took place in Subplots 1A and 1B only as water was at or above soil in the remaining subplots along the transect in Year 1. Please refer to the Year 1 Report for a detailed description of the methodology (Burnside, 2020).

[2] Table taken from *Floristic Quality Assessment: Development and Application in the State of Michigan (USA)* (Masters, et al., 1997) and modified for the purposes of this report.

Vegetation Assessment

A total of 32 vegetation species were identified in the subplots located along the transect, three of which were woody species and the remaining 29 were nonwoody/ground vegetation. All subplots were dominated by (i.e., greater than 50% composition by area) Facultative Wetland and Wetland Obligate species that have a cw between -3 and -5.

Subplots 1A and 1B have the greatest number of plant species, as well as the greatest cw range between 3 and -5. This range is attributed to the determination of the subplot proximity to the wetland water's edge, and consequently the inclusion of drier land. Subplot 4B had the least cw range as it was the only subplot to have exclusively Wetland Obligate species (cw of -5). Remaining Subplots 2A, 2B, 3A, 3B, 4A, 5A, 5B, 6A, and 6B were Obligate Wetland (cw of -5) dominated but with very low percentage composition of Facultative Wetland (cw of -3) and Facultative (cw of 0) species. Native species with a cw of -3 included Sensitive Fern (*Onoclea sensibilis*) and Marsh Fern (*Theliptersi polustris*) (less than 6% and 8%, respectively) native ferns. The graminoid Reed Canarygrass (*Phalaris arundinacea*) comprised less than 6%. The one forb species, Bittersweet Nightshade (*Solanum dulcamara*) with a cw of 0 was also low (less than 5%) where present in these subplots. This shows that soil saturation levels and water retention throughout the transect are high, particularly in between Subplots 2A/2B and 6A/6B.

Broad-leaved Cattail (*Typha latifolia*) was the dominant species in all subplots, except 1A and 1B. Little evidence of the invasive Narrow-leaved Cattail (*Typha angustifolia*) or its hybrid form, *Typha x* glauca, was found within the subplots. However, *Typha x glauca* can be difficult to identify and may require genetic testing to confirm presence/absence. Reed Canarygrass was found in moderate amounts in Subplot 1B (35% composition by area) and low amounts further into the wetland in Subplots 3B, 5A, 5B, and 6B (2% to 6% composition by area) appearing to progress in an invasive manner into this wetland. Year 2 found Purple Loosestrife (*Lythrum salicaria*) in all subplots except one (1A), which is an increase from Year 1 (found in only eight subplots) but overall decreased composition by area (3% to 15%).

Tufted Yellow Loosestrife (*Lysimachia thyrsiflora*), a native species that is rare within Peel Region (CVC, 2002) was found in low amounts (5% to 15% composition by area) in Subplots 2B, 3A, 3B, 5A, and 5B in Year 1. There was one additional subplot (5A) where Tufted Yellow Loosestrife was noted in Year 2 but overall lower composition percentage by area (2 to 4%) was noted.

A summary of the results for each transect can be found in the sections below. Unless otherwise noted, all common names were derived from the Database of Vascular Plants of Canada (VASCAN) website.

Subplot 1A

Subplot 1A is located at the edge of the wetland, approximately 5 m north of the centroid of the transect. At the time of the survey, it was characterized by tall shrubs and thick understory growth. Only one woody vegetation species was found within the subplot: Speckled Alder (*Alnus incana)*. The subplot was dominated by tall non-woody vegetation, including Bluejoint Reedgrass (*Calamagrostis canadensis*) and Sensitive Fern, both of which are native to Ontario. The cw of the plants found within the subplot ranged from 3 to -5. This was expected as this subplot was located at the edge of the wetland, which was determined by estimating the point at which 50% of the vegetation was comprised of wetland indicator species. A summary of the Subplot 1A survey results can be found in Table 3.

Table 3: Summary of Vegetation Species Present in Subplot 1A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Alnus incana	Speckled Alder	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Agrimonia gryposepala	Hooked Agrimony	3	2	Native
Calamagrostis canadensis	Canada Bluejoint Reedgrass	-3	25	Native
Carex vulpinoidea	Fox Sedge	-5	2	Native
Carex lacustris	Lake Sedge	-5	5	Native
Dactylis glomerata	Orchard Grass	3	3	Introduced
Equisetum arvense	Field Horsetail	0	4	Native
Fragaria virginiana	Wild Strawberry	3	2	Native
Onoclea sensibilis	Sensitive Fern	-3	25	Native
Parthenocissus quinquefolia	Virginia Creeper	3	3	Native
Ranunculus acris	Tall buttercup	0	2	Introduced
Solidago sp.	Goldenrod species		5	
Symphyotrichum sp.	Aster species		5	
Trifolium pratense	Red Clover	3	4	Introduced
Typha latifolia	Broad-leaved Cattail	-5	10	Native
Viola sp.	Violet		3	

Subplot 1B

Subplot 1B is located at the edge of the wetland, approximately 5 m south of the centroid of the transect. The subplot contained thick ground vegetation which was dominated by Reed Canarygrass and Bluejoint Reedgrass. Tall trees surrounded the subplot and provided some shade to the area. Only one woody vegetation species was found within the subplot: Common Buckthorn (*Rhamnus cathartica*). The cw of the plants found within the subplot ranged from 3 to -5. A summary of the Subplot 1B survey results can be found in Table 4.

Table 4: Summary of Vegetation Species Present in Subplot 1B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Rhamnus cathartica	Common Buckthorn	0	100	Introduced
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Agrimonia gryosepala	Hooked Agrimony	3	5	Native
Calamagrostis canadensis	Canada Bluejoint Reedgrass	-3	20	Native
Carex lacustris	Lake Sedge	-5	2	Native
Equisetum arvense	Field Horsetail	0	8	Native
Lythrum salicaria	Purple Loosestrife	-5	5	Introduced
Parthenocissus quinquefolia	Virginia Creeper	3	5	Native
Phalaris arundinacea	Reed Canarygrass	-3	35	Native/ Introduced
Typha latifolia	Broad-leaved Cattail	-5	15	Native
Viola sp.	Violet		5	

Subplot 2A

Subplot 2A contained dense ground vegetation dominated by Broad-leaved Cattail. No woody vegetation species were found in the subplot. The diversity of plant species is lower compared to Subplots 1A and 1B as Cattails have begun crowding the area. Wetland obligate species dominated the subplot. Given the presence of water at the surface, saturation levels are expected to be very high. One facultative species (found in both wetlands and uplands) with a cw of 0 was found in the ground vegetation subplot; Bittersweet Nightshade. This species, and Purple Loosestrife, an aggressive invasive species, were the only two introduced species found within the subplot and together made 10% of species composition. The remaining three species are native to Ontario but made 90% of species composition due to the density of cattails. The cw of the plants found within the subplot ranged from 0 to -5. Water was visible at the surface at the time of the survey. A summary of the Subplot 2A survey results can be found in Table 5.

Table 5: Summary of Vegetation Species Present in Subplot 2A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Cicuta bulbifera	Bulbous Water-hemlock	-5	3	Native
Iris versicolor	Harlequin Blueflag	-5	2	Native
Lythrum salicaria	Purple Loosestrife	-5	5	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	5	Introduced
Typha latifolia	Broad-leaved Cattail	-5	85	Native

Subplot 2B

Similar to Subplot 2A, Subplot 2B was densely vegetated and dominated by the native Broad-leaved Cattail. And again, due to the density of cattails, diversity of species was low with only five species found within the subplot. One species with a cw of 0, Bittersweet Nightshade, was found within this subplot. Moss species was also noted. The remaining species were wetland obligate species with a cw of -5. No woody vegetation species were found within the subplot. Water was visible at the surface at the time of the survey. A summary of the Subplot 2B survey results can be found in Table 6.

Table 6: Summary of Vegetation Species Present in Subplot 2B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Carex lacustris	Lake Sedge	-5	5	Native
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-5	4	Native
Lythrum salicaria	Purple Loosestrife	-5	3	Introduced
Sphagnum sp.	Moss species		5	
Solanum dulcamara	Bittersweet Nightshade	0	3	Introduced
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 3A

Similar to Subplots 2A and 2B, Bittersweet Nightshade and Purple Loosestrife, were the only two introduced species found within the subplot but together made only 4% of species composition. At the time of the survey, as per Subplots 2A and 2B, Broad-leaved cattails were the dominant ground vegetation species in Subplot 3A, occupying 80% of the 1 m x 1 m plot. Native aquatic plants included the free-floating Small Duckweed (*Lemna minor)* and Northern Water-plantain (*Alisma triviale*). Common Winterberry (*Ilex verticillate*) was found growing on a mound in the northern corner of the 2 m x 2 m plot. It was the only woody vegetation species identified within the subplot. The cw of the native plants found within the subplot ranged from -3 to -5. Water was visible at the surface at the time of the survey. A summary of the Subplot 3A survey results can be found in Table 7 below.

Table 7: Summary of Vegetation Species Present in Subplot 3A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Alisma triviale	Northern Water-plantain	-5	3	Native
Cicuta bulbifera	Bulbous Water-hemlock	-5	3	Native
Lemna minor	Small Duckweed	-5	8	Native
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-5	2	Native
Lythrum salicaria	Purple Loosestrife	-5	2	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	2	Introduced
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 3B

Subplot 3B was found to be dominated by wetland Broad-leaved Cattail. No woody vegetation species were found within this subplot. Six plant species were identified in this subplot. Among those identified, Purple Loosestrife and Redtop (*Agrostis gigantea*) were the only introduced and aggressive invasive species comprising 10%. The remaining are native to Ontario. Water was visible at the surface at the time of the survey. A summary of the Subplot 3B survey results can be found in Table 8.

Table 8: Summary of Vegetation Species Present in Subplot 3B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lemna minor	Small Duckweed	-5	4	Native
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-5	4	Native
Lythrum salicaria	Purple Loosestrife	-5	4	Introduced
Phalaris arundinacea	Reed Canarygrass	-3	2	Native/ Introduced
Sium suave	Water Parsnip	-5	1	Native
Theliptersis palustris	Marsh Fern	-3	5	Native
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 4A

Similar to Subplot 3B, Subplot 4A was found to be dominated by wetland Broad-leaved Cattail at 80% and no woody vegetation species were found within this subplot. Six plant species were identified in this subplot. Among those identified, Purple Loosestrife and Bittersweet Nightshade were the only introduced invasive species comprising 10%. The remaining are native to Ontario. The remaining 10% included obligate wetland Water Parsnip (*Sium suave*), floating aquatic species, Small Duckweed, and facultative wetland fern species, Marsh Fern. Water was visible at the surface at the time of the survey. A summary of the Subplot 4A survey results can be found in Table 9.

Table 9: Summary of Vegetation Species Present in Subplot 4A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Cicuta bulbifera	Bulbous Water-hemlock	-5	3	Native
Lemna minor	Small Duckweed	-5	4	Native
Lythrum salicaria	Purple Loosestrife	-5	8	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	2	Introduced
Thelipteris palustris	*Marsh Fern*	-3	4	Native
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 4B

All four ground vegetation species found in Subplot 4, were wetland obligate species with a wetland obligate value of -5. This subplot was comprised of 88% native species, dominated at 80% with Broad-leaved Cattail and the remaining native species equally between Lake Sedge and Small Duckweed. The only introduced species was Purple Loosestrife at 12%. Only one woody vegetation species individual, Common Winterberry, was found within the subplot. It is a facultative wetland species with a cw of -3. Water was visible at the surface at the time of the survey. A summary of the Subplot 4B survey results can be found in Table 10 below.

Table 10: Summary of Vegetation Species Present in Subplot 4B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Carex lacustris	Lake Sedge	-5	4	Native
Lemna minor	Small Duckweed	-5	4	Native
Lythrum salicaria	Purple Loosestrife	-5	12	Introduced
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 5A

Subplot 5A saw an increase in species diversity compared to the adjacent 4A subplot with nine species in total. One ground vegetation species found within the subplot, Marsh Fern (*Thlypteris palustris*), is a Facultative Wetland species with a cw of -3. The remaining ground vegetation species are wetland obligate species with a cw of -5. Common Winterberry was the only woody vegetation species found within the 2 m x 2 m woody vegetation plot. Water was visible at the surface at the time of the survey. A summary of the Subplot 5A survey results can be found in Table 11.

Table 11: Summary of Vegetation Species Present in Subplot 5A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Cicuta bulbifera	Bulbous Water-hemlock	-5	3	Native
Iris versicolor	Harlequin Blue Flag	-5	6	Native
Lemna minor	Small Duckweed	-5	6	Native
Lysimachia thrysiflora	Tufted Yellow Loosestrife	-5	2	Native
Lythrum salicaria	Purple Loosestrife	-5	2	Introduced
Phalaris arundinacea	Reed Canarygrass	-3	2	Native/ Introduced
Thelypteris palustris	Marsh Fern	-3	5	Native
Typha latifolia	Broad-leaved Cattail	-5	75	Native

Subplot 5B

Six ground vegetation species were found within Subplot 5B, all of which are wetland obligate species with a cw of -5 and an emergent Galium species. As per the majority of subplots, Broad-leaved Cattail was the dominant species, encompassing 82% of the 1 m x 1 m ground vegetation plot. The two introduced species included Purple Loosestrife and Reed Canarygrass that only occupied 5% of the subplot. Water was visible at the surface at the time of the survey. No woody vegetation species were found within the 2 m x 2 m plot. A summary of the Subplot 5B survey results can be found in Table 12.

Table 12: Summary of Vegetation Species Present in Subplot 5B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Galium sp.	Galium species		2	
Lemna minor	Small Duckweed	-5	8	Native
Lysimachia thrysiflora	Tufted Yellow Loosestrife	-5	3	Native
Lythrum salicaria	Purple Loosestrife	-5	3	Introduced
Phalaris arundinacea	Reed Canarygrass	-3	2	Native/ Introduced
Typha latifolia	Broad-leaved Cattail	-5	82	Native

Subplot 6A

Subplot 6A was densely vegetated and dominated by Broad-leaved Cattails. Two species found identified in the subplot are facultative wetland species with a cw of -3. The remaining three species are wetland obligate species with a cw of -5. Only one, Purple Loosestrife, is an introduced species and it occupied 5% of the subplot at the time of the survey. Water was visible at the surface at the time of the survey. No woody vegetation species were identified within the 2 m x 2 m plot. A summary of the Subplot 6A survey results can be found in Table 13 below.

Table 13: Summary of Vegetation Species Present in Subplot 6A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Cicuta bulbifera	Bulbous Water-hemlock	-5	3	Native
Lythrum salicaria	Purple Loosestrife	-5	5	Introduced
Onoclea sensibilis	Sensitive Fern	-3	6	Native
Thelypteris palustris	Marsh Fern	-3	7	Native
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 6B

Seven ground vegetation species were found in Subplot 6B. Broad-leaved cattail was found to be the dominant species, occupying 60% of the 1 m x 1 m plot. Two introduced species were identified: Purple Loosestrife and Bittersweet Nightshade. The remaining plant species are native to Ontario. The cw of the plants found within the subplot ranged from 0 to -5. No woody vegetation species were identified within the 2 m x 2 m plot. A summary of the Subplot 6B survey results can be found in Table 14 below.

Table 14: Summary of Vegetation Species Present in Subplot 6B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Cicuta bulbifera	Bulbous Water-hemlock	-5	3	Native
Lythrum salicaria	Purple Loosestrife	-5	15	Introduced
Onoclea sensibilis	Sensitive Fern	-3	5	Native
Phalaris arundinacea	Reed Canarygrass	-3	6	Native/ Introduced
Solanum dulcamara	Bittersweet Nightshade	0	2	Introduced
Thelypteris palustris	Marsh Fern	-3	8	Native
Typha latifolia	Broad-leaved Cattail	-5	62	Native

3.2 Amphibian Monitoring

Four species of amphibians, Wood Frog (*Lithobates sylvaticus)*, American Toad (*Anaxyrus americanus*), Gray Treefrog (*Hyla versicolor*), and Green Frog (*Lithobates clamitans*) were documented calling within the wetland stations on the first, second, and third field visits. Results of the surveys are provided below in Table 15.

Table 15: Summary of Amphibian Survey Results Conducted by Burnside Staff

Station ID	Calls Heard	Common Name	Scientific Name	Call Level Code[1]	Abundance Count[2]
April 6, 2020					
1	No	-	-	-	
2	No	-	-	-	
3	Yes	Wood Frog	*Lithobates sylvaticus*	3	Calls continuous, overlapping
4	No	-	-	-	
May 15, 2020					
1	No	-	-	-	
2	Yes	American Toad	*Anaxyrus americanus*	2	3
3	No	-	-	-	
4	Yes	American Toad	*Anaxyrus americanus*	2	7
June 17, 2020					
1	No	-	-	-	
2	Yes	Green Frog	*Lithobates clamitans*	1	1
3	No	-	-	-	
4	Yes	Gray Treefrog	*Hyla versicolor*	1	1
		Green Frog	*Lithobates clamitans*	1	3

[1]Call Level Code: 1 = calls can be counted, calls not simultaneous; 2 = calls distinguishable, some simultaneous calling; 3 = full chorus, calls continuous and overlapping.
[2]Abundance Count: Estimated number of individuals present.

Table 16: Preliminary Comparison of Amphibian Results Across Monitoring Years (2019 and 2020)

Species	Breeding Evidence			
	2019		2020	
	Call Level Code[1]	Abundance Count[2]	Call Level Code[1]	Abundance Count[2]
American Toad	3	Calls continuous, overlapping	2	10
Gray Treefrog	-	-	1	1
Green Frog	1	6	1	3
Wood Frog	1	5	3	Calls continuous, overlapping

[1]Call Level Code: 1 = calls can be counted, calls not simultaneous; 2 = calls distinguishable, some simultaneous calling; 3 = full chorus, calls continuous and overlapping.
[2]Abundance Count: Estimated number of individuals present.

All four amphibian species recorded during the surveys are ranked as “secure” (S5) in Ontario. According to TRCA’s scoring and local ranking of fauna species in their jurisdiction, American Toad and Green Frog have a local rank of “L4” meaning they are a “Species of Urban Concern”; they occur throughout the region but could show declines if urban impacts are not mitigated effectively. Gray Treefrog and Wood Frog have a local rank of “L2” meaning it is a “Species of Regional Conservation Concern”; they are somewhat more abundant and generally less sensitive than L1 species. Field data sheets are found in Appendix B.

4.0 Incidental Observations

Incidental observations of wildlife were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

MNRF's provincial ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. Seven species observed incidentally are listed as secure (S5) or apparently secure (S4) in Southern Ontario. Refer to Table 17 for a summary of incidental observations.

Table 17: Summary of Incidental Wildlife Observed on the Subject Property During Monitoring

Common Name	Scientific Name	Number Observed	S-Rank	SARO status	Comments
Birds					
American Robin	*Turdus migratorius*	1	S5B	-	Heard calling during amphibian surveys.
American Woodcock	*Scolopax minor*	1	S4B		Heard calling during amphibian surveys.
Canada Goose	*Branta canadensis*	2	S5	-	Observed during transect monitoring survey.
Red-winged Blackbird	*Agelaius phoeniceus*	1	S4	-	On nest – was observed during wetland vegetation monitoring.
Trumpeter Swan	*Cygnus buccinator*	1	S4	-	Observed in shallow aquatic wetland (SAS1-1).
Mammals					
Raccoon	*Procyon lotor*	1	S5	-	Found corpse along the side of the road.
Herpetofauna					
Midland Painted Turtle	*Chrysemys picta marginata*	5	S4	-	Observed in shallow aquatic wetland (SAS1-1).

Seven species were incidentally observed in 2020, which is an increase from the five species incidentally observed in 2019. During the two years of monitoring the species incidentally encountered were primarily common and secure species. Two of the same species were observed both in 2020 and 2019: Midland Painted Turtle and Red-winged Blackbird. Both species rely on wetlands during critical life stages.

5.0 Summary

Burnside ecologists conducted a second year of wetland monitoring surveys in 2020 to further establish baseline conditions for the Snell's Hollow East Secondary Plan that commenced in 2019 (Burnside, 2020). Pre-construction monitoring has now been completed in 2019 (Year 1) and 2020 (Year 2).

Overall results of the Year 2 vegetation assessment survey were comparable to Year 1 with no significant cw or composition changes. As in Year 1, Broad-leaved Cattail dominated all subplots except for 1A and 1B as expected. Composition percentages for Broad-leaved Cattail either remained the same or very low variances within 5% were recorded. As expected, no change in the number of woody vegetation species were noted.

Although no significant cw or composition changes were noted, an increase in diversity was noted with a total of 32 plant species observed in Year 2, which was an increase of nine species over Year 1 with a total of 23 species. This is common when starting monitoring programs and could be caused by either increased observer ability or increased observer knowledge of species already found at the site as time progresses (TRCA January 2016). Of the nine additional species, all had low composition (1% to 5%); Small Duckweed had the highest value at 8%. Six of the nine additional species noted were observed in Subplots 1A and 1B with the most abundance variance of cw, including Hooked Agrimony, Lake Sedge, Orchard Grass, Wild Strawberry, and Solidago sp. Of these, only Lake Sedge with a cw of -5 was noted in further subplots (3A and 4B) and is a common wetland plant. The remaining three species included Moss sp., Water Parsnip and Small Duckweed, introduced in Subplots 2B, 3A, and 3B, respectively. Water Parsnip and Small Duckweed have cw of -5 and are common wetland species. The new observed species are all considered common and not considered significant species.

A total of four amphibian species were heard calling at various stations throughout the subject property: Wood Frog, American Toad, Gray Treefrog, and Green Frog. Overall numbers of amphibians recorded in the second year of pre-construction monitoring are higher than in the first year. A total of four amphibian species were recorded in the second year of monitoring, while only three species were recorded during the first year. The data collected during these surveys are to be used to assess the impacts of construction on the existing wetland and re-examine mitigation and impact prevention methods during and after development. Should the project move forward to a development phase, follow up surveys are to be completed for two years during construction, and for three years – every other year – post-development.

6.0 References

Anderson, H. (2012). *Invasive Reed Canary Grass (Phalaris arundinacea subsp. arundinacea) Best Management Practices in Ontario.* Peterborough, ON: Ontario Invasive Plant Council.

Masters, L. A., Herman, K. D., Penskar, M. R., Reznicek, A. A., Wilhelm, G. S., & Brodowicz, W. W. (1997). *Floristis Quality Assessment: Development and Application in the State of Michigan (USA).* Lansing, MI: Michigan Department of Natural Resources, Wildlife Division, Natural Heritage Program.

Ministry of Natural Resources and Forestry. (June, 2019). *Ontario Wetland Evaluation System Training and Certification.* Nipissing University, North Bay: MNRF.

Ontario Ministry of Natural Resources. (2009). *Provincially Significant Heart Lake Wetland Complex.* Aurora District: OMNR.

Toronto Region Conservation Authority. (January, 2016). *Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program.* Toronto: TRCA.

Varga, S. (2012, February 21). Re: Update to the Provincially Signficant Heart Lake Wetland Complex. MNR Aurora District. E-mail correspondence.

Varga, S. (2012, November 23). Update to a Portion of the Provincially Significant Heart Lake Wetland Complex. MNR Aurora District. E-mail correspondence.

Warne, A. (2016). *Purple Loosestrive (Lythrum salcaria) Best Management Practices in Ontario.* Peterborough, ON: Ontario Invasive Plant Council.

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Appendix A

Wetland Vegetation Subplot Photos

Photo 1: Subplot 1A (photo taken on July 14, 2020)

Photo 2: Subplot 1B (photo taken on July 14, 2020)

Photo 3: Subplot 2A (photo taken on July 4, 2019)

Photo 4: Subplot 2B (photo taken on July 14, 2020)

Photo 5: Subplot 3A (photo taken on July 4, 2019)

Photo 6: Subplot 3B (photo taken on July 14, 2020)

Photo 7: Subplot 4A (photo taken on July 4, 2019)

Photo 8: Subplot 4B (photo taken on July 14, 2020)

Photo 9: Subplot 5B (photo taken on July 14, 2020)

Photo 10: Subplot 6A (photo taken on July 4, 2019)

Photo 11: Subplot 6B (photo taken on July 4, 2019)

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Appendix B

Amphibian Surveys

Amphibian Call Survey[1]

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Project Name: Snell's Hollow East

Project No: 300043952

Observers: Nadine Price, Stewart Gibson

Total # of Stations: 4

Survey Time: Start: 20:37 End: 21:18 (24 hr)

Date: Apr. 6, 2020

Air Temperature (°C): Start: 10 End: 9.3 **RH (%):** 40 **Sky Code[2]:** 2 **Wind Scale[3]:** 2

Overnight Temp (21:00 to 5:00): High: 10 Low: 2

Overnight Precip? ☐ YES ☑ NO

Station ID: AMPH-1

Description: By the barn on Kennedy Rd.

Time (24 hr): 20:37

Station Direction: NE (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☐ Treed Swamp
- ☑ Marsh / Thicket Swamp
- ☐ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☑ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 595248 E 4844311 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:
Background noise - high (traffic)
Have started filling pond a bit (see photos from Apr. 3 in Sharepoint)

[2]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

[3] 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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

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Station ID: AMPH 2

Description: SWM pond (Kennedy Rd and Mayfield Rd)

Time (24 hr): 20:47

Station Direction: SW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:
- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:
- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☑ Other: SWM pond.

UTM: 595474 E 4844194 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:

Station ID: AMPH4

Description: Open water pond

Time (24 hr): 21:03

Station Direction: NW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:
- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:
- ☑ Excavated Ditch/Pond
- ☑ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 596016.46 E 4844912.91 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:
American Woodcock calling west of pond.

[2]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

[3] 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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Station ID: AMPH3

Description: In the field, near red stake.

Time (24 hr): 21:15

Station Direction: NW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☑ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☐ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☑ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 595693 E 4844549 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	3									
Count	N/A									

Comments/Additional Observations:
Some background traffic noise.

Station ID: _____

Description: _____

Time (24 hr): _____

Station Direction: _____ (e.g. NW)

Water Temp (where applic.): _____ °C

Landscape Context:

- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☐ Agricultural Field / Meadow
- ☐ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: _____ E _____ N **Veg. Unit Reference** (where applic.): _____

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]										
Count										

Comments/Additional Observations:

[2]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

[3] 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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

BURNSIDE
THE DIFFERENCE IS OUR PEOPLE

Project Name: Snell's Hollow East CEISMP **Project No:** 300043952.

Observers: Nadine Price, Meredith Meeker **Total # of Stations:** 4

Survey Time: Start: 21:09 End: 21:54 (24 hr) **Date:** May 16/20

Air Temperature (°C): Start: 16.5 End: 10.7 **RH (%):** 67 **Sky Code[2]:** 1 **Wind Scale[3]:** 2

Overnight Temp (21:00 to 5:00): High: 12 Low: 9 Overnight Precip? ☐ YES ☑ NO

Station ID: AMPH-1

Description: By the barn on Kennedy Rd.

Time (24 hr): 21:09

Station Direction: NE (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☐ Treed Swamp
- ☑ Marsh / Thicket Swamp
- ☐ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☑ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 595248 E 4844311 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:
Busy traffic on road behind us.

[2]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
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7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

[3] 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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Station ID: AMPH-2

Description: SWM pond (Kennedy Rd + Mayfield Rd)

Time (24 hr): 21:19

Station Direction: SW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:
- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:
- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☑ Other: SWM pond

UTM: 595474 E 4844194 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]				2						
Count				3						

Comments/Additional Observations:
2 Canada Geese on pond.
SPPE were calling across road (diagonally) but not on site.

Station ID: AMPH4

Description: Open water pond

Time (24 hr): 21:39

Station Direction: NW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:
- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:
- ☑ Excavated Ditch/Pond
- ☑ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 596016.46 E 4844812.91 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]				2						
Count				7						

Comments/Additional Observations:
Traffic nearby on road and fireworks going off nearby during survey.

[2]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

[3] 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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Station ID: AMP#3

Description: In the field, near red stake

Time (24 hr): 21:51

Station Direction: NW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☑ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☐ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☑ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 595693 E 4844549 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:
Am. Robin called at end of survey. Fireworks in distance.

Station ID: _____

Description: _____

Time (24 hr): _____

Station Direction: _____ (e.g. NW)

Water Temp (where applic.): _____ °C

Landscape Context:

- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☐ Agricultural Field / Meadow
- ☐ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: _____ E _____ N **Veg. Unit Reference** (where applic.): _____

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]										
Count										

Comments/Additional Observations:

[2]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

[3] 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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Project Name: Snell's Hollow East CEISMP

Project No: 300043952

Observers: Nadine Price, Meredith Meeker

Total # of Stations: 4

Survey Time: Start: 21:34 End: 22:10 (24 hr)

Date: June 17, 2020

Air Temperature (°C): Start: 20.3 End: 18 **RH (%):** 49 **Sky Code[2]:** 0 **Wind Scale[3]:** 1

Overnight Temp (21:00 to 5:00): High: 21 Low: 14

Overnight Precip? ☐ YES ☑ NO

Station ID: AMPH4

Description: Open water pond

Time (24 hr): 21:59

Station Direction: NW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☑ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 596016.46 E 4844812.91 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]					1		1			
Count					1		3			

Comments/Additional Observations:

[2]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

[3] Beaufort Wind Scale
0 = calm, smoke rises vertically (0-2km/hr)
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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]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
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Level 3 – calls continuous and overlapping, individuals not distinguishable

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Amphibian Call Survey[1]

BURNSIDE
THE DIFFERENCE IS OUR PEOPLE

Station ID: AMPH3

Description: In the field, near red stake

Time (24 hr): 22:07

Station Direction: NW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☑ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☐ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☑ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 595693 E 4844549 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:

Station ID: AMPH2

Description: SWM pond (Kennedy Rd and Mayfield Rd)

Time (24 hr): 21:42

Station Direction: SW (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:

- ☐ Upland Forest
- ☐ Treed Swamp
- ☑ Marsh / Thicket Swamp
- ☑ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:

- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☑ Other: SWM pond

UTM: 595474 E 4844194 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:
Heard 1 Green frog during turtle nesting survey earlier in evening here, however none called during amphibian surveys. Felt much cooler by SWM pond than by road.

[2]NAAMP/ Beaufort Sky Codes
0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
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[4]Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
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Level 3 – calls continuous and overlapping, individuals not distinguishable

[1]**This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

Amphibian Call Survey[1]

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Station ID: AMPH1

Description: By the barn on Kennedy Rd.

Time (24 hr): 21:34

Station Direction: NE (e.g. NW)

Water Temp (where applic.): — °C

Landscape Context:
- ☐ Upland Forest
- ☐ Treed Swamp
- ☑ Marsh / Thicket Swamp
- ☐ Agricultural Field / Meadow
- ☑ Suburban / Urban
- ☐ Other: _____

Water Feature:
- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☑ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: 595248 E 4844311 N **Veg. Unit Reference** (where applic.): —

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]	None									
Count										

Comments/Additional Observations:
Busy traffic nearby on road making lots of noise.

Station ID: _____

Description: _____

Time (24 hr): _____

Station Direction: _____ (e.g. NW)

Water Temp (where applic.): _____ °C

Landscape Context:
- ☐ Upland Forest
- ☐ Treed Swamp
- ☐ Marsh / Thicket Swamp
- ☐ Agricultural Field / Meadow
- ☐ Suburban / Urban
- ☐ Other: _____

Water Feature:
- ☐ Excavated Ditch/Pond
- ☐ Natural swale / depression / pond
- ☐ Impoundment
- ☐ Marsh
- ☐ Swamp
- ☐ Vernal Pool
- ☐ Other: _____

UTM: _____ E _____ N **Veg. Unit Reference** (where applic.): _____

	Species[4]									
	WOFR	CHFR	SPPE	AMTO	GRTR	NLFR	GRFR	BULL	Other:	Other:
Call Code[5]										
Count										

Comments/Additional Observations:

[2] **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
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9 = thunderstorms

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[4] Typical Species
American Toad (AMTO)
Northern Leopard Frog (NLFR)
Green Frog (GRFR)
Chorus Frog (CHFR)
Gray Treefrog (GRTR)
Wood Frog (WOFR)
Bullfrog (BULL)
Spring Peeper (SPPE)

[5] Call Level Codes
Level 1 – individual calls can be counted, no overlap
Level 2 – some calls can be counted, some overlap
Level 3 – calls continuous and overlapping, individuals not distinguishable

[1] **This** sheet was developed following guidelines of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada, in partnership with Environment Canada

R.J. Burnside & Associates Limited

Snell's Hollow East Secondary Plan Annual Wetland Monitoring Report – Year 3 (2022)

Snell's Hollow East Landowners Group
c/o Glenn Schnarr & Associates Inc.
700–10 Kingsbridge Garden Circle
Mississauga ON L5R 3K6

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1465 Pickering Parkway Suite 200
Pickering ON L1V 7G7 CANADA

January 2023
300043952.0000

Distribution List

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0	Yes	Yes	Toronto and Region Conservation Authority (TRCA)
0	Yes	Yes	Town of Caledon

Record of Revisions

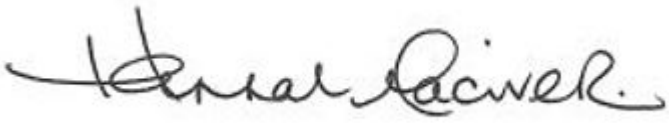
Revision	Date	Description
0	November 29, 2022	Draft Submission to Snell's Hollow East Landowners Group c/o GSAI
1	January 13, 2023	Submission to TRCA

R.J. Burnside & Associates Limited

Report Prepared By:

Sylvia Radovic, B.E.S.
Ecologist
SR:tm

Report Reviewed By:



Hannah Maciver, B.E.S.
Project Coordinator/Ecologist
HM:tm

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Figures

Appendices

Disclaimer

1.0 Introduction

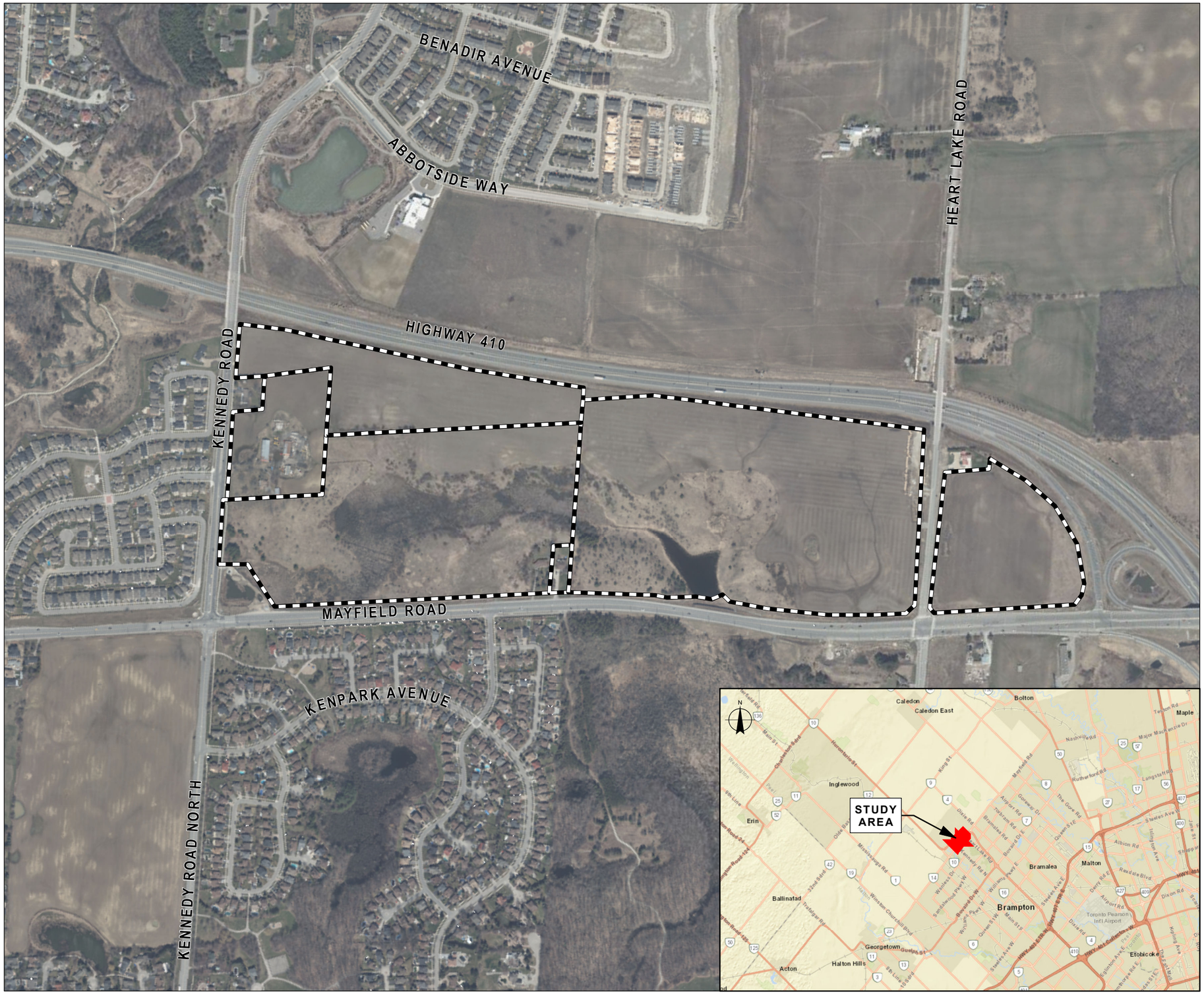
R.J. Burnside & Associates Limited (Burnside) has been retained by the Snell's Hollow East Landowners Group to undertake an Environmental Field Study and Baseline Monitoring Program for a development located at the northeast corner of Kennedy Road and Mayfield Road (herein referred to as the "subject property"). See Figure 1. The subject property is in the Town of Caledon (Town) and within the jurisdiction of Toronto and Region Conservation Authority (TRCA).

The subject property is located at the southern edge of the Town of Caledon, in the proposed Snell's Hollow East Secondary Plan area. The site is bounded by Highway 410 to the north, Heart Lake Road to the east, Mayfield Road to the south, and Kennedy Road to the west (Figure 1).

As outlined in the Terms of Reference (TOR) dated April 8, 2019, the need for a Baseline Monitoring Program for the portion of the Heart Lake Provincially Significant Wetland (PSW) Complex (Wetland No. 1) that is present on the subject property was identified by the Town, the Region of Peel (Region) and the TRCA (grouped together and referred to as the Agencies). Wetland monitoring was to be completed for 1 year pre-development, 2 years during development, and for 3 years – every other year post-development. Burnside Ecologists began collecting data on-site in 2019[1]. Due to changes in project schedule and agency requests, additional years of pre-construction monitoring was completed in 2020 (Year 2) and 2022 (Year 3).

The purpose of this report is to present the results obtained from the third year of wetland monitoring conducted in 2022, described below. This report also provides a year-over-year comparison of monitoring results between 2019, 2020 and 2022.

[1] Please refer to Annual Wetland Monitoring Report Year 1 (2019) dated January 22, 2020 (Revised August 19, 2020). R.J. Burnside & Associates Limited



Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
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Disclaimer:

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983	
Coord. System: NAD 1983 UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°00.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 310.49°	Scale Factor: 0.99960

Grid North

0 100 200 300 400 500

Metres

BURNSIDE

Client

SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

STUDY AREA

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MD	MM	2020/12/03	1
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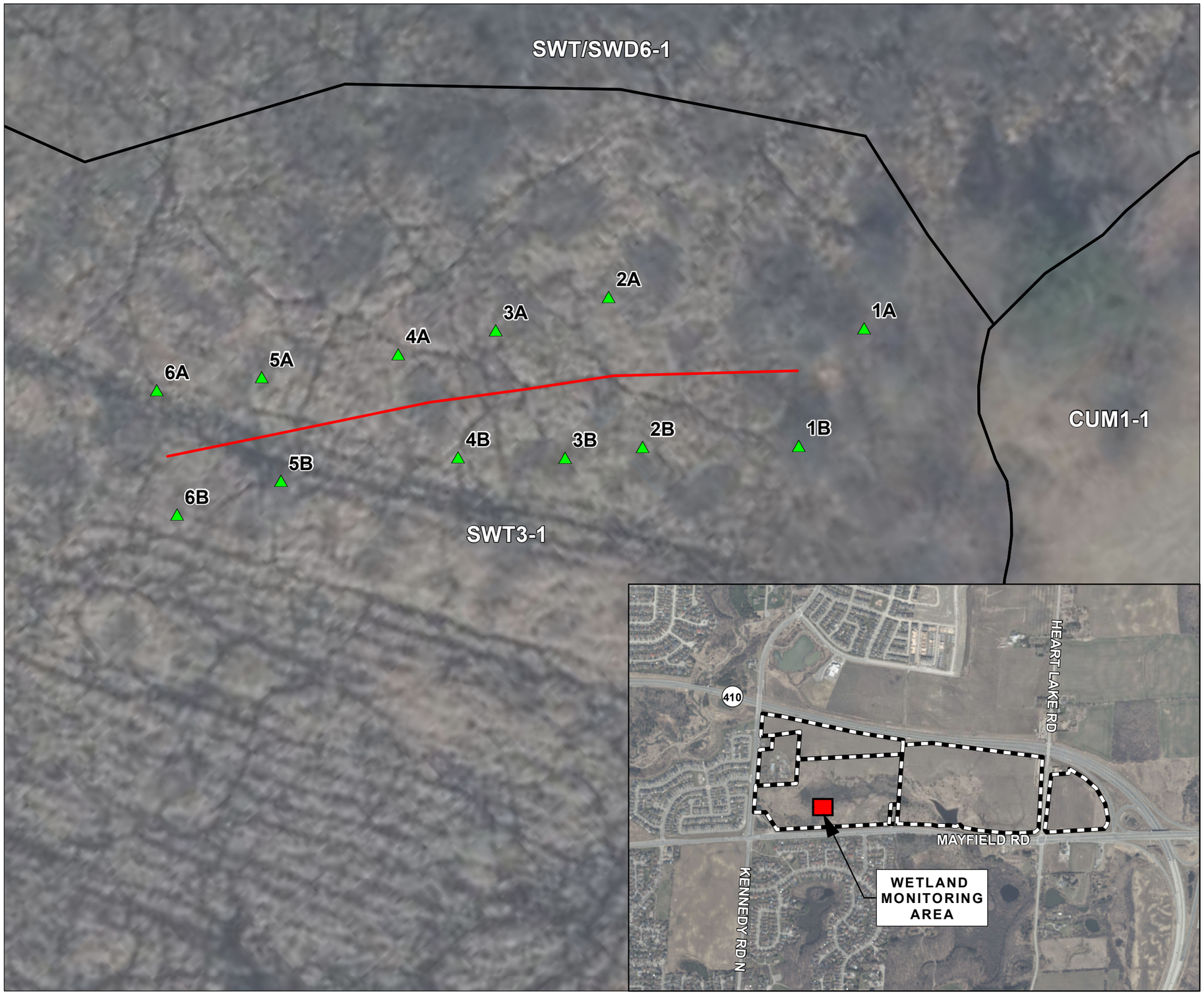
2.0 Wetland Monitoring Program Methodology

2.1 Wetland Vegetation Monitoring

Methodology for the wetland vegetation monitoring survey was based on the TRCA's *Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program* (January 2016). Please refer to the Year 1 Report for a detailed description of the methodology (Burnside, 2020). See Figure 2.



Vegetation Subplot

Transect Line

ELC Boundary

Study Area

ELC Descriptions
CUM1-1: Dry-Moist Old Field Meadow
SWD6-1: Red Maple Organic Deciduous Swamp
SWT: Thicket Swamp
SWT3-1: Alder Organic Thicket Swamp

Sources:

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Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: Transverse Mercator	
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Page Orientation: 310.49°	Scale Factor: 0.99960

Grid North

0 5 10 15 20
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SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

WETLAND MONITORING

Drawn	Checked	Date	Figure No.
MD	MM	2020/12/03	2
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2.2 Amphibian Monitoring

Burnside staff conducted amphibian breeding call surveys following the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada, 2008), during the 2022 breeding season. Surveys were conducted on April 12, May 12, and June 23, 2022 by qualified Ecologists, to detect potential early, mid and late season amphibian breeding activity in Central Ontario.

Survey stations were chosen in Year 1 (2019) to provide information on potential amphibian breeding sites within representative wetland communities located throughout the subject property. Surveys were conducted at four stations. See Figure 3.

The Marsh Monitoring Program guidelines state that three call surveys should be completed when nighttime air temperatures are greater than 5°C, 10°C, and 17°C, respectively, and when wind strength is less than 19 km/h (≤3 on the Beaufort Scale). Conditions during the surveys are outlined in Table 1 below.

Amphibian Monitoring Station

Provincially Significant Heart Lake Wetland Complex (MNRF)

Study Area

Sources:

1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

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Coord. System: NAD 1983 CSRS UTM Zone 17N	
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Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 310.49°	Scale Factor: 0.99960

Grid North

0 100 200 300 400 500
Metres

BURNSIDE

Client

SNELL'S HOLLOW LANDOWNERS GROUP

Figure Title

SNELL'S HOLLOW EAST SECONDARY PLAN

AMPHIBIAN MONITORING STATIONS

Drawn	Checked	Date	Figure No.
MD	MM	2020/12/03	3
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Table 1: Details of Amphibian Breeding Call Surveys Conducted by Burnside Staff

April 12, 2022	**Amphibian Breeding Call Survey No. 1**
Time (24h): 20:37	Air Temp (°C): 14-9.3
Sky Code[1]: 1	Wind Scale[2]: 0
May 12, 2022	**Amphibian Breeding Call Survey No. 2**
Time (24h): 21:09	Air Temp (°C): 20-10.7
Sky Code[1]: 1	Wind Scale[2]: 1
June 23, 2022	**Amphibian Breeding Call Survey No. 3**
Time (24h): 21:34	Air Temp (°C): 18-18
Sky Code[1]: 0	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, 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 (0-2 km/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).

3.0 Wetland Monitoring Program Results

3.1 Wetland Vegetation Monitoring

Baseline vegetation and soil condition data was collected by Burnside Ecologists on July 4, 2019. Monitoring in Year 3 was completed on July 15, 2022. Given the significant slope from the upland habitat towards the wetland, the wetland edge was determined to be close to water's edge of the wetland. Therefore, the first two Subplots, 1A and 1B, were dry and the remaining subplots were saturated. See Appendix A for wetland subplot photos.

Once plant species in each subplot were identified, a Coefficient of Wetness (cw) was used to assess soil saturation levels. The cw defines the estimated probability for which a species is likely to grow in wetland or upland soils. Values between -5 and 5 are assigned to each species; -5 signifies a species most likely to be found in wetland soils and 5 signifies a species that is most likely to be found in dry, upland soils. Table 2 below defines cw values.

Table 2: Definition of Coefficient of Wetness Values[2]

Wetland Category	Symbol	Coefficient of Wetness	Definition
Upland	UPL	5	Occurs almost never in wetlands under natural conditions (estimated <1% probability).
Facultative Upland	FACU	3	Occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1% to 33% probability).
Facultative	FAC	0	Equally likely to occur in wetlands or non-wetlands (estimated 34% to 66% probability).
Facultative Wetland	FACW	-3	Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67% to 99% probability).
Obligate Wetland	OBL	-5	Occurs almost always in wetlands under natural conditions (estimated >99% probability).

Soil Assessment

Soil assessment took place in Subplots 1A and 1B only as water was at or above soil in the remaining subplots along the transect in Year 1. Please refer to the Year 1 Report for a detailed description of the methodology (Burnside, 2020).

[2] Table taken from *Floristic Quality Assessment: Development and Application in the State of Michigan (USA)* Masters et al, 1997 and modified for the purposes of this report.

Vegetation Assessment

A total of 31 vegetation species were identified in the subplots located along the transect; four were woody species and the remaining 27 were non-woody/ground vegetation. All subplots were dominated by (i.e., greater than 50% composition by area) Facultative Wetland and Obligate Wetland species that have a cw between -3 and -5.

Subplots 1A and 1B have the greatest number of plant species by well over half of all species in all the remaining subplots. Subplot 1B has the greatest cw range between -5 and 5 of all the subplots. This range is attributed to the determination of the subplot proximity to the wetland water's edge, and consequently the inclusion of drier land. Subplot 3B had the least cw range as it was the only subplot to have exclusively Obligate Wetland species (cw of -5). Although a single subplot exhibiting this narrow cw range is consistent with 2020 findings, the single subplot was 4B in 2020. Subplots 2A, 2B, 3A, 4A, 5A, 4B, 5B, and 6A were Obligate Wetland (cw of -5) dominated with only Subplot 6B with a slightly greater number of Obligate Facultative (cw of -3) species. Regardless, all remaining Subplots have very low percentage composition of Facultative Wetland (cw of -3) and Facultative (cw of 0) species.

Native species with a cw of -3 included Sensitive Fern (*Onoclea sensibilis*) and Marsh Fern (*Theliptersi polustris*) (between 3% and 6%, respectively beyond 1A and 1B) native ferns. The graminoid Reed Canarygrass (*Phalaris arundinacea*) comprised up to 18%, an increase from 6% in 2020. The one forb species with a cw of 0, Bittersweet Nightshade (*Solanum dulcamara*), was also low (less than 6%) where present compared to 2020 with the highest at 5%. The consistent presence of cw of -3 species indicates that soil saturation levels and water retention throughout the transect are high, particularly in between Subplots 2A/2B and 6A/6B.

Broad-leaved Cattail (*Typha latifolia*) was the dominant species in all subplots, except 1A and 1B. Little evidence of the invasive Narrow-leaved Cattail (*Typha angustifolia*) or its hybrid form, *Typha x glauca*, was found in these subplots. However, *Typha x glauca* can be difficult to identify and may require genetic testing to confirm presence/absence. Reed Canarygrass was found in moderate amounts in Subplot 1B and 5B (20% and 18%, respectively, composition by area). Overall, amounts have changed from 2% in 2020 each by composition to being absent in 3B and 5A in 2022. Although a decrease in the number of subplots were noted with this invasive species, marginally greater amounts by composition further into the wetland in Subplots 6A and 6B (10% composition by area) were recorded. Compared to 2020, Reed Canarygrass was not recorded in 6A and only 6% composition by area was recorded in 6B. This trend of composition indicates the invasive progression of this species into this wetland. Year 3 found Purple Loosestrife (*Lythrum salicaria*) again in all subplots except one (1A), which is consistent with Year 2 but is an increase from Year 1 (found in only eight of the twelve subplots). Overall, only a slight year over year increase (2%) in composition by area was recorded from 2020 (2% to 12%) to 2022 (2 % to 14%).

The most notable change in composition was of newly recorded woody species in Subplot 1A and 6B: Cranberry Viburnum (*Viburnum opulus*) with 3% composition and Common Winterberry (*Ilex verticillata*). Neither of these species were recorded in 2020. Both species have a cw of -3 and are identified as Wetland Indicators (MNRF, 2013).

Overall, the greatest change in composition occurred in Subplots 1A and 1B. There were two newly recorded native groundcover species: Riverbank Grape (*Vitis riparia*) (cw of 0) and Rough Avens (*Geum laciniatum*) (cw of 3), both with low percentage of composition by area, 3% and 2%, respectively. Also, two newly recorded Obligate Wetland (cw of -5) native sedge species: Bearded Sedge (*Carex comosa*) (cw of -5) and Fringed Sedge (*Carex crinita*), both with low percentage of composition by area, 3% and 4%, respectively. Lastly, two newly recorded Facultative Upland (cw of 3) introduced species include: Creeping Thistle (*Cirsium arvense*) and Common Dandelion (*Taraxacum officinale*), both with very low percentage (1%) of composition by area.

Tufted Yellow Loosestrife (*Lysimachia thyrsiflora*), a native species that is rare in Peel Region (CVC, 2002) was found in low amounts (5% to 15% composition by area) in Subplots 2B, 3A, 3B, 5A, and 5B in Year 1. The one additional Subplot (5A) where Tufted Yellow Loosestrife was noted in Year 2 was again noted in Year 3 and a higher percentage of composition by area was noted from Year 2 (2% to 4%) to Year 3 (4% to 6%).

A summary of the results for each transect can be found in the sections below. Unless otherwise noted, all common names were derived from the Database of Vascular Plants of Canada (VASCAN) website (Brouillet, L., et al., 2010+).

Subplot 1A

Subplot 1A is located at the edge of the PSW wetland, approximately 5 m north of the centroid of the transect. At the time of the survey, it was characterized by tall shrubs and thick understory growth. Two woody vegetation species were found in the subplot: Speckled Alder (*Alnus incana)* and Common Winterberry. The subplot was dominated by tall non-woody vegetation, including Sensitive Fern and Lake Sedge (*Carex lacustris)*, both of which are native to Ontario. Newly recorded introduced species (cw of 0 to 3): Creeping Thistle, Bittersweet Nightshade and Common Dandelion were recorded in nominal traces of 1% each. Newly recorded native species (cw of -3) were also recorded and comprised 2% to 15% by area: Rough Avens, Bearded Sedge and Lake Sedge. The cw of the plants found in the subplot remained in the range from 3 to -5. This was expected as this subplot is located at the edge of the wetland, which was determined by estimating the point at which 50% of the vegetation was comprised of wetland indicator species. A summary of the Subplot 1A survey results can be found in Table 3.

Table 3: Summary of Vegetation Species Present in Subplot 1A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Alnus incana	Speckled Alder	-3	97	Native
Viburnum opulus	Cranberry viburnum	-3	3	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Agrimonia gryposepala	Hooked Agrimony	3	2	Native
Calamagrostis canadensis	Canada Bluejoint Reedgrass	-3	4	Native
Carex lacustris	Lake Sedge	-5	15	Native
Carex comosa	Bearded Sedge	-5	4	Native
Carex vulpinoidea	Fox Sedge	-5	2	Native
Cirsium arvense	Creeping Thistle	3	1	Introduced
Dactylis glomerata	Orchard Grass	3	4	Introduced
Equisetum arvense	Field Horsetail	0	10	Native
Fragaria virginiana	Wild Strawberry	3	2	Native
Geum laciniatum	Rough Avens	-3	3	Native
Onoclea sensibilis	Sensitive Fern	-3	30	Native
Parthenocissus quinquefolia	Virginia Creeper	3	3	Native
Ranunculus acris	Tall buttercup	0	2	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	1	Introduced
Solidago sp.	Goldenrod species		4	
Symphyotrichum sp.	Aster species		2	
Taraxacum officinale	Common Dandelion	3	1	Introduced
Trifolium pratense	Red Clover	3	1	Introduced
Typha latifolia	Broad-leaved Cattail	-5	4	Native
Viola sp.	Violet		5	

Subplot 1B

Subplot 1B is located at the edge of the wetland, approximately 5 m south of the centroid of the transect. The subplot contained thick ground vegetation which was dominated by Aster species (*Symphyotrichum sp.*) and Broad-leaved Cattail forbs with Reed Canarygrass graminoids. Of note, new species were recorded with less water tolerant rates including two introduced species: Smooth Brome (*Bromus inermis*) (cw of 5) and Orchard Grass (*Dactylis glomerata*) (a cw of 3); both comprised 4% by area. Tall trees

surrounded the subplot and provided some shade to the area. Only one woody vegetation species was found in the subplot: Common Buckthorn (*Rhamnus cathartica*). The cw of the plants found in the subplot ranged from 3 to -5. A summary of the Subplot 1B survey results can be found in Table 4.

Table 4: Summary of Vegetation Species Present in Subplot 1B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Rhamnus cathartica	Common Buckthorn	0	100	Introduced
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Agrimonia gryosepala	Hooked Agrimony	3	4	Native
Bromus inermis	Smooth Brome	5	4	Introduced
Carex lacustris	Lake Sedge	-5	7	Native
Carex comosa	Bearded Sedge	-5	4	Native
Carex crinita	Fringed Sedge	-5	4	Native
Dactylis glomerata	Orchard Grass	3	4	Introduced
Equisetum arvense	Field Horsetail	0	3	Native
Lythrum salicaria	Purple Loosestrife	-5	2	Introduced
Onoclea sensibilis	Sensitive Fern	-3	3	Native
Parthenocissus quinquefolia	Virginia Creeper	3	2	Native
Phalaris arundinacea	Reed Canarygrass	-3	20	Native/ Introduced
Symphyotrichum sp.	Aster species		24	
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Typha latifolia	Broad-leaved Cattail	-5	15	Native
Viola sp.	Violet		2	
Vitis riparia	Riverbank Grape	0	2	Native

Subplot 2A

Subplot 2A contained dense ground vegetation dominated by Broad-leaved Cattail. No woody vegetation species were found in the subplot. The diversity of plant species is lower compared to Subplots 1A and 1B and compared to Year 2 with two less species recorded; cattails have begun crowding the area. One Facultative species (found in both

wetlands and uplands) with a cw of 0 was found in the ground vegetation subplot; Bittersweet Nightshade. Bittersweet Nightshade and Purple Loosestrife are invasive species and comprised 20% by area combined (doubled since Year 2 with only 10%). Broad-leaved Cattail, a native species to Ontario, comprised 80% by area due to density. The cw of the plants found in the subplot ranged from 0 to -5. Soil was saturated at the time of the survey. A summary of the Subplot 2A survey results can be found in Table 5.

Table 5: Summary of Vegetation Species Present in Subplot 2A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lythrum salicaria	Purple Loosestrife	-5	14	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	6	Introduced
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 2B

Similar to Subplot 2A, Subplot 2B was densely vegetated and dominated by Broad-leaved Cattail. Due to the density of cattails, diversity of species was low with only five species found in the subplot. A moss species (genus unknown) was recorded in Year 2, but it was not noted in this subplot in Year 3. Water Parsnip (*Sium suave)*, with a cw of -5, was a newly recorded species in this subplot. Bittersweet Nightshade, with a cw of 0, was also found in this subplot. The remaining species were Obligate Wetland species with a cw of -5. No woody vegetation species were recorded. Soil was saturated at the time of the survey. A summary of the Subplot 2B survey results can be found in Table 6.

Table 6: Summary of Vegetation Species Present in Subplot 2B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Carex lacustris	Lake Sedge	-5	5	Native
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-5	5	Native
Lythrum salicaria	Purple Loosestrife	-5	5	Introduced
Sium suave	Water Parsnip	-5	3	Native
Solanum dulcamara	Bittersweet Nightshade	0	2	Introduced
Typha latifolia	Broad-leaved Cattail	-5	80	Native

Subplot 3A

Similar to Subplots 2A and 2B, the following introduced species were recorded: Bittersweet Nightshade and Purple Loosestrife and Yarrow (*Achillea Linnaeus)*. Together these three introduced species comprised 13% by area, compared to only 4% in Year 2. Similar to Subplots 2A and 2B, Broad-leaved Cattail was the dominant ground vegetation species in Subplot 3A and comprised 78% by area of the 1 m x 1 m plot. Native aquatic plants (cw of -5) included a nominal amount (1%) of free-floating Small Duckweed (*Lemna minor)*. While Northern Water Plantain (*Alisma triviale*) and Bulbous Water Hemlock (*Cicuta bulbifera*) were recorded in Year 2, they were absent in Year 3. Sensitive Fern (cw of -3) was a newly recorded native species and comprised 3% by area. Common Winterberry was found growing on a mound in the northern corner of the 2 m x 2 m plot. It was the only woody vegetation species identified in the subplot. The cw of the native plants found in the subplot ranged from -3 to -5. Soil was saturated at the time of the survey. A summary of the Subplot 3A survey results can be found in Table 7 below.

Table 7: Summary of Vegetation Species Present in Subplot 3A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Achillea linnaeus	Yarrow	3	3	Introduced
Lemna minor	Small Duckweed	-5	1	Native
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-5	5	Native
Lythrum salicaria	Purple Loosestrife	-5	5	Introduced
Onoclea sensibilis	Sensitive Fern	-3	3	Native
Solanum dulcamara	Bittersweet Nightshade	0	5	Introduced
Typha latifolia	Broad-leaved Cattail	-5	78	Native

Subplot 3B

Subplot 3B was dominated by Broad-leaved Cattail (wetland species). No woody vegetation species were found in this subplot. Five plant species were identified in this subplot. Among those identified, Purple Loosestrife was the only introduced invasive species present and comprised 4% by area; although an aggressive species, it was also 4% by area in Year 2. The remaining species are native to Ontario. All species were Obligate Wetland (cw of -5) whereas in 2020, two Facultative Wetland (cw of -3) species were recorded in low amounts and comprised 7% by area. Soil was saturated at the time of the survey. A summary of the Subplot 3B survey results can be found in Table 8.

Table 8: Summary of Vegetation Species Present in Subplot 3B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lemna minor	Small Duckweed	-5	3	Native
Lysimachia thyrsiflora	Tufted Yellow Loosestrife	-5	4	Native
Lythrum salicaria	Purple Loosestrife	-5	4	Introduced
Sium suave	Water Parsnip	-5	4	Native
Typha latifolia	Broad-leaved Cattail	-5	85	Native

Subplot 4A

Similar to Subplot 3B, Subplot 4A was dominated by Broad-leaved Cattail (wetland species) and comprised 82% by area. No woody vegetation species were found in this subplot. Five plant species were identified in this subplot, with one newly recorded species and two species that were not recorded in Year 2. Among those identified, Purple Loosestrife and Bittersweet Nightshade were the only introduced invasive species and comprised 12% by area. The two remaining native species (cw of -5) comprised 6% by area: Obligate Wetland Water Parsnip, a newly recorded species and Small Duckweed, a floating aquatic species. Soil was saturated at the time of the survey. A summary of the Subplot 4A survey results can be found in Table 9.

Table 9: Summary of Vegetation Species Present in Subplot 4A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lemna minor	Small Duckweed	-5	2	Native
Lythrum salicaria	Purple Loosestrife	-5	6	Introduced
Sium suave	Water Parsnip	-5	4	Native
Solanum dulcamara	Bittersweet Nightshade	0	6	Introduced
Typha latifolia	Broad-leaved Cattail	-5	82	Native

Subplot 4B

The majority of vegetation species found in Subplot 4B were Obligate Wetland species with an Obligate Wetland value of -5. This subplot was comprised of 92% native species, dominated by Broad-leaved Cattail at 90% and Small Duckweed at 2%. Introduced species were lower overall and comprised 8% by area. A newly recorded introduced species, Bittersweet Nightshade (cw of 0) comprised 4% by area in addition to Purple Loosestrife (introduced species). Purple Loosestrife comprised only 4% by area (down from 12% in Year 2). Only one woody vegetation species, Common Winterberry, was found in the subplot. It is a Facultative Wetland species with a cw of -3. Soil was saturated at the time of the survey. A summary of the Subplot 4B survey results can be found in Table 10 below.

Table 10: Summary of Vegetation Species Present in Subplot 4B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lemna minor	Small Duckweed	-5	2	Native
Lythrum salicaria	Purple Loosestrife	-5	4	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	4	Introduced
Typha latifolia	Broad-leaved Cattail	-5	90	Native

Subplot 5A

The ground vegetation in Subplot 5A were almost entirely Obligate Wetland (cw of -5) species and comprised of 94% by area. There was only one native ground vegetation Facultative Wetland species with a cw of -3 found in the subplot, Marsh Fern and one newly recorded introduced species, Bittersweet Nightshade, a Facultative species with a cw of 0. This species comprised 4% by area. By contrast, Reed Canarygrass (introduced) was not recorded in Year 3 even though it comprised 2% by area in Year 2. Common Winterberry was the only woody vegetation species found in the 2 m x 2 m woody vegetation plot. Soil was saturated at the time of the survey. A summary of the Subplot 5A survey results can be found in Table 11.

Table 11: Summary of Vegetation Species Present in Subplot 5A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Cicuta bulbifera	Bulbous Water-hemlock	-5	2	Native
Iris versicolor	Harlequin Blue Flag	-5	1	Native
Lemna minor	Small Duckweed	-5	2	Native
Lysimachia thrysiflora	Tufted Yellow Loosestrife	-5	6	Native
Lythrum salicaria	Purple Loosestrife	-5	4	Introduced
Solanum dulcamara	Bittersweet Nightshade	0	4	Introduced
Thelypteris palustris	Marsh Fern	-3	2	Native
Typha latifolia	Broad-leaved Cattail	-5	79	Native

Subplot 5B

Five ground vegetation species were found in Subplot 5B; all but one was an Obligate Wetland species with a cw of -5. Broad-leaved Cattail was the dominant species, and comprised 70% by area, down from 82% in Year 2. Two introduced species, Purple Loosestrife and Reed Canarygrass, comprised 22% by area, which is a significant increase from 5% in Year 2 for both these species. Soil was saturated at the time of the survey. No woody vegetation species were found in the 2 m x 2 m plot. A summary of the Subplot 5B survey results can be found in Table 12.

Table 12: Summary of Vegetation Species Present in Subplot 5B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lemna minor	Small Duckweed	-5	2	Native
Lysimachia thrysiflora	Tufted Yellow Loosestrife	-5	5	Native
Lythrum salicaria	Purple Loosestrife	-5	5	Introduced
Phalaris arundinacea	Reed Canarygrass	-3	18	Native/ Introduced
Typha latifolia	Broad-leaved Cattail	-5	70	Native

Subplot 6A

Subplot 6A was densely vegetated and dominated by Broad-leaved Cattail. Two species recorded in the subplot were Facultative Wetland species with a cw of -3 and comprised 13% by area. The remaining three species were Obligate Wetland species with a cw of -5. Only one of these Obligate Wetland species, Purple Loosestrife, is an introduced species and it comprised 7% by area of the subplot, up from 5% in Year 2. Soil was saturated at the time of the survey. No woody vegetation species were identified in the 2 m x 2 m plot. A summary of the Subplot 6A survey results can be found in Table 13 below.

Table 13: Summary of Vegetation Species Present in Subplot 6A

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
N/A				
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lemna minor	Small Duckweed	-5	1	Native
Lythrum salicaria	Purple Loosestrife	-5	7	Introduced
Phalaris arundinacea	Reed Canarygrass	-3	10	Native/ Introduced
Sium suave	Water Parsnip	-5	5	Native
Thelypteris palustris	Marsh Fern	-3	6	Native
Typha latifolia	Broad-leaved Cattail	-5	71	Native

Subplot 6B

Five ground vegetation species were found in Subplot 6B. Broad-leaved Cattail was found to be the dominant species and comprised 74% by area. This is an increase of 14% from Year 2 in the 1 m x 1 m plot. Two native species recorded in Year 2 were not recorded in Year 3. Two introduced species that were recorded in Year 2 were recorded again in Year 3: Purple Loosestrife and Bittersweet Nightshade. The remaining plant species were native to Ontario. The cw of the plants found in the subplot ranged from 0 to -5. A newly recorded woody vegetation species had successfully established in Year 3, Common Winterberry. This species is a Wetland Indicator (cw of -3) and was recorded in the 2 m x 2 m plot. Soil was saturated at the time of the survey. A summary of the Subplot 6B survey results can be found in Table 14 below.

Table 14: Summary of Vegetation Species Present in Subplot 6B

Woody Vegetation (2 m x 2 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Ilex verticillata	Common Winterberry	-3	100	Native
Ground Vegetation (1 m x 1 m)				
Scientific Name	**Common Name**	**Coefficient of Wetness**	**Composition %**	**Native/ Introduced**
Lythrum salicaria	Purple Loosestrife	-5	6	Introduced
Phalaris arundinacea	Reed Canarygrass	-3	10	Native/ Introduced
Solanum dulcamara	Bittersweet Nightshade	0	5	Introduced
Thelypteris palustris	Marsh Fern	-3	5	Native
Typha latifolia	Broad-leaved Cattail	-5	74	Native

3.2 Amphibian Monitoring

Four species of amphibians, Wood Frog (*Lithobates sylvaticus)*, American Toad (*Anaxyrus americanus*), Spring Peeper (*Pseudoacris crucifer*) and Green Frog (*Lithobates clamitans*) were documented calling during amphibian breeding call surveys in 2022. Results of the surveys are provided below in Table 15. Data was collected digitally using ArcGis Field Maps; a summary of data collected is provided in Appendix B.

Table 15: Summary of Amphibian Survey Results Conducted by Burnside Staff

Station ID	Calls Heard	Common Name	Scientific Name	Call Level Code[1]	Abundance Count[2]
April 12, 2022					
1	No	-	-	-	
2	No	Spring Peeper	*Pseudacris crucifer*	1	1
3	Yes	Wood Frog	*Lithobates sylvaticus*	1	4
4	No	-	-	-	
May 12, 2022					
1	No	-	-	-	
2	Yes	American Toad	*Anaxyrus americanus*	3	calls continuous and overlapping
	Yes	Green Frog	*Lithobates clamitans*	1	1
3	No	-	-	-	
4	Yes	American Toad	*Anaxyrus americanus*	2	5
June 23, 2022					
1	No	-	-	-	
2	Yes	Green Frog	*Lithobates clamitans*	1	1
3	No	-	-	-	
4	Yes	Green Frog	*Lithobates clamitans*	1	3

[1]Call Level Code: 1 = calls can be counted, calls not simultaneous; 2 = calls distinguishable, some simultaneous calling; 3 = full chorus, calls continuous and overlapping.
[2]Abundance Count: Estimated number of individuals present.

Table 16: Preliminary Comparison of Amphibian Results Across Monitoring Years (2019, 2020 and 2022)

Species	Breeding Evidence					
	2019		2020		2022	
	Call Level Code[1]	Abundance Count[2]	Call Level Code[1]	Abundance Count[2]	Call Level Code[1]	Abundance Count[2]
American Toad	3	Calls continuous, overlapping	2	10	3	Calls continuous, overlapping
Gray Treefrog	-	-	1	1	-	-
Green Frog	1	6	1	3	1	5
Spring Peeper	-	-	-	-	1	1
Wood Frog	1	5	3	Calls continuous, overlapping	1	4

[1]Call Level Code: 1 = calls can be counted, calls not simultaneous; 2 = calls distinguishable, some simultaneous calling; 3 = full chorus, calls continuous and overlapping.
[2]Abundance Count: Estimated number of individuals present.

All four amphibian species recorded during the surveys are ranked as "secure" (S5) in Ontario. According to TRCA's scoring and local ranking of fauna species in their jurisdiction, American Toad and Green Frog have a local rank of "L4" meaning they are a "Species of Urban Concern"; they occur throughout the region but could show declines if urban impacts are not mitigated effectively. Spring Peeper and Wood Frog have a local rank of "L2" meaning it is a "Species of Regional Conservation Concern"; they are somewhat more abundant and generally less sensitive than L1 species.

4.0 Incidental Observations

Incidental observations of wildlife were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

Ministry of Natural Resources and Forestry (MNRF)'s provincial ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. Seven species recorded incidentally are listed as secure (S5) or apparently secure (S4) in Southern Ontario. Refer to Table 17 for a summary of incidental observations.

Table 17: Summary of Incidental Wildlife Recorded on the Subject Property During Monitoring

Common Name	Scientific Name	No. Recorded	S-Rank	SARO status	Comments
Birds					
American Robin	*Turdus migratorius*	1	S5B	-	Heard calling during amphibian surveys.
American Goldfinch	*Spinus tristis*	1	S5	-	Calls heard during wetland vegetation monitoring.
American Woodcock	*Scolopax minor*	1	S4B	-	Heard calling during amphibian surveys.
Canada Goose	*Branta canadensis*	2	S5	-	Recorded during wetland vegetation monitoring.
Cedar Waxwing	*Bombycillidae*	1	S5	-	Calls heard during wetland vegetation monitoring.
Common Grackle	*Quiscalus quiscula*	1	S5	-	Heard calling during amphibian surveys.
Common Yellowthroat	*Geothlypis trichas*	1	S4	-	Calls heard during wetland vegetation monitoring.
Killdeer	*Charadrius vociferus*	1	S4	-	Heard calling during amphibian surveys.
Northern Cardinal	*Cardinalis*	1	S5	-	Heard calling during amphibian surveys.
Red-winged Blackbird	*Agelaius phoeniceus*	1	S4	-	Recorded during wetland vegetation monitoring and heard during amphibian surveys.
Song Sparrow	*Melospiza melodia*	1	S5	-	Heard calling during wetland vegetation monitoring.
Willow Flycatcher	*Empidonax traillii*	1	S4	-	Heard calling during wetland vegetation monitoring.
Herpetofauna					
Green Frog	*Lithobates clamitans*	1	S5	-	Individual recorded at Amphibian Station 1 during survey No. 3 but not heard calling.

Thirteen species were incidentally recorded in 2022. A single Green Frog was recorded prior to the start of the amphibian survey along the pond edge on June 23, 2022, at Survey Station 1; however, no breeding calls were heard during any of the three surveys. Additionally, during the three years of monitoring, Green Frog has not been

recorded calling in this wetland. According to Harding, J.H. (1997), Green Frog often take up brief residence in small ponds, ditches and puddles when dispersing overland to new habitats. Therefore, this observation is considered incidental.

5.0 Summary

Burnside Ecologists conducted a third year of wetland monitoring surveys in 2022 to further establish baseline conditions for the Snell's Hollow East Secondary Plan that commenced in 2019 (Burnside, 2020). Pre-construction monitoring has now been completed in 2019 (Year 1), 2020 (Year 2) and 2022 (Year 3).

Overall, results of Year 3 vegetation assessments were comparable to Year 1 and Year 2 with no significant cw or composition changes. As in previous years, Broad-leaved Cattail dominated all subplots except for 1A and 1B as expected. Composition percentages for Broad-leaved Cattail either remained the same or very low variances (between 2% to 10%) and were recorded with the highest variance in Stations 5B and 6B with a respective decrease and increase of 12%. The number of woody vegetation species increased by two, one in Subplot 1A, Cranberry Viburnum, and one in Subplot 6B, Common Winterberry. Both species are Wetland Indicator species (cw of -3) and have successfully established over the last two years.

Although no significant cw or composition changes were noted, a year-over-year increase in overall diversity was again noted with a total of 31 groundcover plant species recorded in Year 3, which was an increase of four groundcover species over Year 2 (total of 27 groundcover species) and 11 species over Year 1 (total of 20 groundcover species). This is common when starting monitoring programs and could be caused by either increased observer ability or increased observer knowledge of species already found at the site as time progresses (TRCA, January 2016). Notably, some plants from previous years were not recorded in the current year including Northern Water Plantain, galium species (genus unknown), and moss species (genus unknown). In Year 3, seven new species that were not recorded in previous years were recorded: Bearded Sedge, Fringed Sedge, Common Dandelion, Creeping Thistle, Riverbank Grape, Rough Avens, and Smooth Brome. Of these seven newly recorded species, all had low composition (1% to 4%). The newly recorded species are all considered common and not ranked as significant.

A total of four amphibian species were heard calling at various stations throughout the subject property: American Toad, Green Frog, Spring Peeper, and Wood Frog. Overall numbers of amphibians recorded in Year 3 are similar to that of Year 2. A newly added species, Spring Peeper, was recorded in Year 3. Traffic noise at all survey stations has been a significant barrier to collecting audible frog and toad recordings. The subject lands are bound on all sides by busy roads. Therefore, it is likely that species abundance is actually higher than what has been recorded during surveys year-over-year.

The data collected during these surveys are to be used to assess the impacts of construction on the existing wetland and re-examine mitigation and impact prevention methods during and after development. Should the project move forward to a development phase, follow up surveys are to be completed for two years during construction, and for three years – every other year – post-development.

6.0 References

Bird Studies Canada (BSC). March 2001. Ontario Breeding Bird Atlas Guide for Participants. 45 pp.Brouillet, L., F. Coursol, S.J. Meades, M. Favreau, M. Anions, P. Bélisle & P. Desmet. 2010+. VASCAN, the Database of Vascular Plants of Canada. http://data.canadensys.net/vascan/ (consulted on 2022-11-29).

Credit Valley Conservation. 2002. Plants of the Credit River Watershed. 37 pp.

Harding, James H. 1997. Amphibians and Reptiles of the Great Lakes Region. The University of Michigan Press.

Masters, L. A., Herman, K. D., Penskar, M. R., Reznicek, A. A., Wilhelm, G. S., & Brodowicz, W. W. 1997. *Floristis Quality Assessment: Development and Application in the State of Michigan (USA).* Lansing, MI: Michigan Department of Natural Resources, Wildlife Division, Natural Heritage Program.

Ministry of Natural Resources and Forestry (MNRF). 2013. *Ontario Wetland Evalation Systems - Southern Manual 3.2*, Appendix 10, Wetland Plant List.

Toronto and Region Conservation Authority. January 2016. *Wetland Vegetation Monitoring Protocol, Terrestrial Long-term Fixed Plot Monitoring Program.* Toronto: TRCA.

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Wetland Vegetation Subplot Photos

Photo 1: Subplot 1A (photo taken on July 15, 2022)

Photo 2: Subplot 1B (photo taken on July 15, 2022)

Photo 3: Subplot 2A (photo taken on July 15, 2022)

Photo 4: Subplot 2B (photo taken on July 15, 2022)

Photo 5: Subplot 3A (photo taken on July 4, 2019)

Photo 6: Subplot 3B (photo taken on July 15, 2022)

Photo 7: Subplot 4A (photo taken on July 15, 2022)

Photo 8: Subplot 4B (photo taken on July 15, 2022)

Photo 9: Subplot 5A (photo taken July 15, 2022)

Photo 10: Subplot 5B (photo taken on July 15, 2022)

Photo 11: Subplot 6A (photo taken on July 15, 2022)

Photo 12: Subplot 6B (photo taken on July 15, 2022)

BURNSIDE

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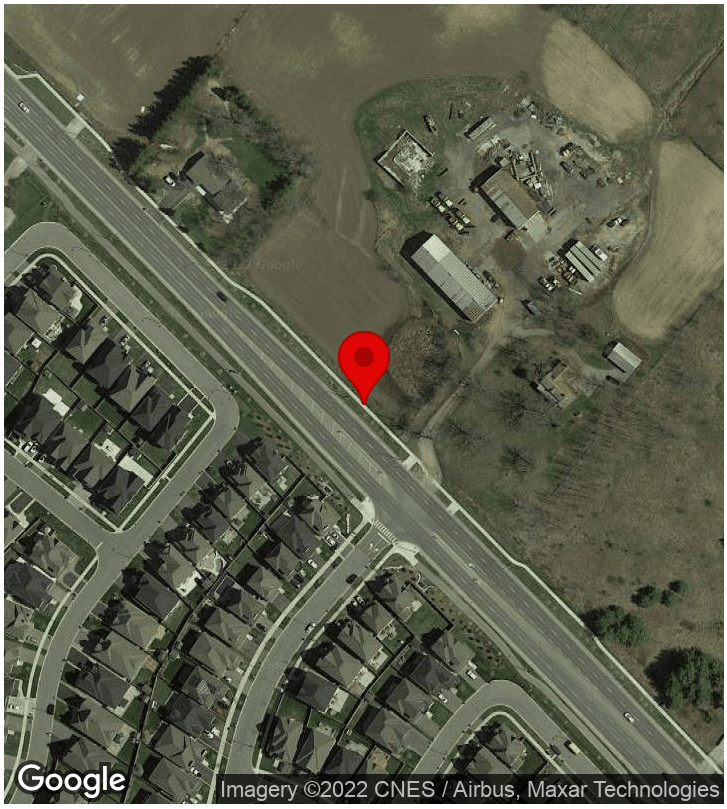
Appendix B

Amphibian Surveys

EPA Amphibian Survey (2022)

300051670: AMP-001



LOCATION

43.745852, -79.817137

UTM Coordinates (WGS84)	17-595239m.E 4844326m.N
Project Number	300051670
Habitat(s)	Marsh, Excavated Ditch/Pond
Habitat Comments	

Habitat Photos

Station Observation Direction	West
Call Record Summary	1. 2022-04-12: No Species Recorded, 0. No Calls Recorded [0], 2. 2022-05-12: No Species Recorded, 0. No Calls Recorded [0], 3. 2022-06-23: No Species Recorded, 0. No Calls Recorded [0]

WEATHER RECORDS (3 Items)

WX - 300051670: 2022-04-12 21:31:32

Weather Summary	Observations on 2022-04-12 from 21:31 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 14°C°C - 11°C°C || Overnight Temp. (High - Low): Not-Recorded - 7°C || Overnight Precip.: Yes || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-05-12 21:19:15

Weather Summary	Observations on 2022-05-12 from 21:19 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (1) Light air movement, smoke drifts: 3-5km/hr || Temp. (Start - End of Survey): 20°C°C - Not-Recorded°C || Overnight Temp. (High - Low): Not-Recorded - Not-Recorded || Overnight Precip.: Non-Applicable || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-06-23 22:27:02

Weather Summary	Observations on 2022-06-23 from 22:27 to undefined || Beaufort Sky Class: (0) Clear (no cloud cover) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 18°C°C - 18°C°C || Overnight Temp. (High - Low): 18°C - 15°C || Overnight Precip.: No || Observed Ground Conditions: Dry || Other Comments: None

CALLS (3 Items)

1. 2022-04-12: No Species Recorded

Observers	Erica Mekli, Sylvia Radovic
Start Time	21:25
End Time	21:28
Call Code	0. No Calls Recorded
Call Count	0
Incidental Notes	Heavy traffic noise

2. 2022-05-12: No Species Recorded

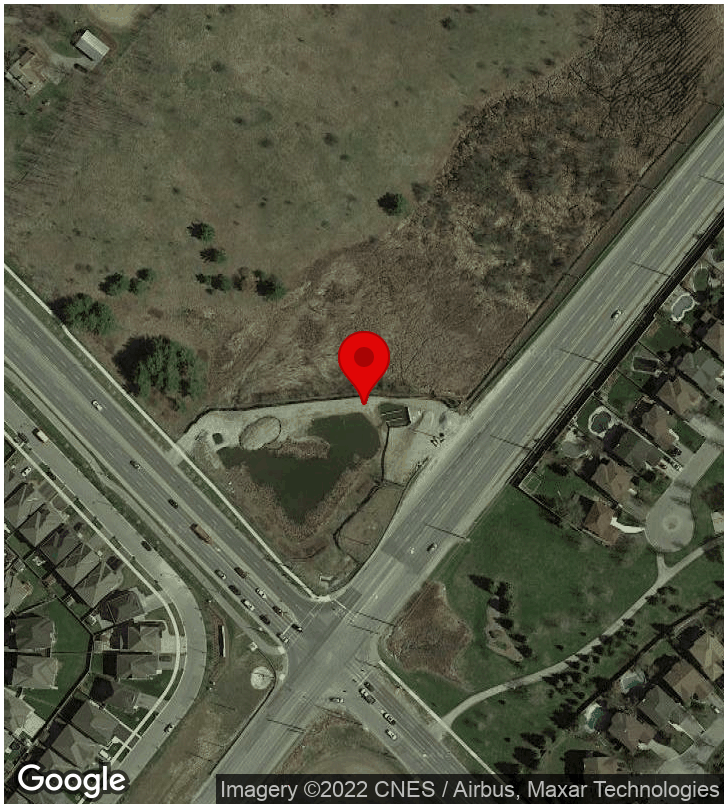
Observers	Erica Mekli, Tom Exton
Start Time	22:00
End Time	22:03
Call Code	0. No Calls Recorded
Call Count	0
Incidental Notes	Major traffic noise

3. 2022-06-23: No Species Recorded

Observers	Mackenzie Dawson, Sylvia Radovic
Start Time	22:40
End Time	22:43
Call Code	0. No Calls Recorded
Call Count	0
Incidental Type(s)	Noise, Human Activity, Avian
Incidental Notes	Heavy constant traffic, Killdeer, Airplane, Green Frog visual at bank/pond edge

EPA Amphibian Survey (2022)

300051670: AMP-002



LOCATION

43.744643, -79.814282

UTM Coordinates (WGS84)	17-595471m.E 4844195m.N
Project Number	300051670
Habitat(s)	Storm water Pond

Habitat Photos

Station Observation Direction	West
Call Record Summary	1. 2022-04-12: Spring Peeper, 1. Calls not simultaneous, number of individuals can be accurately counted. [1], 2. 2022-05-12: Green Frog, 1. Calls not simultaneous, number of individuals can be accurately counted. [1], 3. 2022-05-12: American Toad, 3. Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated. [0], 4. 2022-06-23: Green Frog, 1. Calls not simultaneous, number of individuals can be accurately counted. [3]

WEATHER RECORDS (3 Items)

WX - 300051670: 2022-04-12 21:31:32

Weather Summary	Observations on 2022-04-12 from 21:31 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 14°C°C - 11°C°C || Overnight Temp. (High - Low): Not-Recorded - 7°C || Overnight Precip.: Yes || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-05-12 21:19:15

Weather Summary	Observations on 2022-05-12 from 21:19 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (1) Light air movement, smoke drifts: 3-5km/hr || Temp. (Start - End of Survey): 20°C°C - Not-Recorded°C || Overnight Temp. (High - Low): Not-Recorded - Not-Recorded || Overnight Precip.: Non-Applicable || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-06-23 22:27:02

Weather Summary	Observations on 2022-06-23 from 22:27 to undefined || Beaufort Sky Class: (0) Clear (no cloud cover) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 18°C°C - 18°C°C || Overnight Temp. (High - Low): 18°C - 15°C || Overnight Precip.: No || Observed Ground Conditions: Dry || Other Comments: None

CALLS (4 Items)

1. 2022-04-12: Spring Peeper

Observers	Erica Mekli, Sylvia Radovic
Start Time	21:19
End Time	21:22
Call Code	1. Calls not simultaneous, number of individuals can be accurately counted.
Call Count	1
S Rank	S5
Provincially Tracked	N
Incidental Notes	Heavy traffic noise

2. 2022-05-12: Green Frog

Observers	Erica Mekli, Tom Exton
Start Time	21:49
End Time	21:52
Call Code	1. Calls not simultaneous, number of individuals can be accurately counted.
Call Count	1
S Rank	S5
Provincially Tracked	N

3. 2022-05-12: American Toad

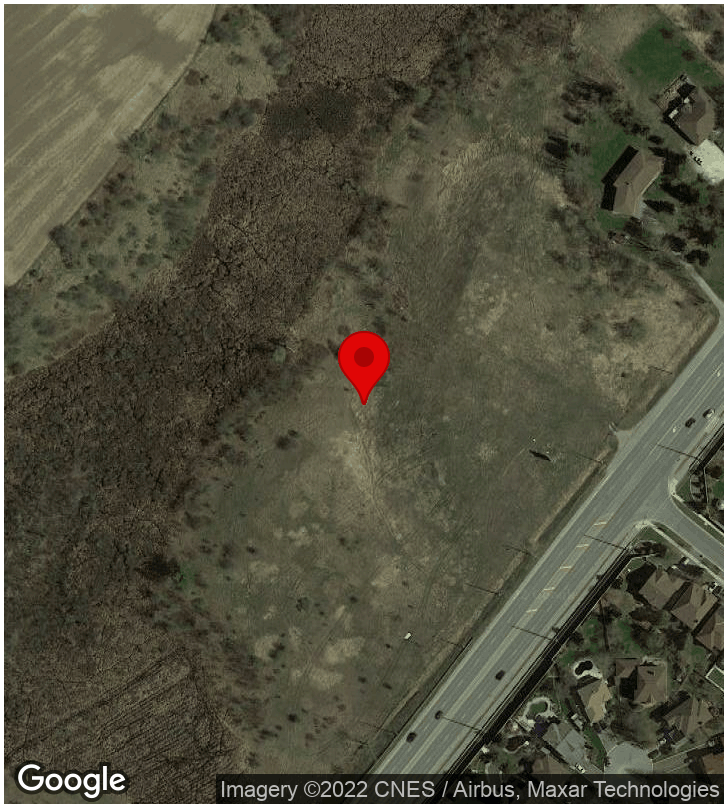
Observers	Erica Mekli, Tom Exton
Start Time	21:49
End Time	21:52
Call Code	3. Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated.
Call Count	0
S Rank	S5
Provincially Tracked	N
Incidental Notes	Major traffic noises

4. 2022-06-23: Green Frog

Observers	Mackenzie Dawson, Sylvia Radovic
Start Time	22:28
End Time	22:31
Call Code	1. Calls not simultaneous, number of individuals can be accurately counted.
Call Count	3
S Rank	S5
Provincially Tracked	N
Incidental Type(s)	Noise, Human Activity
Incidental Notes	Heavy constant traffic

EPA Amphibian Survey (2022)

300051670: AMP-003



LOCATION

43.747752, -79.811786

UTM Coordinates (WGS84)	17-595667m.E 4844543m.N
Project Number	300051670
Habitat(s)	Marsh Thicket Swamp

Habitat Photos

Station Observation Direction	West
Call Record Summary	1. 2022-04-12: Wood Frog, 0. No Calls Recorded [4], 2. 2022-05-12: No Species Recorded, 0. No Calls Recorded [0], 3. 2022-06-23: No Species Recorded, 0. No Calls Recorded [0]

WEATHER RECORDS (3 Items)

WX - 300051670: 2022-04-12 21:31:32

Weather Summary	Observations on 2022-04-12 from 21:31 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 14°C°C - 11°C°C || Overnight Temp. (High - Low): Not-Recorded - 7°C || Overnight Precip.: Yes || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-05-12 21:19:15

Weather Summary	Observations on 2022-05-12 from 21:19 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (1) Light air movement, smoke drifts: 3-5km/hr || Temp. (Start - End of Survey): 20°C°C - Not-Recorded°C || Overnight Temp. (High - Low): Not-Recorded - Not-Recorded || Overnight Precip.: Non-Applicable || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-06-23 22:27:02

Weather Summary	Observations on 2022-06-23 from 22:27 to undefined || Beaufort Sky Class: (0) Clear (no cloud cover) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 18°C°C - 18°C°C || Overnight Temp. (High - Low): 18°C - 15°C || Overnight Precip.: No || Observed Ground Conditions: Dry || Other Comments: None

CALLS (3 Items)

1. 2022-04-12: Wood Frog

Observers	Erica Mekli, Sylvia Radovic
Start Time	21:01
End Time	21:04
Call Code	0. No Calls Recorded
Call Count	4
S Rank	S5
Provincially Tracked	N

2. 2022-05-12: No Species Recorded

Observers	Erica Mekli, Hannah Maciver
Start Time	21:35
End Time	21:38
Call Code	0. No Calls Recorded
Call Count	0
Incidental Notes	Heard spring peeper (estimated 2) but was out of range/ Woodcock heard / minor traffic noise

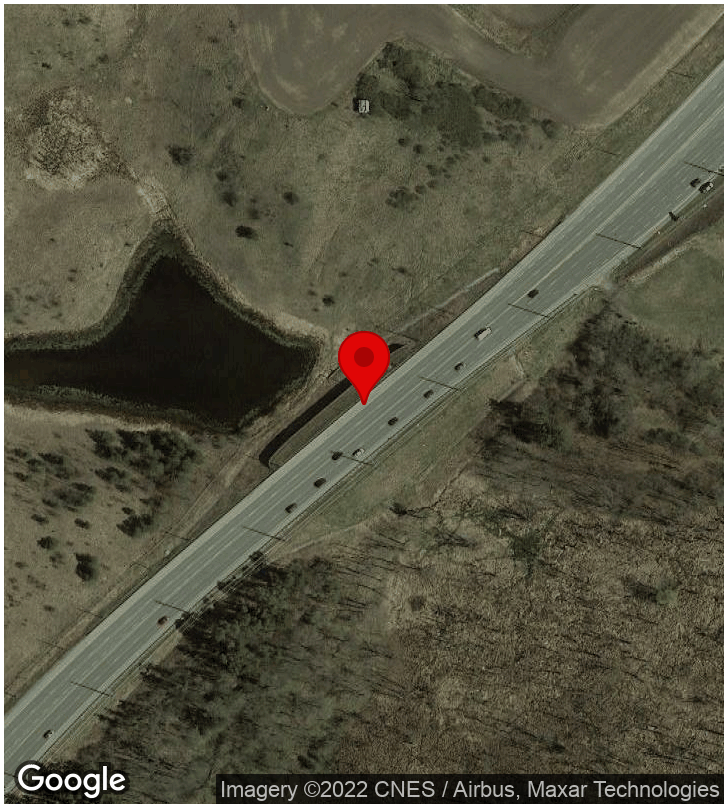
3. 2022-06-23: No Species Recorded

Observers	Mackenzie Dawson, Sylvia Radovic
Start Time	22:13
End Time	22:16
Call Code	0. No Calls Recorded
Call Count	0
Incidental Type(s)	Noise, Human Activity

Incidental Notes	Moderate constant traffic

EPA Amphibian Survey (2022)

300051670: AMP-004



LOCATION

43.750350, -79.806698

UTM Coordinates (WGS84)	17-596072m.E 4844837m.N
Project Number	300051670
Habitat(s)	Urban/Suburban, Marsh, Open water

Habitat Photos

Station Observation Direction	North West
Call Record Summary	1. 2022-04-12: No Species Recorded, 0. No Calls Recorded [0], 2. 2022-05-12: American Toad, 2. Some calls simultaneous, number of individuals can be reliably estimated. [5], 3. 2022-10-14: Green Frog, 1. Calls not simultaneous, number of individuals can be accurately counted. [3]

WEATHER RECORDS (3 Items)

WX - 300051670: 2022-04-12 21:31:32

Weather Summary	Observations on 2022-04-12 from 21:31 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 14°C°C - 11°C°C || Overnight Temp. (High - Low): Not-Recorded - 7°C || Overnight Precip.: Yes || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-05-12 21:19:15

Weather Summary	Observations on 2022-05-12 from 21:19 to undefined || Beaufort Sky Class: (1) Partly Cloudy (scattered or broken or variable) || Beaufort Wind Class: (1) Light air movement, smoke drifts: 3-5km/hr || Temp. (Start - End of Survey): 20°C°C - Not-Recorded°C || Overnight Temp. (High - Low): Not-Recorded - Not-Recorded || Overnight Precip.: Non-Applicable || Observed Ground Conditions: undefined || Other Comments: None

WX - 300051670: 2022-06-23 22:27:02

Weather Summary	Observations on 2022-06-23 from 22:27 to undefined || Beaufort Sky Class: (0) Clear (no cloud cover) || Beaufort Wind Class: (0) Calm, smoke rises vertically: 0-2km/hr || Temp. (Start - End of Survey): 18°C°C - 18°C°C || Overnight Temp. (High - Low): 18°C - 15°C || Overnight Precip.: No || Observed Ground Conditions: Dry || Other Comments: None

CALLS (3 Items)

1. 2022-04-12: No Species Recorded

Observers	Erica Mekli, Sylvia Radovic
Start Time	20:45
End Time	20:48
Call Code	0. No Calls Recorded
Call Count	0
Incidental Notes	Heavy traffic noise/dark spot in water maybe muskrat

2. 2022-05-12: American Toad

Observers	Erica Mekli, Hannah Maciver
Start Time	21:24
End Time	21:27
Call Code	2. Some calls simultaneous, number of individuals can be reliably estimated.
Call Count	5
S Rank	S5
Provincially Tracked	N
Incidental Notes	Major traffic noise

3. 2022-10-14: Green Frog

Observers	Sylvia Radovic, Mackenzie Dawson
Start Time	21:17
End Time	21:20
Call Code	1. Calls not simultaneous, number of individuals can be accurately counted.
Call Count	3

S Rank	S5
Provincially Tracked	N