892 Lower Lions Club Road

City of Hamilton

Scoped Environmental Impact Study

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Hamilton Conservation Authority

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1.0 Introduction

Aboud & Associates Incorporated (AA) was retained by the Hamilton Conservation Authority (HCA) to complete a Scoped Environmental Impact Study (EIS) to assess the environmental condition of the study area surrounding 892 Lower Lions Club Road and its suitability in formalizing and accommodating public parking. Due to the study lands being within, and adjacent to, designated natural features, a scoped EIS is required to evaluate potential impacts to existing natural heritage features and provide appropriate mitigation recommendations to minimize any potential negative impact resulting from the potential formalization of public parking.

1.1 Potential Development

The potential development includes the creation of a formalized public parking area located at 892 Lower Lions Club Road. A preliminary layout or design of the potential parking area has not been provided to AA for inclusion in the EIS. A formal trail will also be necessary as part of this development, to connect the potential public parking area to the Bruce and HCA trails along the southern edge of the study area. This potential parking area is being considered to accommodate the increase in visitors accessing Tiffany Falls across Wilson Street East, as well as nearby trail connections into the greater Dundas Valley Conservation Area.

The Rural Hamilton Official Plan (2018 Consolidation) indicates that the study area is within the limits of the Niagara Escarpment Plan and contains lands designated as Core Areas. Per Schedules B-2 and B-6 the study area contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls), respectively. The study area also includes a reach of Tiffany Creek.

The study area is also within the Natural Heritage System and contains a portion of the Ancaster Creek Valley Life Science Area of Natural and Scientific Interest, as designated by the Ministry of Natural Resources and Forestry.

1.1.1 HCA Visitor Management & Vehicle Parking Review

In February 2019, a report titled “HCA Conservation Area Vehicle Parking Review” was presented to the Conservation Advisory Board with the recommendation “That HCA staff be directed to undertake the parking inventory as detailed in the report titled “HCA Conservation Area Vehicle Parking Study”.

A project steering committee was formed which reviewed work previously undertaken and determined the next steps to be taken to further improve the situation, including five

key visitor management and parking program areas with associated action items to be implemented.
Within the key visitor management and parking program areas it was noted that Tiffany Falls is a highly visited area that is serviced by a small parking lot. While there are no options available to physically enlarge the existing parking lot, some measures can be taken on site to optimize the lot to enhance traffic flow and angular parking. Several options for further detailed consideration and investigation have been identified and include, but are not limited to:

1. Potential for the development of a new larger parking lot for this site on HCA lands adjacent to Tiffany Falls located north of Wilson Street with frontage on Lower Lions Club Road. There is additional work to be completed to determine the feasibility of this proposal. This includes:
    i. Completion of an Environmental Impact Study (EIS) to determine if it is acceptable according to HCA and City of Hamilton requirements to develop a parking lot on the lands as the majority of the area is designated as an Environmentally Significant Area. This work would take approximately 1-year to complete and would require the services of an outside consultant.
    ii. The subject lands are located within the Niagara Escarpment Plan area, within the Protection Area designation and a Development Permit would be required for the development of a parking lot in this area. The above noted EIS would form part of this application.
    iii. A review of traffic issues and pedestrian crossing requirements would need to be completed and reviewed with the City of Hamilton. Wilson Street is a major thoroughfare within the City and specifically Ancaster with a 70km/hr speed limit at the Tiffany Falls area.

The Conservation Advisory Board made several recommendations to the Board of Directors which included, but was not limited to the following:

- HCA Staff implement immediate parking enhancement opportunities at Artaban Road, Tiffany Falls, Devil's Punchbowl, Tew Falls and Westfield Heritage Village to optimize number of parking spaces, traffic flow and signage;

- HCA staff further examine and explore additional options for safe visitor access to Tiffany Falls;

1.2 Existing Land Use and Study Area

The study area is located at 892 Lower Lions Club Road in the City of Hamilton, and up to 120 metres (*Figure 1*). The study area is surrounded by natural lands and single-family residential properties to the north, west and south, with the Ancaster Sports Centre to the east.

1.3 Existing Regulations

1.3.1 Fisheries Act, 1985

The study area contains fish-bearing waters in the form of Tiffany Creek. This area and the fish within are protected under the Federal Fisheries Act, 1985. The Fisheries Act provides protection for the sustainability and ongoing productivity of Canada's recreational, commercial and Aboriginal fisheries.

Section 35(1) of the Fisheries Act states that:
"No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat."

The Fisheries Act requires that projects and activities avoid causing serious harm to fish and fish habitat unless authorized to do so by the Department of Fisheries and Oceans Canada (DFO). This applies to work conducted in or near waterbodies that support recreational, commercial and Aboriginal fisheries. Within the context of the potential creation of a formal parking area, any proposed actions that could impact fish or fish habitat would need to be assessed for compliance with the Fisheries Act. If it is determined that proposed actions will cause serious harm to fish, which cannot be mitigated for, then a Fisheries Act Authorization would be required.

1.3.2 Species at Risk Act, 2002

The Species at Risk Act aids in the prevention of wildlife species from being extirpated or becoming extinct, provides for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and manages species of special concern to prevent them from becoming endangered or threatened.

Section 32 (1) states:
"No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, and endangered species or a threatened species."

Section 33 states:
"No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species, or that is listed as an extirpated species if a recovery strategy has recommended the reinstruction of the species into the wild in Canada."
If it is determined that proposed actions will contravene the Sections stated above, and cannot be mitigated for, then a Species at Risk Act Authorization would be required.

1.3.3 Provincial Policy Statement

The *Provincial Policy Statement* (PPS) (OMMHA 2020) provides policy direction on matters of provincial interest related to land use planning and development.

The PPS states that:

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

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

Under the PPS, development and site alteration are not permitted in:
a) significant wetlands;
b) significant woodlands;
c) significant valleylands;
d) significant wildlife habitat;
e) significant areas of natural and scientific interest; and
f) coastal wetlands,

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

The PPS (2020) also states that:
1. *Development and site alteration is not permitted in fish habitat, habitat of endangered species and threatened species except in accordance with provincial and federal requirements.*

2. *Development and site alteration is not permitted on adjacent lands to the natural heritage features and areas identified above (Items a to f), unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.*

3. *Development and site alteration is restricted in or near sensitive surface water features and sensitive ground water features in order to protect the hydrologic functions of the feature. Mitigation and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions.*

1.3.4 Endangered Species Act, 2007

The provincial Endangered Species Act, 2007 (ESA) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (MNRF 2021). The habitat of some species at risk is also protected under the ESA. Protected habitat is habitat identified as essential for life processes including breeding, rearing, feeding, hibernation, and migration.

The ESA (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

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

Clause 10(1)(a) of the ESA also states that:

"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."

Clause 16(5) of the ESA states that:

"An agreement entered into under this section may require the authorized party under the agreement to pay a species conservation charge to the Agency in accordance with Section 20.3 if an impacted species under the agreement is also a conservation fund species."

Clause 17(1) of the ESA states:
"The Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threated species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by Section 9 or 10. 2007, c. 6, s. 17(1)"

1.3.5 Niagara Escarpment Plan (2020 Consolidation)

Plan Map 2 of the Niagara Escarpment Plan (NEP) indicates that the study area contains lands designated as Escarpment Protection Area and Escarpment Natural Area and falls entirely within the Development Control area. The study area contains a portion of a Key Natural Heritage Feature in the form of a woodland. Section 1.4 indicates that the policies surrounding the Escarpment Protection Area aim to protect and enhance natural and hydrologic features and the open landscape character of the Escarpment and lands in its vicinity.

Section 2.7.2 states:
"Development is not permitted in key natural heritage features with the except of the following, which may be permitted subject to compliance with all other relevant policies of this Plan:

a) Development of a single dwelling and accessory facilities outside a wetland on an existing lot of record, provided that disturbance in minimal and where possible temporary;
b) Forest, fisheries and wildlife management to maintain or enhance features;
c) Conservation and flood or erosion control projects, after all alternatives have been considered;
d) The Bruce Trail, and other trails, boardwalks and docks on parks and open space lands that are part of the Parks and Open Space System; and

e) *Infrastructure, where the project has been deemed necessary to the public interest and there is no other alternative."*

Section 2.7.6 states:
"If in the opinion of the implementing authority, a proposal for development within 120m of a key natural heritage feature has the potential to result in a negative impact on the feature and/or its functions, or on connectivity between key natural heritage features and key hydrologic features, a natural heritage evaluation will be required that:

a) *Demonstrates that the development, including any alteration of the natural grade, or drainage, will protect the key natural heritage feature or the related functions of that feature;*
b) *Identifies planning, design and construction practices that will minimize erosion, sedimentation and the introduction of nutrients or pollutants and protect and, where possible, enhance or restore the health, diversity and size of the key natural heritage feature;*
c) *Determines the minimum vegetation protection zone required to protect and where possible enhance the key natural heritage feature and its functions; and*
d) *Demonstrates that the connectivity between key natural heritage features and key hydrologic features located within 240m of each other will be maintained and where possible enhanced for the movement of native plants and animals across the landscape."*

1.3.6 Hamilton Conservation Authority

Per the HCA's Online Regulation Areas Mapping, the study area is located partially within the HCA's Regulated Area and contains a reach of Tiffany Creek. As noted above, the study area also contains Significant Woodlands and a portion of the Ancaster Creek Valley Life Science Area of Natural and Scientific Interest.

Section 3.1.4 of the Planning & Regulation Policies and Guidelines (2011) states:

a) *"Development and/or site alteration will not be permitted in significant woodlands unless it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions.*
b) *Development and/or site alteration will not be permitted on lands adjacent to significant woodlands (within 50m of the boundary of the woodland) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions…"*

Section 3.1.6 states:

a) *"The Authority will direct development and/or site alteration away from Provincially Significant Areas of Natural and Scientific Interest (ANSIs) unless it can be demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or the ecological functions."*
b) *Development and/or site alteration will not be permitted on lands adjacent to Provincially Significant ANSIs (within 50m of the boundary of the area) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or on their ecological functions."*

1.3.7 Rural Hamilton Official Plan (2018 Consolidation)

The Rural Hamilton Official Plan Schedule B indicates that the study area is within the limits of the NEP.

Chapter C, Section 1.1.1 states:
"Any development within the Niagara Escarpment Plan Area, as shown on Schedule A-Provincial Plans, shall meet the requirements of this Plan and the Niagara Escarpment Plan, and the Parkland, Open Space and Trails policies of the Greenbelt Plan. Where there is a discrepancy between this Plan and the Niagara Escarpment Plan, and the Parkland, Open Space and Trails policies of the Greenbelt Plan, the most restrictive policies will prevail."

Schedule B indicates that the study area contains Core Areas. Furthermore, Schedules B-1, 2 and 6, indicate that the study area is partially within a Key Natural Heritage Feature Life Science ANSI, within an Environmentally Significant Area and within Significant Woodlands, respectively.

Chapter C, Section 2.3.3 states:
"Any development or site alteration within or adjacent to Core Areas shall not negatively impact their environmental features or ecological functions."

Chapter C, Section 2.3.4 states:
"New development or site alteration shall not be permitted within provincially significant wetlands, significant coastal wetlands, or significant habitat for threatened or endangered species, except in accordance with applicable provincial and federal regulations with respect to significant habitat of threatened or endangered species."

1.3.8 City of Hamilton Zoning By-law 05-200 (2019 Consolidation)

The City of Hamilton Interactive Zoning Mapping indicates that the majority of the study area is zoned as Conservation/Hazard Land (P6) with an area bordering the north and east limits zoned as Agriculture (A1).

Section 7.6 states:
"New development within the P6 Zone may require the approval of a Site Plan Control application, including the submission of an Environmental Impact Statement, to demonstrate that there will be no negative impact on Core Area features, as identified in the Rural Hamilton Official Plan, as a result of the proposed development, prior to the development proceeding."

Section 7.6.1 states permitted uses include Agriculture, Conservation, Flood and Erosion Control Facilities, Recreation (Passive), Secondary Uses to Agriculture and Single Detached Dwelling.

Approval of the creation of formalized public parking on the subject lands requires the preparation of a scoped EIS to the satisfaction of the City of Hamilton, NEC and HCA. Consideration will be given to the Fisheries Act (1985), Species at Risk Act (2002), Provincial Policy Statement (2020), Endangered Species Act (2007), Niagara Escarpment Plan (2020), Rural Hamilton Official Plan (2018) and City of Hamilton Zoning By-law 05-200 (2005).

1.4 Terms of Reference

Based upon the above Acts, Policies and Regulations, Terms of Reference (ToR) for the Scoped EIS were developed and submitted to the City of Hamilton Natural Heritage Planner, Catherine Plosz, on April 5, 2021. Ms. Plosz provided comments on the City's behalf on April 7, 2021, which included providing the ToR to the NEC for review and clarifying how the adjacent watercourse will be characterized. The ToR was subsequently forwarded to Johnpaul Loiacono, Senior Planner with the Niagara Escarpment Commission for review.

Mr. Loiacono provided comments on May 13, 2021 indicating that the NEC did not have any concerns with the proposed ToR; however, it was identified that the Terms did not include reference to the Niagara Escarpment Plan.

A final revised ToR was circulated to Ms. Plosz and Mr. Loiacono on June 2, 2021 which included all recommended revisions. Both Ms. Plosz and Mr. Loiacono responded on June 8, 2021 indicating they had no further comments.

The original and revised Terms of Reference documents and agency correspondence are provided in *Appendix 1*.

2.0 Methods

2.1 Background Review

A background information review was conducted, of both biological and physical features within the vicinity of the study area. The following resources were consulted during this review:

- Atlas of the Breeding Birds of Ontario, 2001-2005,
- HCA Regulated Areas Map Tool (accessed April 2021) of natural heritage features (e.g. regulation limit, watercourses),
- City of Hamilton Interactive Mapping,
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. 2019,
- Ontario Mammal Atlas (1994),
- eBird. Cornell Lab of Ornithology. Accessed July 2021,
- iNaturalist. Accessed July 2021,
- Ontario Butterfly Atlas. Toronto Entomologists' Association, 2011. Accessed July, 2021,
- Natural Heritage Information Centre (NHIC) database, 2021,
- City of Hamilton Zoning By-law 05-200 (August 2019 Consolidation),
- Rural Hamilton Official Plan, March 7, 2012 (2018 Consolidation),
- Niagara Escarpment Plan (July 2020 Consolidation),
- Hamilton Natural Areas Inventory (2014),
- Desktop Hydrogeological Assessment 892 Lower Lions Club Road (Hydrogeology Consulting Services, 2021).

2.2 Woodland Delineation

The dripline of the existing woodland within the study area, where access is permitted, was staked by Shannon Davison, AA, on October 28, 2021, with the City of Hamilton verifying the limits the same day. The dripline was surveyed by AA using a Trimble GeoXT hand-held device with sub-metre accuracy on October 28, 2021 and is shown on *Figure 1*.

2.3 Vegetation

2.3.1 Ecological Land Classification

Ecological Land Classification (ELC) field investigations were completed on May 12, 2021. Detailed survey dates and weather information are provided in *Appendix 8*. ELC surveys were conducted within the study area where access was permitted. Where

access was restricted, ELC surveys were conducted from the roadside or property boundary. Surveys were completed by qualified Ecologists, Shannon Davison, OMNRF Certified in Ecological Land Classification and Kelly Skaug. Vegetation communities within the study area were characterized and delineated through field investigation, following the Ecological Land Classification (ELC) system for Southern Ontario 1st approximation; community codes generally follow the 2nd approximation (Lee at al., 1998, 2008). Boundaries of the ELC communities were mapped using aerial images and field observations (*Figure 2*). Digitized ELC data sheets are provided in *Appendix 3*.

Identified ELC communities were cross-referenced with the NHIC Ontario Plant Community List (NHIC 2015) to determine the presence of rare plant communities (S3-S1). The Subnational, or Provincial Ranks (S-Rank) are assigned by the Ontario Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) in order to help assign protection priorities.

2.3.2 Botanical Inventory

The study area was inventoried where access was permitted, and from the property limits and roadside, to provide a comprehensive three season botanical inventory. Detailed survey dates and weather information are provided in *Appendix 8*.

Identified vascular plant species were compared to provincial and federal SAR lists (COSSARO, SARA), provincial ranks (NHIC 2015), global ranks and the Hamilton Natural Areas Inventory (HCA, 2014), to assess federal, provincial, regional and local conservation status of each species. English colloquial names and scientific binomials of plant species generally follow the Database of Vascular Plants of Canada (VASCAN) (VASCAN 2015).

Identification of environmentally sensitive plant species was completed based on the assignment of a coefficient of conservatism value (CC) for each native species (Oldham et al., 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to specific natural habitat parameters. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters. These species may be more sensitive to environmental changes (Mortarello et al., 2010).

A list of all identified plant species is provided in *Appendix 4*. The list provides botanical name, common name, provincial rarity rank (S-Rank), global rarity rank (G-Rank), provincial SAR status, federal SAR status, coefficient of conservatism (CC) and coefficient of wetness (CW). Plant species that could only be identified to genus were not assigned the above information.

2.4 Wildlife Habitat

2.4.1 Breeding Birds

Breeding bird surveys were conducted in 2021 by Cheryl-Anne Ross, Wildlife Ecologist, to determine if significant breeding bird habitat occurs within, or adjacent to, the study area. Two surveys were conducted, comprised of 10-minute point counts positioned at pre-determined locations. Surveys followed the Ontario Breeding Bird Atlas: Guide for Participants (Bird Studies Canada, 2001). The highest observed level of breeding evidence was used to assign breeding status (i.e., confirmed, possible, probable, or observed) to each species.

Surveys were performed during the peak breeding season for the bulk of species in southern Ontario (last week of May through early July), and were spaced at least 10 days apart in order to determine presumed permanent territories through territorial singing males. The two surveys took place on the mornings of June 4 & June 24, 2021, between 30 minutes before dawn and 5 hours after dawn. The Point Count locations are illustrated on *Figure 1*; Survey results and breeding evidence code descriptions are provided in *Appendix 7*. Detailed survey dates and weather information are provided in *Appendix 8*.

2.4.2 Fish

Background fish dot records for Tiffany Creek within the study area were requested through a Request for Review submitted to the MNRF Guelph District on April 19, 2021. MNRF provided a response on April 22, 2021 indicating that Tiffany Creek is considered to have a warm water thermal regime. Additionally, MNRF noted that the in-water work timing restriction for Tiffany Creek is from April 1- June 30. The response in its entirety, including fish species noted to be present in Tiffany Creek are provided in *Appendix 9*.

2.4.3 Incidental Wildlife Observations

Incidental observations of insects, mammals, birds, and reptiles were recorded during all field visits. Detailed survey dates and weather information are provided in *Appendix 8*.

2.5 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the SWH EcoRegion Criterion Schedule 7E (2015), the potential parking area and adjacent lands (within 120m) were considered for the presence of Significant Wildlife Habitat (e.g., specialized habitats for wildlife, and habitat for species of conservation concern). An assessment of the study area for all SWH is provided in *Appendix 5.*

2.6 Species at Risk Habitat

A thorough review of background documents was conducted to compile a master list of all Species at Risk, and species with conservation designation that may occur in the study area. A review of the site, along with habitat requirements for each species was conducted; the site was then evaluated for potential habitat using Ecological Land Classification, guidance from MNRF documents, and on-site knowledge acquired through field surveys. Detailed survey dates and weather information are provided in *Appendix 8*. An assessment of the study area for candidate habitat for SAR is provided in *Appendix 6*.

2.7 Aquatic Habitat Assessment

Myler Ecological Consulting (Myler) undertook a screening of aquatic habitat within the study area to investigate the potential for impact of the potential creation of a public parking lot. Myler visited the study area on February 8 and March 15, 2021 for initial reconnaissance and a site start-up meeting, respectively. A third visit was conducted on March 20, 21 to complete a more extensive transverse and observations focused on Tiffany Creek.

The desktop element of the screening included review of the existing information, including online mapping and aerial imagery, fisheries information for Tiffany Creek that was provided by MNRF, and DFO online aquatic Species at Risk mapping.

The field portion of the screening involved site visits to conduct visual observations to confirm presence/absence of aquatic habitat in the study area outside of the mapped Tiffany Creek (e.g., ponds, vernal pools, and substantial unmapped tributaries) and to investigate the existence and general characteristics of the Tiffany Creek watercourse in relation to the potential parking lot creation, including presence/absence of topographical/drainage relation, extent of vegetated buffer, existing concentrated and/or erosional drainage paths through existing buffer, and the occurrence of upstream migration barriers that would influence the likelihood of fish presence within the watercourse segment.

3.0 Existing Conditions

Information that characterizes the existing conditions of the study area came from several sources, including, but not limited to, background review of existing documents, public information sources, and field reconnaissance.

3.1 Background Review

3.1.1 Natural Heritage Information Centre - Species at Risk

Preliminary investigation through the Natural Heritage Information Centre (NHIC) uncovered nine (9) provincial Species at Risk (SAR) records in the 1km x 1km square (17NH8488) containing the study area, as well as a Wildlife Concentration Area in the form of Colonial Waterbird Nesting. Habitat for Bobolink, Eastern Meadowlark and Eastern Milksnake was identified as occurring in the study area. Species and habitat requirements are summarized in *Table 1*.

Table 1. NHIC Species at Risk Records

Scientific Name	Common Name	S-Rank	COSEWIC Status	SARO Status	Habitat Requirements
Chimaphila maculata	Spotted Wintergreen	S2	THR	END	Woodland understorey associated with dry-fresh Oak and Oak-pine mixed forests and woodlands. Occurs on well-drained sandy soils (COSEWIC 2017).
Juglans cinerea	Butternut	S2?	END	END	Rich, moist sites that are well-drained. Often found along stream banks or gravelly sites. Shade intolerant (COSEWIC 2003b).
Colinus virginianus	Northern Bobwhite	S1	END	END	Early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity (COSEWIC 2003a).
Parkesia motacilla	Louisiana Waterthrush	S3B	THR	SC	Nests along headwater streams and associated wetlands which occur in mature forests, specifically mixed wood forests with Hemlock (COSEWIC 2006).
Sturnella magna	Eastern Meadowlark	S4B	THR	THR	Nests in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Prefers areas with good grass and thatch cover (Jaster et al., 2012).
Dolichonyx oryzivorus	Bobolink	S4B	THR	THR	Nests in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover (Renfrew et al., 2015).
Crotalus horridus	Timber Rattlesnake	SX	EXP	EXP	Forested areas with rocky outcrops, dry ridges and second growth deciduous or coniferous forests with southern exposure (Environment Canada, 2010).

Scientific Name	Common Name	S-Rank	COSEWIC Status	SARO Status	Habitat Requirements
Lampropeltis triangulum	Eastern Milksnake	S4	SC	NAR	Habitat generalists associated with edge habitat, meadows, prairies, pastures, rocky outcrops and human disturbances including hydro corridors and railway embankments. Habitat is usually close to a water source (COSEWIC 2014).
Chelydra serpentina	Snapping Turtle	S4	SC	SC	Slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays used as summering and overwintering habitat (COSEWIC 2008).

3.1.2 Ministry of Natural Resources and Forestry

A request for information was sent to the MNRF on April 19, 2021, to inquire whether any information is available pertaining to the natural features within the study area. A response was provided on April 22, 2021 which provided a summary of the fisheries information available for the study area and indicated the presence of the Ancaster Creek Valley Life Science Area of Natural and Scientific Interest and White-tailed Deer Wintering Area (Stratum 2). The correspondence in its entirety is provided in *Appendix 9.*

3.1.3 Ministry of Environment, Conservation and Parks

A request for information was sent to the Ministry of Environment, Conservation and Parks (MECP) on April 13, 2021, to inquire whether there were any additional records of Species at Risk noted for the study area. A response was provided on September 29, 2021 and indicated that the list of species was sufficient but should also consider all Species at Risk Bats. The correspondence in its entirety is provided in *Appendix 10*.

3.1.4 Ontario Breeding Bird Atlas

A list of birds determined to be breeding (Possible, Probable or Confirmed) in the 10km x 10km square containing the study area (17NH88) during the 2001-2005 Ontario Breeding Bird Atlas (Cadman et. al. 2007) was compiled. This list includes 114 species; 12 of which are considered Species at Risk under the ESA and SARA, respectively (Barn Owl (*Tyto alba*) (END, END), Chimney Swift (*Chaetura pelagica*) (THR, THR), Eastern Wood-Pewee (*Contopus virens*) (SC, SC), Bank Swallow (*Riparia riparia*) (THR, THR), Barn Swallow (*Hirundo rustica*) (THR, THR), Wood Thrush (*Hylocichla mustelina*) (SC, SC), Golden-winged Warbler (*Vermivora chrysoptera*) (SC, THR), Louisiana Waterthrush (*Seiurus motacilla*) (THR, SC), Yellow-breasted Chat (*Icteria virens* (END, END), Grasshopper Sparrow (*Ammodramus savannarum*) (SC, SC),

Bobolink (*Dolichonyx oryzivorus*) (THR, THR), and Eastern Meadowlark (*Sturnella magna*) (THR, THR)). Sixteen (16) of the species determined to be breeding in the square are considered Rare within the natural areas in the Regional Municipality of Hamilton (HCA, 2014). The findings of this review are presented in *Appendix 2*.

3.1.5 Ontario Reptile and Amphibian Atlas

Review of the Ontario Reptile and Amphibian Atlas (Ontario Nature 2019) identified 26 species that are known to occur within the 10km x 10km square containing the study area (17NH88). This list includes four species at risk under the ESA and SARA, respectively (Eastern Musk Turtle (*Sternotherus odoratus*) (SC, SC), Northern Map Turtle (*Graptemys geographica*) (SC, SC), Snapping Turtle (*Chelydra serpentina*) (SC, SC), and Jefferson Salamander (*Ambystoma jeffersonianum*) (END, END), with two federally listed Species at Risk (Western Chorus Frog (*Pseudacris triseriata*) (THR) and Milksnake (*Lampropeltis triangulum*) (SC)). Six (6) of the species which may occur in the square are considered Rare within the Regional Municipality of Hamilton (HCA, 2014). The findings of this review are presented in *Appendix 2.*

3.1.6 Atlas of the Mammals of Ontario

Review of the Atlas of the Mammals of Ontario (Dobbyn 1994) identified 25 species that are known to occur within approximately 10km the study area. Two of the species listed are considered Species at Risk under the ESA and SARA (Little Brown Myotis (*Myotis lucifugus* (END, END) and Northern Myotis (*Myotis septentrionalis*) (END, END)). One of the species listed is considered Rare within the Regional Municipality of Hamilton (HCA, 2014). The findings of this review are presented in *Appendix 2.*

3.1.7 Ontario Butterfly Atlas

Review of the Ontario Butterfly Atlas online database (Toronto Entomologists' Association, 2019) identified 72 species that are known to occur within the 10km x 10km square containing the study area (17NH88). This list includes one Species at Risk under the ESA and SARA, respectively (Monarch (*Danaus plexippus*) (SC, SC)). Seven of the species listed are considered Rare within the Regional Municipality of Hamilton (HCA, 2014). The findings of this review are presented in *Appendix 2*.

3.1.8 eBird

eBird is an online reporting system for birdwatchers managed by the Cornell Lab of Ornithology. The database was reviewed to see what bird species had been reported in the vicinity of the subject property. The closest reporting station is Dundas Valley CA-Tiffany Falls, ~475m from the study area. One hundred and two (102) species have been observed at this site, including 29 species that were not listed in the Ontario Breeding Bird Atlas. It should be noted that eBird observations occur year-round, and may include non-breeding, wintering, and migratory individuals. This list includes seven

Species at Risk listed under the ESA and SARA, respectively (Chimney Swift (*Chaetura pelagica*) (THR, THR), Eastern Wood-pewee (*Contopus virens*) (SC, SC), Barn Swallow (*Hirundo rustica*) (THR, THR), Wood Thrush (*Hylocichla mustelina*) (SC, THR), Eastern Meadowlark (*Sturnella magna*) (THR, THR) and Bobolink (*Dolichonyx oryzivorus*) (THR, THR)), The findings of this review are presented in *Appendix 2*.

3.1.9 iNaturalist

iNaturalist, another self-reporting system that is not limited by taxa, was also consulted. The search was limited to 1km from the study area and only research grade reports, which are confirmed independently, were used to compile the list. Sixty-six research-grade reports were confirmed including 31 vascular plant species, 15 insect species, eight fungi species, four reptile and amphibian species, three mammal species, three moss & lichen species and two bird species. None of the species observed are listed as Species at Risk. The findings of this review are presented in *Appendix 2*.

3.1.10 Hamilton Conservation Authority

Staff from the Hamilton Conservation Area provided AA with species lists containing observations for birds, herpetofauna, lepidoptera and odonata as well as mammals surrounding the study area. A list of vascular plants observed by HCA staff within close proximity to the study area was also provided. The lists include six Species at Risk listed under the ESA and SARA, respectively. The findings of this review are presented in *Appendix 2*.

3.1.11 Department of Fisheries and Oceans Aquatic Species at Risk Mapping

Review of DFO's online aquatic Species at Risk mapping by Myler Ecological Consulting confirmed no mapped occurrence of fish or mussel Species at Risk in Tiffany Creek within 1km of the study area.

3.2 Vegetation

3.2.1 Ecological Land Classification and Botanical Inventory

The community polygons identified during the ELC survey are summarized in *Table 2* below. Field forms and a comprehensive vascular plant list for the entire study area are presented in *Appendices 3* and *4*, respectively.

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
Graminoid Meadow (MEG)		
MEGM 3	Dry- Fresh Graminoid Meadow	Two graminoid meadow polygons occur within the study area. The canopy and sub-canopy are sparse throughout and contain Sugar Maple (*Acer saccharum*), Tree-of-heaven (*Ailanthus altissima*), Black Walnut (*Juglans nigra*) and Common Buckthorn (*Rhamnus cathartica*). The understorey consists of Wild Red Raspberry (*Rubus ideaus ssp. strigosus*), Multiflora Rose (*Rosa multiflora*), Manitoba Maple (*Acer negundo*) and Choke Cherry (*Prunus virginiana*), while the ground layer includes Canada Bluegrass (*Poa compressa*), Canada Goldenrod (*Solidago canadensis*), Wild Carrot (*Daucus carota*) and Teasel (*Dipsacus fullonum*).
Deciduous Woodland (WOD)		
WODM 4-4	Dry- Fresh Black Walnut Deciduous Woodland	The Black Walnut deciduous woodland is located within the centre of the study area, surrounded by the Sugar Maple-Hardwood Deciduous Forest. The canopy and subcanopy are dominated by Black Walnut with Sugar Maple and Balsam Poplar (*Populus balsamifera*) as secondary species. The understorey includes Wild Red Raspberry, Tartarian Honeysuckle (*Lonicera tatarica*), Black Raspberry (*Rubus occidentalis*) and Honeysuckle species (*Lonicera sp.*), with the ground layer being comprised of a Canada Bluegrass, Rough Forget-me-not (*Myosotis arvensis)*, Wild Carrot and Canada Goldenrod.
Deciduous Forest (FOD)		
FODM 5-9	Dry- Fresh Sugar Maple- Hardwood Deciduous Forest	The Sugar Maple- Hardwood Forest community occurs along the southern limit of the study area, and surrounds both meadow communities. The canopy consists of Sugar Maple, White Ash (*Fraxinus americana*) and Crack Willow (*Salix x fragilis*), with the subcanopy containing White Ash, Manitoba Maple, Common Apple (*Malus pumila*) and Eastern White Cedar (*Thuja occidentalis*). The understorey is comprised of Wild Red Raspberry, Riverbank Grape (*Vitis riparia*), Multiflora Rose and Tartarian Honeysuckle, while the ground layer includes Garlic Mustard (*Alliaria petiolata*), Rough Forget-me-not, Common Dandelion (*Taraxacum officinale*) and Common Motherwort (*Leonurus cardiaca*).

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
FODM 7-3	Fresh- Moist Willow Lowland Deciduous Forest	This community is located north of Lower Lions Club Road and surrounds the reach of Tiffany Creek within the study area. Inventories were completed from the roadside as access to this property was restricted. The canopy consists primarily of Crack Willow, with Sugar Maple, while the subcanopy includes Manitoba Maple, Common Buckthorn and Sugar Maple. The understorey is comprised of Common Buckthorn, Wild Red Raspberry and Riverbank Grape while the ground layer contains Garlic Mustard, Canada Goldenrod, Canada Bluegrass and Common Dandelion.
Mixed Forest (FOM)		
FOMM 2	Dry- Fresh White Pine- Hardwood Mixed Forest	This community is located north of Lower Lions Club Road, adjacent single-family residential dwellings. Inventories were completed from the roadside as access to this property was restricted. Some individuals were likely planted by the current or past property owners. The canopy includes Eastern White Pine (*Pinus strobus*) and Sugar Maple, while the subcanopy is comprised of Red Maple (*Acer rubrum*), Eastern White Pine, Eastern White Cedar and White Spruce (*Picea glauca*). The understorey consists of Wild Red Raspberry and Common Buckthorn, with the ground layer includes Kentucky Bluegrass (*Poa pratensis*), Garlic Mustard, Canada Goldenrod, and Common Dandelion.
Green Lands (CGL)		
CGL_4	Recreational	One polygon consisting of a portion of the Ancaster Sports Centre along the eastern edge of the study area has been classified as Recreational.
Residential (CVR)		
CVR_3	Single Family Residential	Several Single-Family Residential properties occur north of Lower Lions Club Road in the study area.

3.2.1.1 Species at Risk, Regional and Local Significance

No vegetation communities listed in Table 2 are considered rare in the province.

Between the botanical inventories conducted in the spring, summer and fall, 89 vascular plants were identified to species within the study area, with an additional one identified to genus. Of those identified to species, 47 species or 53% were native and 42 species or 47% were exotic. Most of the native species are ranked ‘S5’ (Secure in Ontario) or SNA (S-Rank not applicable) with two species, White Ash (*Fraxinus americana*), and Arrow-leaved Aster (*Symphyotrichum urophyllum*) ranking ‘S4’ (apparently secure in Ontario), two species are ranked ‘S4?’, Virginia Creeper (*Parthenocissus quinquefolia*) and Black Walnut (*Juglans nigra*), indicating uncertainty in their ranking. No S1-S3

species were observed in the study area. None of the species observed are considered Rare in the Regional Municipality of Hamilton (HCA, 2014).

No vascular plant species listed under ESA or SARA were observed.

3.3 Wildlife Habitat

3.3.1 Breeding Birds

The results of the Breeding Bird Survey (BBS) are presented in Tables 3 & 4. During BBS visits, a total of 21 species were detected during point counts. During area search transects a total of 18 species were detected, seven of which were not identified during point counts (Downy Woodpecker (*Picoides pubescens*), Northern Flicker (*Colaptes auratus*), American Crow (*Corvus brachyrhynchos*), Black-capped Chickadee (*Poecile atricapillus*), House Wren (*Troglodytes aedon*), American Robin (*Turdus migratorius*) and Chestnut-sided Warbler (*Dendroica pensylvanica*).

Due to the contiguity with natural lands surrounding the study area, it is important to note that, despite high levels of breeding evidence, a given species may not have been breeding specifically in the area in which it was observed. This is particularly true where species were only detected during one of the Breeding Bird Surveys. These species may have been foraging in these areas or, may have been wandering during post-breeding dispersal. Therefore, the following nine species, which were observed with probable or confirmed breeding evidence, are those that can be presumed to have breeding in, or within the study area: Blue Jay (*Cyanocitta cristata*), Yellow Warbler (*Dendroica petechia*), Northern Cardinal (*Cardinalis cardinalis*), Indigo Bunting (*Passerina cyanea*), Field Sparrow (*Spizella pusilla*), Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), House Wren (*Troglodytes aedon*) and Baltimore Oriole (*Icterus galbula*). The Breeding Bird Survey results in their entirety can be found in *Appendix 7*.

Table 3. Point Count Surveys- Highest Breeding Evidence (HBE)

Common Name	Scientific Name	COSARO	COSEWIC	S-RANK	G-RANK	Area sensitive	Area required (ha)	PIF priority species	HCA (2014)	A		B		FINAL HBE
										TOTAL	HBE	TOTAL	HBE	
Yellow-bellied Sapsucker	*Sphyrapicus varius*			S5B	G5	✓	2-5ha		R			1	H	H
Eastern Wood-pewee	*Contopus virens*	SC	SC	S4B	G5			✓	C	1	S			S
Alder Flycatcher	*Empidonax alnorum*			S5B	G5				U	1	S			S
Eastern Kingbird	*Tyrannus tyrannus*			S4B	G5			✓	A			1	S	S
Blue Jay	*Cyanocitta cristata*			S5	G5				A	2	A	1	H	A
Gray Catbird	*Dumetella carolinensis*			S4B	G5				A			2	S	S
Brown Thrasher	*Toxostoma rufum*			S4B	G5			✓	U	1	S			S
Cedar Waxwing	*Bombycilla cedrorum*			S5B	G5				C			3	H	H
Red-eyed Vireo	*Vireo olivaceus*			S5B	G5				C	1	S			S
Yellow Warbler	*Dendroica petechia*			S5B	G5				A	3	T	2	T	T
Common Yellowthroat	*Geothlypis trichas*			S5B	G5				C			1	S	S
Northern Cardinal	*Cardinalis cardinalis*			S5	G5				A			3	T	T
Indigo Bunting	*Passerina cyanea*			S4B	G5				C	2	T	1	T	T
Field Sparrow	*Spizella pusilla*			S4B	G5			✓	C	2	T	1	S	T
Savannah Sparrow	*Passerculus sandwichensis*			S4B	G5	✓	>50ha	✓	A	1	S			S
Song Sparrow	*Melospiza melodia*			S5B	G5				A	2	A	3	S	A
Red-winged Blackbird	*Agelaius phoeniceus*			S4	G5				A	3	A	3	H	A
Common Grackle	*Quiscalus quiscula*			S5B	G5				A			1	H	H
Brown-headed Cowbird	*Molothrus ater*			S4B	G5				A			2	H	H
Baltimore Oriole	*Icterus galbula*			S4B	G5			✓	C	4	FY	2	P	FY
American Goldfinch	*Carduelis tristis*			S5B	G5				A	1	H	2	H	H

Table 4. Area Search Transects – Highest Breeding Evidence (HBE)

Common name	Scientific name	COSARO	COSEWIC	S RANK	G RANK	Area Sensitive (MNRF 2000)	Area Required (Ha)	PIF priority Species (BCR 13)	HCA (2014)	HBE
Downy Woodpecker	*Picoides pubescens*			S5	G5				C	H
Northern Flicker	*Colaptes auratus*			S4B	G5			✓	C	H
Alder Flycatcher	*Empidonax carolinus*			S5B	G5				U	S
American Crow	*Corvus brachyrhynchos*			S5B	G5				C	S
Black-capped Chickadee	*Poecile atricapillus*			S5	G5				A	H
House Wren	*Troglodytes aedon*			S5B	G5				C	P
American Robin	*Turdus migratorius*			S5B	G5				A	S
Gray Catbird	*Dumetella carolinensis*			S4B	G5				A	S
Brown Thrasher	*Toxostoma rufum*			S4B	G5			✓	U	S
Red-eyed Vireo	*Vireo olivaceus*			S5B	G5				C	S
Yellow Warbler	*Dendroica petechia*			S5B	G5				A	S
Chestnut-sided Warbler	*Dendroica pensylvanica*			S5B	G5				U	S
Northern Cardinal	*Cardinalis cardinalis*			S5	G5				A	S
Field Sparrow	*Spizella pusilla*			S4B	G5			✓	C	S
Song Sparrow	*Melospiza melodia*			S5B	G5				A	S
Red-winged Blackbird	*Agelaius phoeniceus*			S4	G5				A	A
Brown-headed Cowbird	*Molothrus ater*			S4B	G5				A	S
Baltimore Oriole	*Icterus galbula*			S4B	G5			✓	C	A

Legend (Table 4 and 5):
COSARO: Committee on the status of Species at Risk Ontario
COSEWIC: Committee on the status of Endangered Wildlife in Canada
SARA: Species at Risk Act
THR: Threatened SC: Special Concern
S-Rank:
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the province
G-Rank:
G5: Very common globally; demonstrably secure

Breeding Evidence:
Possible
H-suitable habitat
S-singing male
Probable
T- Presumed territory
A- Agitated behaviour
P- Pair observed
Confirmed
FY- Fledged Young

Hamilton Conservation Authority:
A- Abundant
C- Common
U- Uncommon
R- Rare

3.3.1.1 Breeding Bird Species at Risk

One Species at Risk listed as Special Concern under the ESA and SARA was observed during Breeding Bird Surveys. Locations of observations are shown on *Figure 3.*

Eastern Wood-pewee are associated with mid-aged mixed and deciduous forest stands, often dominated by Maple (*Acer*), Elm (*Ulmus*), or Oak (*Quercus*), and include areas with clear-cuts, openings, or forest edges. Eastern Wood-pewee also prefers forest stands with little to no understorey vegetation (COSEWIC 2012). Eastern Wood-pewee

was observed singing during the June 4 breeding bird survey in the Sugar Maple-Hardwood Deciduous Forest. Eastern Wood-pewee was identified as a possible breeder in Polygon B.

3.3.1.2 Breeding Bird Regional and Local Significance

All species detected in the study area are ranked as either S5 (Secure) or S4 (Apparently Secure) in Ontario. The rank qualifier 'B' denotes the status of a migratory species during the breeding season.

Based on the HCA Natural Areas Inventory (2014), one species observed (Yellow-bellied Sapsucker (*Sphyrapicus varius*)) is considered Rare, with three additional species considered to be Uncommon in the City of Hamilton. Per the Natural Areas Inventory (HCA, 2014), species are ranked Rare if the estimated number of breeding pairs is between 1 and 20, while species are ranked Uncommon if the estimated number of breeding pairs is between 21-200.

3.3.1.3 Breeding Bird Regional Priority Species

The Ontario Landbird Conservation Plan (OLCP): Lower Great Lakes/St. Lawrence Plain, North American Bird Conservation Region 13 (Partners in Flight, 2008) has identified a number of species that are considered conservation priorities for the region (Ontario PIF, 2008). Seven priority species (Eastern Wood-pewee (*Contopus virens*), Eastern Kingbird (*Tyrannus tyrannus*), Brown Thrasher (*Toxostoma rufum*), Field Sparrow (*Spizella pusilla*), Savannah Sparrow (*Passerculus sandwichensis*), Baltimore Oriole (*Icterus galbula*) and Northern Flicker (*Colaptes auratus*)) were observed in or adjacent to the study area. The OLCP does not provide legislative protection of species or their habitat, but rather identifies species that should be conservation priorities on a regional level, beyond those designated as Species at Risk.

3.3.2 Incidental Wildlife Observations

Incidental wildlife observations made outside of the above formal field surveys are presented in *Table 5.* All observations were of single individuals unless otherwise stated.

Table 5. Incidental Wildlife Observations

Common Name	Scientific Name	Taxa	Date	Location/Notes
Eastern Cottontail	*Sylvilagus floridanus*	Mammal	May 12, 2021	Scat observed during ELC/Spring botanical.
White-tailed Deer	*Odocoileus virginianus*	Mammal	May 12 & October 28, 2021	Tracks observed during ELC/Spring botanical. One individual observed during woodland dripline delineation.

Table 5. Incidental Wildlife Observations

Common Name	Scientific Name	Taxa	Date	Location/Notes
Eastern Gartersnake	*Thamnohis sirtalis sirtalis*	Reptile	June 4, 2021 September 21, 2021	Observed during Breeding Bird Surveys and fall botanical.
Eastern Milksnake	*Lampropeltis triangulum*	Reptile	October 28, 2021	Observed on Lower Lions Club Road during woodland dripline delineation.
Northern Cardinal	*Cardinalis cardinalis*	Bird	July 9, 2021	Observed during summer botanical.
Field Sparrow	*Spizella pusilla*	Bird	July 9, 2021	Observed during summer botanical.
Indigo Bunting	*Passerina cyanea*	Bird	July 9, 2021	Observed during summer botanical.
Blue Jay	*Cyanocitta cristata*	Bird	October 28, 2021	Observed during woodland dripline delineation.
American Crow	*Corvus brachyrhynchos*	Bird	October 28, 2021	Observed during woodland dripline delineation.
Canada Goose	*Branta canadensis*	Bird	October 28, 2021	Observed flying overhead during woodland dripline delineation.
Wild Turkey	*Meleagris gallopavo*	Bird	October 28, 2021	8-10 individuals observed during woodland dripline delineation.
Monarch	*Danaus plexippus*	Insect	July 9, 2021	Multiple individuals observed feeding in eastern meadow community during the summer botanical.
Cabbage White	*Pieris rapae*	Insect	July 9, 2021	Observed during summer botanical.

3.4 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the SWH EcoRegion Criterion Schedule 7E (2015), we have determined that Significant Wildlife Habitat (SWH) is present in the form of Deer Wintering Area & Movement Corridors and Habitat for Special Concern & Rare Wildlife species. Candidate SWH in the form of Bat Maternity Colony and Reptile Hibernaculum, is present within the Study Area. All confirmed SWH have been mapped in *Figure 3*.

3.4.1 Deer Winter Congregation Areas & Movement Corridors

Deer Winter Congregation Areas are defined as large woodlands greater than 100ha in area in which deer maintain trails leading from the cover to areas of woody browse,

mast-producing trees or other food sources (OMNRF, 2014). Movement corridors require specific habitat features such as coniferous forest habitat with dense understorey containing a wealthy supply of shrubs of various species (OMNRF, 2014). Often, with movement corridors, these features will also exhibit terrain features such as ridges and valleys (OMNRF, 2014). Both Deer Winter Congregation Areas and Movement Corridors are defined by the OMNRF through their Land Information Ontario database. The woodland, forested and meadow communities within the study area, have been designated as being part of a Deer Winter Congregation Area and a Movement Corridor; however, meadow communities do not exhibit the characteristics of SWH, including offering woody browse or other food sources.

Since the majority of the study area is mapped by LIO as being part of a Deer Winter Congregation Area and Movement Corridor, the potential creation of a formal public parking area will impact the larger Deer Winter Congregation Area and Movement Corridor. The Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014) provides potential impacts and possibilities for mitigation for activities that may negatively impact Significant Wildlife Habitat. Within the mitigation options, it is noted that site selection is critical and that minimizing the amount of habitat affected, as well as locating the disturbance at the edge of the habitat may be a satisfactory mitigation option (OMNRF, 2014). Additionally, it is anticipated that the potential creation of a formal public parking area will generate an influx of visitors to the area. As a result, visitors will need to be educated about the negative effects of feeding White-tailed Deer during the winter months through appropriate signage (OMNRF, 2014).

It is the opinion of AA, that the SWH may be negatively impacted; however, without a preliminary site plan or design of the potential parking area, the potential impacts cannot be analyzed in greater detail. If HCA decides to proceed with the creation of a formal public parking area within this study area, the amount of SWH removal should be prioritized when considering and analyzing feasible locations. The potential development should also avoid severing any existing corridors that allow White-tailed Deer and other wildlife free movement between different ecological communities which may assist in carrying out their life cycle processes. Additionally, correspondence with MNRF should be initiated to determine the actual limits of the SWH based on the presence of meadow habitat.

3.4.2 Special Concern & Rare Wildlife Species

Monarch and Eastern Wood-pewee, listed as Special Concern under the ESA, were observed during field investigations. Per the SWH EcoRegion Criterion Schedule 7E (MNRF, 2015), the SWH consists of the area of the habitat to the finest ELC scale that

protects the habitat form and function. Since Monarch was observed within the eastern polygon of the Dry- Fresh Graminoid Meadow, that vegetation community has been classified as Significant Wildlife Habitat. Eastern Wood-pewee was observed within the Sugar Maple- Hardwood deciduous forest community during Breeding bird surveys.

Although a preliminary design of the potential formal public parking area is not available, opportunities within the study area exist to avoid potential negative impacts to Monarch SWH. As all Monarch activity observed during field investigations occurred in the eastern graminoid meadow community it is recommended that if the HCA is to proceed with the creation of a formal public parking area, that it be located within the western meadow community. Additionally, compensation through the planting of Milkweed and other herbaceous species beneficial to the life cycle of the Monarch is recommended to minimize any potential negative impacts. It is the opinion of AA that provided the potential public parking area is located outside of the eastern meadow community and compensation efforts are undertaken, Monarch and their habitat will not be negatively impacted by the creation of a formal public parking area.

If a formal parking area is created within the study area, a formal trail will be necessary to connect the parking area with the adjacent Bruce and HCA trails. The creation of this trail will require removal of trees within the Sugar Maple- Hardwood deciduous forest. With the overall contiguity of the larger woodland remaining intact, it is the opinion of AA that the creation of a trail will not negatively impact Eastern Wood-pewee and its life cycle processes. It was noted during field investigations, that many of the existing White Ash trees within this community are of poor health. It is recommended, where possible, that the trail connection to Tiffany Falls be aligned such that tree removals are targeted at dead and dying White Ash trees, where present. The removal of the existing White Ash in poor health may be beneficial as it will allow preservation of other native trees in better health and remove a potential public safety risk. If HCA proceeds with the creation of a formal parking area and trail, it is recommended that a Tree Preservation Plan be completed to assess the condition of the existing trees, identify locations of dead and dying White Ash, and ensure proper compensation for necessary removals.

3.4.3 Bat Maternity Colony

Bat maternity colonies can be located in human structures (e.g. barns and attics), abandoned mines, tree hollows and rock faces (OMNRF, 2014). For several species, mature woodland communities that include dead or dying stems are important, others roost individually in the foliage of trees. Candidate bat maternity colony habitat is present within the Sugar Maple-Hardwood and Willow Lowland Deciduous Forests, White Pine-Hardwood Mixed Forest and the Black Walnut Deciduous Woodland. As any

potential tree removal is currently unknown, it is recommended that detailed studies of Candidate Bat Habitat occur pre-construction, if it is determined that site activities will affect these communities. If candidate trees will be impacted, additional work will be required, including compensation and maternity window avoidance measures. Additionally, it is recommended that HCA seek guidance from the MECP in regards to candidate bat maternity colony habitat and associated tree removals. Including determining appropriate study requirements to confirm presence/absence of maternity habitat, prior to any removals.

3.4.4 Reptile Hibernaculum

Reptile hibernaculum sites are critical for the ability of reptiles to overwinter successfully in cold climates (OMNRF, 2014). Snakes depend on hibernation sites located below frost lines in a variety of features such as rock crevices to escape freezing temperatures (OMNRF, 2014). Candidate reptile hibernaculum was identified in the study area due to the presence of a decommissioned well and large rock pile in the western-most Graminoid Meadow community. These features were investigated on multiple occasions with only a single Eastern Gartersnake identified on two occasions; and a single Eastern Milksnake identified on the south edge of Lower Lions Club Road on one occasion (*Figure 3*). As the fate of these features are currently unknown, it is recommended that detailed studies to determine whether the features provide overwintering habitat be completed if removal of these features is proposed.

3.5 Species at Risk Habitat

An assessment of all Species at Risk, and species with conservation designation, that have the potential to occur in the study area based on lists provided by several wildlife atlases, correspondence with MECP and MNRF Species Occurrence Mapping was completed and is provided in *Appendix 6*. Species assessed include all species with Provincial SARO status, Federal SARA status, or an S-rank of S1-S3. Candidate Species at Risk Habitat is shown on *Figure 4*.

3.5.1 Wooded Communities

Candidate habitat for Eastern Wood-pewee, Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis and Tri-colored Bat was identified within the Sugar Maple-Hardwood and Lowland Willow Deciduous Forests, and Black Walnut Deciduous Woodland communities. Only habitat for Eastern Wood-pewee was confirmed as occurring in the study area and is discussed in detail below. While candidate habitat occurs for other species, potential impacts are unable to be assessed in detail as a preliminary layout has not been provided.

3.5.1.1 Eastern Wood-pewee

Eastern Wood-pewee was identified within the Sugar Maple-Hardwood Deciduous Forest during Breeding Bird studies and contains suitable habitat for Eastern Wood-pewee life stages. Since Eastern Wood-pewee is only listed as Special Concern, it does not receive general habitat protection through the ESA and SARA.

3.5.2 Meadow and Edge Habitat

Candidate habitat for Monarch, Milksnake, Bobolink, Eastern Meadowlark and Yellow-banded Bumble Bee was identified within the Graminoid Meadow and along the edges of the forested communities. Monarch was observed in the eastern meadow community during field investigations. One Eastern Milksnake was also identified on the south edge of Lower Lions Club Road.

3.5.2.1 Monarch

Multiple Monarch individuals were observed within the eastern-most graminoid meadow community. Since Common Milkweed (*Asclepias syriaca*) was noted as being within this community, it contains suitable habitat for all Monarch life stages. Since Monarch is only listed as Special Concern, it does not receive habitat protection through the ESA.

3.5.2.2 Eastern Milksnake

One Eastern Milksnake was observed along the southern edge of Lower Lions Club Road immediately east of Tiffany Creek. Based on field investigations, the meadow/edge habitat present within the study area does contain suitable habitat for Eastern Milksnake. Since Eastern Milksnake is only listed as Special Concern under SARA, it is not afforded habitat protection as the study area is not within federal lands.

See *Appendix 6* for a detailed assessment of Species at Risk habitat.

3.6 Aquatic Habitat Assessment

Review of online mapping and aerial imagery confirmed that a segment of Tiffany Creek passes through the study area, flowing in a northward direction through the subject property towards its confluence with Ancaster Creek. No other aquatic habitats, such as isolated ponds or vernal pools, were observed within the study area on mapping and aerial imagery. The eastern field within the study area is separated from Tiffany Creek by >100 m of woodland and forest. The western field is closer to Tiffany Creek, separated from it by a variable width of riparian forest on the west bank of the creek ranging from <10m to slightly greater than 30m.

As noted in Section 2.4.2, MNRF identified in an e-mail response (*Appendix 9*) that Tiffany Creek is classified as having a warm water thermal regime. MNRF provided a list of four small-bodied fish species known from Tiffany Creek. The three tough minnow species and the Brook Stickleback are characteristic of urban and naturally marginal stream habitats and are not considered to be particularly sensitive. The thermal regime identified by MNRF differs from HCA's watercourse thermal regime, and should be confirmed at detailed design.

The segment of Tiffany Creek within the study area was observed to be high gradient and very rocky, owing to its location at the toe of the Niagara Escarpment. That high gradient continues downstream of the crossing at Lower Lions Club Road. Steep concrete ramps within the perched culvert create a barrier to any fish that might possibly ascend the creek as far as Lower Lions Club Road. Within the study area there is another upstream barrier created by a natural limestone ledge that was augmented by historical placement of concrete and bricks, but it is unlikely that any fish can reach it due to the barrier imposed by the road culvert. Myler observed no fish in the clear waters of Tiffany Creek within the study area, but fish are known to occur downstream.

The western bank and riparian area at Tiffany Creek is vegetated, with a band of riparian forest ranging from <10m to slightly greater than 30m in width and otherwise by meadow. The riparian area shows extensive signs of historical disturbance, including the addition of concrete and brick to the natural stone ledge in the creek channel, removal of stone (likely for the pre-existing barn and its remnant stone ramp), scattering of stone rubble from the demolished barn foundation, and remnants of historical dumping of household and farmstead refuse, much of which it appears may have been washed downstream during periods of high flow.

The grade within the open meadow next to the creek is generally sloping downward to the north and Lower Lions Club Road, but localized runoff from some portions of the meadow likely heads eastward to the creek. However, there were no signs of discrete, concentrated runoff such as within swales or small gullies leading form the field towards the creek.

3.7 Hydrogeologic Assessment

A Desktop Hydrogeological Assessment for the potential creation of a formal public parking area was completed by Hydrogeology Consulting Services (HCS). The assessment was completed to gain an understanding of the physical and hydrologic features for the site, including soil types, overburden and bedrock geology, landforms, water table, groundwater recharge and discharge, location of wells, drainage patterns,

and existing erosion. The assessment also discusses potential impacts of the development and provides mitigation measures and monitoring recommendations.

It was determined that no shallow groundwater aquifer is expected to exist beneath the study area; therefore, minor changes to the site infiltration rate resulting from the potential development would not be expected to result in material impacts to groundwater resources (HCS, 2021). Potential impacts of the parking area include increases in site runoff rates and erosion into Tiffany Creek and possible erosion of the creek banks (HCS, 2021). Stormwater management practices including site grading, installation of swales to decrease flow velocities and filter out suspended sediments, and construction of drainage ditches to direct runoff to appropriate areas can be implemented to minimize and/or prevent erosion and direct runoff away from Tiffany Creek (HCS, 2021).

The Hydrogeologic Assessment report has been submitted under separate cover.

3.8 Landscape Analysis

The study area contains a portion of a significant woodland that is part of a larger contiguous woodland, greater than 23 hectares in area, that surrounds the study area. The significant woodland contains several trails connecting to HCA owned lands, with some privately owned properties consisting of single-family residential dwellings. Other large contiguous woodland features occur north of Lower Lions Club Road and south of Wilson Street; however, the presence of both roads have likely negatively affected connectivity of the woodlands for wildlife movement. It is expected that wildlife mortality rates due to vehicular traffic on both roads may increase during seasonal wildlife movement periods. The study area is at the eastern edge of the Significant Woodland, with recreational and residential development east of the study area. However, the significant woodland extends west with few anthropogenic disturbances, allowing opportunities for wildlife and plant movement as well as areas for sensitive wildlife to complete their life cycle processes. The subject property contains an existing hydro corridor which traverses the property from east to west immediately south of Lower Lions Club Road. This corridor receives regular maintenance through clearing by the utility provider, which has the potential to disturb the wildlife utilizing the study area.

4.0 Impact Analysis

4.1 Impact Assessment and Mitigation

The potential parking lot creation will result in impacts to the existing natural features. An assessment of the impacts (potential and actual) and mitigation measures are provided in *Table 6*. See *Appendix 11* for descriptions of criteria, impact ratings and analysis.

Table 6. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing	Vegetation Removal – clearing & grubbing *upland areas*	· Loss of vegetation and wildlife habitat	ST	P	SA	O	P D	H	N	Minor	· Avoid significant wildlife habitat · Design to avoid or minimize loss of vegetation and edge habitat · Revegetate areas with native species after site preparation · Establish and maintain buffers between development and existing natural communities. · Implement an invasive species removal plan for Common Buckthorn	None	· Install native plantings suitable to existing soil and moisture conditions between development and existing natural communities where able. · Monitor to ensure proper establishment. · Monitor success of invasive species removal and complete follow-up removals if necessary.

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)	Vegetation Removal – clearing & grubbing *upland areas (cont.)*	• Disturbance of wildlife species	ST	P	SA	O	P D	M	N	Minor	• Avoid removal or destruction of animal movement corridors • Time activities to avoid wildlife disturbance during important life stages (bird nesting, bat maternity) • Seek guidance from MECP regarding candidate bat maternity habitat and associated tree removals.	None	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)	Vegetation Removal – clearing & grubbing *upland areas (cont.)*	▪ Impacts to Nesting Birds Protected under the Migratory Bird Convention Act	ST	P	SA	O	P D	M	N	Severe	▪ Complete all vegetation removals outside of the Environment Canada breeding bird nesting window (April 1-August 31). ▪ If removals take place during the nesting window, conduct a bird nest survey to determine locations of active nests prior to construction works including installation of Erosion and Sediment Control (ESC) fence and any site clearing. ▪ Create nest protection zones where active bird nests are found.	None	▪ Monitor nests (as needed, e.g. weekly) until inactive.
	Grading	▪ Increased erosion	ST	P	SA	O	P D	M	Y	Moderate	▪ Develop & implement an ESC Plan per GGH Erosion and Sediment Guidelines (TRCA, 2019) ▪ Maintain or restore vegetative buffers	Minor-None	▪ Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
		▪ Increased soil compaction	LT	P	SA	O	P D	H	N	Moderate	▪ Control access and movement of equipment and people	Minor	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)	Grading (cont.)	▪ Changes to drainage ▪ Changes to surface runoff	LT	P	AA	O	P D	M	Y	Minor	▪ Schedule grading to avoid high runoff volumes ▪ Minimize changes to land contours and natural drainage	Minor-None	
		▪ Changes in soil moisture, tree cover and vegetation	LT	R	SA	O	P D	M	Y	Minor	▪ Minimize the area and duration of soil exposure ▪ Install native plantings suitable for the moisture and soil conditions where disturbance occurs ▪ Implement appropriate protocols from the Clean Equipment Protocol (Halloran et al., 2013)	Minor-None	▪ Monitor plantings to ensure proper establishment.
		▪ Disturbance to wildlife ▪ Alteration or destruction of wildlife habitat	ST	R	SA	O	P D	L	N	Minor	▪ Time activities to avoid sensitive periods (Breeding birds, bat maternity) ▪ Identify sensitive species prior to work and design grading to avoid disturbing sensitive species ▪ Conduct work outside timing windows of sensitive species	None	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
	Grading (cont.)	• Wildlife Entering Construction Areas	ST	R	SA	O	P D	L	N	Minor	• Develop & implement ESC plan per GGH erosion and sediment guidelines to exclude wildlife	None	• Monitor ESC fence weekly, and after major storm events for any breaks, and repair.
Construction	Parking Lot Construction (including Accessory uses and amenities)	• Increased erosion, sedimentation and turbidity	ST	P	SA	O	P D	M	N	Moderate	• Install native plantings suitable to the soil and moisture conditions between development and existing natural features. • Develop and implement ESC plan per GGH erosion and sediment guidelines.	Minor-None	• Monitor plantings to ensure proper establishment. • Monitor ESC fencing weekly, and after major storm events for any breaks, and repair.
		• Water contamination by oils, gasoline, grease and other materials	LT	P	SA	O	P D	M	Y	Moderate	• Control water contamination through good housekeeping practices such as designating an equipment storage area as far as possible from existing natural features, and ensuring all materials are stored in appropriate containers.	Minor-None	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Construction (cont.)	Parking Lot Construction (including Accessory uses and amenities) (cont.)	▪ Increased impervious surfaces causing, Increased runoff, reduced infiltration and groundwater discharge	LT	P	SA	O	P D	H	N	Minor	▪ Maintain or provide vegetative buffers ▪ Implement infiltration techniques ▪ Control quantity and quality of stormwater discharge ▪ Select semi-pervious materials (i.e., limestone screening, gravel)	Minor-None	
		▪ Loss of vegetation at forest edges and removal of dead trees for public safety	ST	P	SA	O	P D	L	N	Minor	▪ Install native plantings suitable to soil and moisture conditions to maintain sufficient buffer between parking lot and existing natural features.	Minor-None	▪ Monitor plantings to ensure proper establishment.
Post-Construction	Recreation activities (e.g. walking, cycling)	▪ Disturbance to Wildlife from sounds and activity associated with occupancy.	ST	P	SA	S	P D	M	N	Minor	▪ Restrict access and buffer natural areas to discourage landowner encroachment and improper use ▪ Provide appropriate signage at trail entrances	None	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Post-Construction (cont.)	Recreation activities (e.g. use of walking, cycling) (cont.)	• Trail development impacts including vegetation trampling, damage to root mat, soil disturbance	LT	P	SA	S	P D	H	N	Moderate	• Choose designs and materials that will minimize impacts • Configure alignment to minimize disturbance/removal of existing vegetation and confirmed SWH. • Assess health of trees and consider removals for public safety.	Minor	
		• Introduction of invasive & non-native plant species	LT	P	SA	C	P D	H	Y	Moderate	• Provide opportunities for people to report on natural areas • Educate the public through signage • Add boot scrubbers at trail entrances.	Minor-None	
		• Trampling of vegetation and chasing of wildlife by off-leash dogs	LT	P	SA	S	P D	H	N	Moderate	• Enforce proper trail use • Install signage identifying that all dogs on trails must be on-leash.	Minor	
		• Disturbance to wildlife during critical life stages	LT	P	SA	S	P D	M	Y	Moderate	• Locate development away from sensitive features • Educate the public through signage.	Minor-None	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Post-Construction (cont.)	Recreation activities (e.g. use of walking, cycling) (cont.)	▪ Attraction of some wildlife species and scavengers due to human activities, including garbage and bird feeders, causing increased human wildlife interactions	LT	P	SA	S	P D	M	N	Moderate	▪ Educate the public about attracting nuisance species through signage located within picnicking areas. ▪ Provide appropriate garbage receptacles and service.	Minor	
		▪ Increased access to sensitive sites, and destruction of sensitive features from trampling	LT	P	SA	S	P D	M	Y	Moderate	▪ Develop trails for walking and cycling that avoid sensitive habitat ▪ Enforce proper trail use ▪ Install buffer plantings to deter public from entering existing natural areas.	Minor-None	▪ Monitor plantings to ensure proper establishment.

4.2 Buffers

4.2.1 Woodlands

As indicated in Section 1.3.7 and the Rural Hamilton Official Plan Schedule B, the study area is within the boundaries of the Greenbelt Plant and NEP. Section 2.4.11 of the Rural Hamilton Official Plan indicates that where vegetation protection zones have not been specified by watershed and sub-watershed plans, Secondary or Rural Settlement Area Plan policies, the vegetation protection zone for Significant Woodlands shall be at minimum 30 metres measured from the dripline of trees at the woodland edge.

At this time a preliminary layout is not available; however, per *Figure* 1, a 10m buffer from the surveyed woodland dripline has been applied. Based on the field investigations completed, is it the opinion of AA that with the implementation of a reduced,10m buffer from the dripline of the significant woodland, within which no development is to occur, will protect the trees along the woodland edge and their root zones. Additionally, Sections 4.0 & 7.0 provide mitigation recommendations including the planting of native tree, shrub and herbaceous species to maintain and establish native buffers between potential development and the significant woodland. Provided native plantings are implemented where any disturbance from the potential development occurs, outside of the 10m buffer to the dripline, it is the opinion of AA that the Significant Woodland would not be negatively impacted.

If HCA proceeds with the creation of a parking area and a trail to connect to the existing Bruce and HCA trails is required, development within the Significant Woodland will be necessary. Section 2.4.8 of the Rural Hamilton Official Plan indicates that new development and site alteration shall not be permitted within or adjacent to key natural heritage features until it has been demonstrated there shall be no negative impacts on the natural features or their ecological functions. It is recommended that a Tree Preservation Plan be completed to assess the health and condition of the trees within the Significant Woodland and help to determine a trail alignment that would minimize removals of healthy trees and potential negative impacts. As noted in Section 3.4.2, the alignment of the trail should be aligned such that tree removals are targeted at White Ash trees in poor health wherever possible, with consideration for accessibility requirements of the HCA.

4.2.2 Development Limit

At the time of submission of this report, a preliminary layout was not available; therefore, potential impacts to the existing features due to development cannot be assessed in detail. To avoid potential impacts to the Significant Woodland, Significant Wildlife Habitat and reach of Tiffany Creek within the study area, it is recommended that

a potential parking area be located within the western graminoid meadow community and provide at minimum a 10m buffer to the existing features. The implementation of a variable buffer is recommended to allow the largest possible buffer to the features within the southern portion of the study area, while employing a 10m buffer along Lower Lions Club Road adjacent the western meadow community.

Due to established on-going maintenance of the existing hydro corridor, it is the opinion of AA that locating the potential parking area under the corridor will minimize disturbance and negative impact to the Significant Woodland and Significant Wildlife Habitat within the study area. Additionally, locating the potential parking area immediately south of Lower Lions Club Road will provide an opportunity to restore and/or enhance the southern portion of the western meadow, maintain the candidate snake hibernacula and potentially provide better connectivity throughout the woodland feature.

If HCA proceeds with the creation of a parking area and trail to connect to the existing Bruce and HCA trails, optimal buffer widths surrounding the existing features can be better determined through the detailed design stage.

4.3 Clean Equipment Protocol for Industry

Due to the presence of natural communities within and immediately adjacent to the study area and the potential to encroach within these communities, it is recommended that the protocols presented within the Clean Equipment Protocol for Industry (Halloran et al., 2013) are followed to minimize the potential of any invasive species being brought into the existing natural features throughout the duration of site works. Based on field investigations completed, the majority of the vascular plant species observed are native to the area; therefore, the implementation of the Clean Equipment Protocol is important for maintaining the existing species composition and ratio of native to exotic species. In addition, the implementation of buffer enhancements consisting of native species in the form of trees and shrubs as well as an herbaceous seed mix, where able, will help in preserving the existing conditions of the natural features and deter public encroachment.

4.4 Recommended Fisheries/Fish Habitat Mitigation Measures

Creation of a parking lot in the eastern meadow is unlikely to have any measurable impact on Tiffany Creek given the minimum >100m vegetated area that separates the meadow from the creek.

Creation of a parking lot within the western meadow would require attention to maintaining appropriate width of vegetated riparian buffer. Additionally, measures to

control runoff from the parking area surface would be required to avoid concentrating flow that could erode the site's clayey soils and deposit them in the creek where they would be transported to fish-bearing waters downstream. Runoff from the parking surface could be directed to perimeter swales that would provide a measure of temporary retention and a means of settling out particulates prior to discharge via outlet swale to the roadside ditch at Lower Lions Club Road. Although native soils likely do not support substantial infiltration, the excavation and construction of bioswales filled with pervious media and planted with wetland species could contribute to the detention of runoff and evapotranspiration of some portion of it.

5.0 Legislation and Policy Compliance

5.1 Fisheries Act, 1985

The Fisheries Act, 1985 states that *"No person shall carry one any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat."*

At this time a preliminary layout of the potential development is unavailable so a detailed analysis of how the Fisheries Act may relate to the development cannot be completed. However, the reach of Tiffany Creek within the study area flows through a portion of the Significant Woodland and is additionally protected by the recommended 10m buffer from the dripline of the woodland. With the recommended buffer provided, no direct impacts to the watercourse are anticipated. However, mitigation measures provided in Sections 4.0 & 7.0 should be implemented to ensure that indirect impacts are avoided. Provided adequate mitigation measures are implemented, it is the opinion of AA that the creation of a formal parking area will not contravene the Fisheries Act, 1985.

5.2 Species at Risk Act, 2002

The Species at Risk Act, 2002 states:

"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."

And;

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

Eastern Milksnake, listed as Special Concern under SARA, was observed within the study area during field investigations. As Eastern Milksnake is listed as Special Concern and the study area was not within federal lands, it is not afforded general habitat protection under SARA. Therefore, the potential creation of a formal parking area complies with the Species at Risk Act, 2002.

5.3 Provincial Policy Statement

The *Provincial Policy Statement* ([PPS] OMMHA, 2020) provides policy direction on matters of provincial interest related to land use planning and development. Section 2.1.5 of the PPS states that "*Development and site alteration shall not be permitted in: Significant Wetlands, south and east of the Canadian Shield; Significant Woodlands, Significant Valleylands, Significant Wildlife Habitat… unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological function."*

As a preliminary layout of the potential development is not currently available, a detailed analysis of how the PPS relates cannot be completed. However, it was determined that the study area contains Significant Woodlands and Significant Wildlife Habitat, in the form of Deer Wintering Area and Movement Corridors as well as Special Concern and Rare Species.

Based on LIO data, a Deer Wintering Area and associated Movement Corridor occurs throughout the forested and meadow communities south of Lower Lions Club Road; however, based on the characteristics Deer Wintering Areas and Movement Corridors require to be classified as SWH, AA is of the opinion that the meadow communities should not be included within the classification. Deer Wintering Areas consist of large woodlands, >100ha, where they are able to establish and maintain a network of trails leading them to areas of woody browse and other food sources (OMNRF, 2014). Movement Corridors typically consist of continuous forest cover with an undisturbed understorey, which provided White-tailed Deer with security from predators while migrating (OMNRF, 2014). For an area to function as a movement corridor, it requires forest habitat, often with terrain features such as ridges and valleys, with an understorey of various shrubs species (OMNRF, 2014). With the presence of wooded communities and meadows in the study area, it is the opinion of AA that since the meadows don't display characteristics of Deer Wintering Areas or Movement Corridors, they would be best suited for the potential creation of a formal public parking area.

The Sugar Maple-Hardwood Deciduous Forest has also been classified as Significant Wildlife Habitat, in the form of Special Concern and Rare Species habitat, as Eastern

Wood-pewee was observed in the community during breeding bird surveys. It is likely that if a formal public parking area is created, a trail to connect to the existing Bruce and HCA trails south of the parking area will be required. At this time is it unknown whether tree removal from this community will be required to accommodate the potential formal public parking area; however, tree removal will likely be necessary to create a trail connection. To minimize any negative impacts to the SWH, it is recommended that the meadow communities be considered for the location of the potential public parking area and a Tree Preservation Plan be completed to assess potential trail alignments and the conditions of existing trees.

The eastern-most Graminoid Meadow community has been classified as Significant Wildlife Habitat, in the form of Special Concern and Rare Species habitat as multiple Monarchs were observed feeding and utilizing the community during field investigations (*Figure 3*). With the known presence of Common Milkweed within the eastern-most graminoid meadow, it is considered suitable for all life cycle needs of Monarch. Therefore, it is recommended that to minimize potential negative impacts, the formal public parking area be located within the western-most meadow community. Additionally, compensation in the form of compensation of known species beneficial to Monarch should be considered where appropriate, to reduce potential negative impacts.

It is the opinion of AA that with the implementation of the mitigation measures provided in Sections 4.0 & 7.0, there are opportunities for the potential creation of a formal public parking area while avoiding any negative impacts to the Significant Woodland or Significant Wildlife Habitat identified within the study area. Thus, complying with the PPS.

5.4 Endangered Species Act

The Endangered Species Act, 2007 (ESA) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (MNRF, 2021). As both Eastern Wood-pewee and Monarch are listed as Special Concern, they are not afforded habitat protection under the Endangered Species Act. Therefore, the potential creation of a formal parking area complies with the ESA, 2007.

5.5 Niagara Escarpment Plan (2020 Consolidation)

Plan Map 2 of the Niagara Escarpment Plan (NEP) indicates that the study area contains lands designated as Escarpment Protection Area and Escarpment Natural Area. The study area contains a portion of a Key Natural Heritage Feature in the form of a woodland.

Section 2.7.2 states:
"Development is not permitted in key natural heritage features with the except of the following, which may be permitted subject to compliance with all other relevant policies of this Plan:

j) …Infrastructure, where the project has been deemed necessary to the public interest and there is no other alternative."

Section 2.7.6 states:
"If in the opinion of the implementing authority, a proposal for development within 120m of a key natural heritage feature has the potential to result in a negative impact on the feature and/or its functions, or on connectivity between key natural heritage features and key hydrologic features, a natural heritage evaluation will be required that:

e) Demonstrates that the development, including any alteration of the natural grade, or drainage, will protect the key natural heritage feature or the related functions of that feature;
f) Identifies planning, design and construction practices that will minimize erosion, sedimentation and the introduction of nutrients or pollutants and protect and, where possible, enhance or restore the health, diversity and size of the key natural heritage feature;
g) Determines the minimum vegetation protection zone required to protect and where possible enhance the key natural heritage feature and its functions; and
h) Demonstrates that the connectivity between key natural heritage features and key hydrologic features located within 240m of each other will be maintained and where possible enhanced for the movement of native plants and animals across the landscape."

With a preliminary layout unavailable at this time, it cannot be determined whether woodland removals will be necessary to accommodate a potential public parking area. The woodland dripline was verified and surveyed and is shown on *Figure 1,* along with a proposed 10m buffer from the edge of the woodland dripline. If a parking area within the study area is pursued, a trail connection to the existing Bruce and HCA trails may be necessary. This connection may require the removal of a portion of the Significant Woodland.

In order to reduce potential negative impacts, and preserve the existing Significant Woodland, it is recommended that a formal public parking area be located within the western-most meadow community. It is the opinion of AA that provided the mitigation measures detailed in Sections 4.0 & 7.0 are implemented, it is unlikely that the creation of a formal public parking area within the western-most meadow community will result in negative impacts to the significant woodland or its ecological function. If HCA decides to

proceed with the creation of a parking area at 892 Lower Lions Club Road, a Tree Inventory and Preservation plan may be required if removals are necessary to accommodate the proposed layout and trail connection.

5.6 Hamilton Conservation Authority

Per the HCA's Online Regulation Areas Mapping, the study area is located partially within the HCA's Regulated Area and contains a reach of Tiffany Creek. As noted above, the study area also contains Significant Woodlands and a portion of the Ancaster Creek Valley Life Science Area of Natural and Scientific Interest.

Section 3.1.4 of the Planning & Regulation Policies and Guidelines (2011) states:

c) "Development and/or site alteration will not be permitted in significant woodlands unless it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions.

d) Development and/or site alteration will not be permitted on lands adjacent to significant woodlands (within 50m of the boundary of the woodland) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions…"

Section 3.1.6 states:

c) *"The Authority will direct development and/or site alteration away from Provincially Significant Areas of Natural and Scientific Interest (ANSIs) unless it can be demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or the ecological functions."*

d) *Development and/or site alteration will not be permitted on lands adjacent to Provincially Significant ANSIs (within 50m of the boundary of the area) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or on their ecological functions."*

As a preliminary layout is unavailable, potential impacts cannot be analyzed in detail. However, a 10m recommended buffer has been applied to the verified woodland dripline to avoid negative impacts to the existing Significant Woodland and the root zones of the trees. With the areas being considered for the potential formal public parking area being south of Lower Lions Club Road, it is likely that the development limit will be greater than 50m from the limit of the existing Area of Natural and Scientific Interest. If HCA proceeds with the development of a preliminary site plan for the formal public parking area at this location, it is recommended that it be located outside of the recommended 10m dripline from the Significant Woodland, and that the mitigation

measures provided in Sections 4.0 & 7.0 are implemented to ensure the development does not result in any negative impacts to the Significant Woodland or its ecological functions. In the event that tree removals are required, AA recommends that a Tree Inventory and Preservation Plan be completed to ensure any tree removals are being adequately compensated for.

5.7 Rural Hamilton Official Plan (2018 Consolidation)

The Rural Hamilton Official Plan Schedule A indicates that the study area is within the limits of the NEP and the Greenbelt Plan. Schedule B indicates that the study area contains Core Areas. Furthermore, Schedules B-1, 2, 6, indicate that the study area is partially within a Key Natural Heritage Feature Life Science ANSI, within an Environmentally Significant Area and within Significant Woodlands, respectively.

Chapter C, Section 2.3.3 states:
"Any development or site alteration within or adjacent to Core Areas shall not negatively impact their environmental features or ecological functions."

Chapter C, Section 2.3.4 states:
"New development or site alteration shall not be permitted within provincially significant wetlands, significant coastal wetlands, or significant habitat for threatened or endangered species, except in accordance with applicable provincial and federal regulations with respect to significant habitat of threatened or endangered species."

Per the Rural Hamilton Official Plan (2018 Consolidation), Core Areas contain key natural heritage features, which include significant woodlands and life science areas of natural and scientific interest. As a preliminary layout is unavailable, AA cannot provide details regarding potential impacts to the existing Core Areas. *Figure 1* details the verified woodland dripline, as well as an applied 10m recommended buffer to the dripline to reduce potential negative impacts to the edge trees and their root zones. If HCA proceeds with a preliminary layout within this study area, it is recommended that it be located outside of the 10m recommended buffer to the woodland dripline. If encroachment within the 10m dripline buffer is necessary, more detailed mitigation measures may be necessary to ensure no negative impact to the significant woodland or its ecological functions. If tree removals are required to accommodate the formal public parking area and/or trail connection, AA recommends that a Tree Inventory and Preservation Plan be completed to ensure the alignment minimizes impacts to the Significant Woodland and trees removed are being properly compensated for.

5.8 City of Hamilton Zoning By-law 05-200 (2019 Consolidation)

The City of Hamilton Interactive Zoning Mapping indicates that the study area is zoned as Conservation/Hazard Land (P6).

Section 7.6 states:
"New development within the P6 Zone may require the approval of a Site Plan Control application, including the submission of an Environmental Impact Statement, to demonstrate that there will be no negative impact on Core Area features, as identified in the Rural Hamilton Official Plan, as a result of the proposed development, prior to the development proceeding."

Section 7.6.1 states permitted uses include Agriculture, Conservation, Flood and Erosion Control Facilities, Recreation (Passive), Secondary Uses to Agriculture and Single Detached Dwelling.

Recreation (Passive) is defined as:
"Shall mean activities that involve relatively unorganized recreational pursuits, generally in the outdoors, such as walking, sitting and picnicking."

Since the potential expansion and formalization of the existing parking area will better support Recreation (Passive), consultation with the City of Hamilton may be required to ensure the potential works meet the permitted uses defined in Section 7.6.1.

6.0 Summary and Conclusions

It is the opinion of AA that the measures to mitigate construction and post-construction impacts from the potential creation of a formal public parking area and trail connection will result in minimal negative impacts to natural heritage features identified within and adjacent the potential limits of development, provided the recommended mitigation measures are implemented. Below is a summary of the identified Natural Heritage features and constraints, and associated mitigation and/or protection measures.

6.1 Biological Constraints

1. Surveys were conducted for Ecological Land Classification and Vegetation (ELC and Vascular Plant List), Breeding Birds, Significant Wildlife Habitat and Species at Risk Habitat and Aquatic Habitat Assessment as well as a Desktop Hydrogeological Assessment.
2. Eastern Wood-pewee, listed as Special Concern under the ESA and SARA, was observed within the study area. Suitable habitat for Eastern Wood-pewee was identified within the Sugar Maple-Hardwood and Lowland Deciduous Forests.
    - Suitable habitat for Bat Species at Risk was identified within the Sugar Maple-Hardwood and Willow Lowland Deciduous Forests, White Pine-Hardwood Mixed Forest and the Black Walnut Deciduous Woodland.
3. Eastern Milksnake, listed as Special Concern under SARA, was observed along the southern edge of Lower Lions Club Road.
4. Several forms of Significant Wildlife Habitat have been confirmed within the study area:
    - Deer Winter Congregation Areas & Movement Corridors were identified through LIO within the Woodland and Meadow communities in the study area.
    - Habitat of Special Concern & Rare Wildlife Species was for Eastern Wood-pewee and Monarch was confirmed within the Sugar Maple-Hardwood Deciduous Forest and eastern-most Graminoid Meadow, respectively.
5. Candidate Significant Wildlife Habitat was identified for Bat Maternity Habitat within the forested communities in the study area.

6.2 Impact Assessment

1. Potential impacts from the creation of a formal public parking area were assessed to determine their extent (see *Table 6*), and mitigation guidelines have been provided.

2. Impacts primarily involve vegetation removal, site grading, erosion and sedimentation, and wildlife disturbance.

3. There are opportunities to limit public encroachment into the existing natural features through the installation of educational signage and the installation of native vegetation buffers to deter the public from entering trails outside of formal entrances.

6.3 Legislation and Policy Compliance

1. The *Fisheries Act, 1985* does not permit any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat. Since Tiffany Creek is protected by the Significant Woodland and 10m buffer to the dripline, it is the opinion of AA that provided the mitigation measures in Sections 4.0 & 7.0 are implemented, the potential development will not result in native impacts to fish or their habitat.
2. The *Species at Risk Act, 2002* provides protection to species designated as Threatened or Endangered on federal lands. As no Species at Risk listed as Endangered or Threatened under SARA were identified within the limits of the study area, the potential creation of a formal parking area complies with the Species at Risk Act, 2002.
3. The *Provincial Policy Statement (2020)* does not permit development and site alteration within Significant Woodlands or Significant Wildlife Habitat unless it has been demonstrated that there will be no negative impacts. A preliminary layout has not been provided; however, in order to avoid negative impacts to the Significant Woodland and its ecological functions, as well as the confirmed Significant Wildlife Habitat, it is recommended that the potential development be located within the western-most meadow community outside of the recommended 10m dripline buffer. If a trail connection is necessary, a Tree Preservation Plan should be completed to ensure the alignment minimizes negative impacts and that the trees removed are compensated for. It is the opinion of AA that locating the potential parking area in this location and minimal removal of trees to accommodate a trail connection will not result in negative impacts to the Significant Woodland or Significant Wildlife Habitat, thus complying with the PPS.

4. The *Endangered Species Act (2007)* does not permit the killing, harming, harassing or capturing of a Species at Risk in Ontario, or the damaging or destroying of their habitat. Special Concern species were identified within the study area but do not receive habitat protection per the ESA. Therefore, the potential development complies with the ESA (2007).
5. Without a preliminary layout, compliance with the Niagara Escarpment Plan (2020 Consolidation), HCA's *Planning & Regulation Policies and Guidelines* (2011), and Rural Hamilton Official Plan (2018 Consolidation) cannot be confirmed. However, to avoid negative impacts it is recommended that the potential parking area be located outside of the recommended 10m buffer to the Significant Woodland within the western Meadow community. A connection from the parking area to the existing Bruce and HCA trails may be necessary, and may require removal of some of the Significant Woodland. It is the opinion of AA that provided the mitigation measures recommended in Sections 4.0 & 7.0 are implemented and a Tree Preservation Plan is completed for the trail connection, negative impacts to the Significant Woodland and/or its ecological function can be minimized and potentially avoided.

7.0 Recommendations

The following recommendations are provided to ensure protection of natural heritage features and function within and adjacent the potential parking area.

1) Locate the potential parking area within the western meadow community beneath the existing hydro corridor to minimize potential impacts to the Significant Woodland, avoid removal of Significant Wildlife Habitat for Rare and Special Concern species (Monarch) and maintain the candidate snake hibernacula.

    a) Implement a variable buffer, if feasible based on detailed design, to provide an opportunity for restoration and enhancement of the southern portion of the western meadow.

2) Implement Erosion and Sediment Control Plan (ESC) per the Erosion & Sediment Control Guideline for Urban Construction (TRCA, 2019).

    a) Sediment control fencing to be installed as shown on a Detailed Site Plan. Installed sediment control fencing is to be inspected to ensure that it is in place and functioning as designed prior to any activities or construction.

3) Minimize tree loss through the completion of a Tree Preservation Plan including the installation of a silt and sediment control barrier consisting of a combination of silt fencing as well as orange construction fencing. This fencing barrier is to be installed at least 10m beyond the dripline of remaining trees wherever possible. Ensure that the location and details pertaining to the tree protection measures are accurately outlined and shown within the Tree Protection Plan and Detailed Site Plan.

    a) Any tree proposed for removal should be inspected for bat maternity habitat by a qualified biologist.

    b) Sediment control barrier to be inspected weekly during construction and following a storm event of 25mm of rainfall within 24 hours.

4) ESC measures to be kept in place until construction is completed, and disturbed soils have been vegetated.

5) The area of construction disturbance shall be kept to a minimum;

6) Control the access and movement of equipment and people;

a) Implement appropriate protocols outlined in the Clean Equipment Protocol for Industry (Halloran et al., 2013);

b) Equipment is to be limited to a pre-determined construction allowance area and is not to encroach within the adjacent natural communities.

7) Works and equipment storage are to be located as far as possible from the existing natural features as possible.

8) Accumulated sediment and debris to be removed before silt fence is removed.

9) All disturbed areas to be re-vegetated or restored with site appropriate indigenous plants wherever opportunities exist.

10) Install vegetated swales to detain surface runoff and prevent the formation of eroded gullies. Drainage from the swales is recommended to outlet to the roadside ditch at Lower Lions Club Road.

11) If removal of the existing rock pile is proposed, complete studies to determine whether the feature provides significant wildlife habitat in the form of Reptile Hibernaculum.

12) Examine any trees proposed for removal for candidate bat maternity habitat characteristics.

13) Time activities to avoid wildlife disturbance during critical life stages:
    a) Avoid removal of trees and vegetation during the generalized breeding bird nesting period from April 1 to August 31. If removal of vegetation is to occur during the general nesting period, a nest search should be completed by a skilled and experienced Biologist.

14) Align required trail connection so tree removals target existing White Ash in poor or dead condition where feasible.

15) Choose designs and materials that will minimize impacts.

16) Establish educational signage pertaining to proper trail use, encroachment into the surrounding natural features and the negative effects of feeding and/or approaching wildlife.

Prepared by:

ABOUD & ASSOCIATES INC.

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OMNR Certified Ecological Land Classification
OMNR Certified Wetland Evaluation

Reviewed by:

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OMNR Certified Wetland Evaluator

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Hall, Matthew. Director; Capital Projects & Strategic Services. Hamilton Conservation Authority. Email & In-person Correspondence.

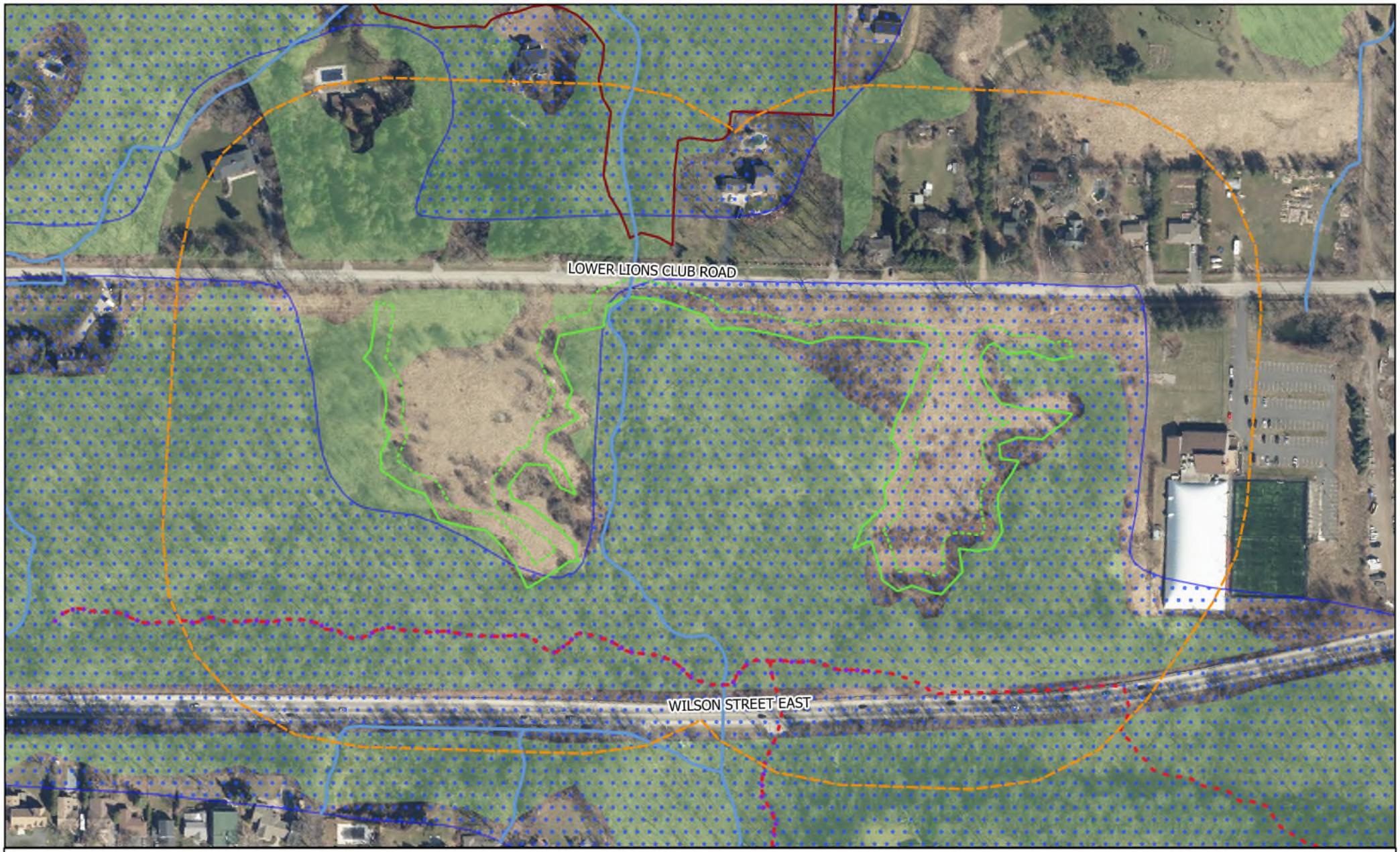
McDonell, Lesley. Terrestrial Ecologist. Hamilton Conservation Authority. Email & In-person Correspondence.

Oaks, Colin. Aquatic Ecologist. Hamilton Conservation Authority. Email & In-person Correspondence.

Plosz, Catherine. Natural Heritage Planner. City of Hamilton. 2021. Email & In-person Correspondence

Smith, Kathy. Design Projects Manager. Hamilton Conservation Authority. Email & In-person Correspondence.

FIGURES



LEGEND

- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- WOODLAND
- VERIFIED WOODLAND DRIPLINE
- WOODLAND DRIPLINE BUFFER (10M)
- ENVIRONMENTALLY SENSITIVE AREA
- AREA OF NATURAL AND SCIENTIFIC INTEREST

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed October, 2021.
2. Trails andwatercourses provided by Hamilton Conservation Authority, March 2021
3. Environmentally Sensitive Areas & woodlands provided by the City of Hamilton, March 2021

Title:

LIMITS OF NATURAL FEATURES

Project:

892 LOWER LIONS CLUB RD
CITY OF HAMILTON

Date: NOVEMBER 2021
Project: AA21-010A
Scale: 1 : 3000

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
190 Nicklin Road, Guelph, Ontario, N1H 7L5 .519.822.6839 .www.aboudng.com

Figure No: 1

POLYGON	ELC CODE	COMMUNITY DESCRIPTION
A	MEGM 3	Dry- Fresh Graminoid Meadow
B	FODM 5-9	Dry- Fresh Sugar Maple-Hardwood Deciduous Forest
C	WODM 4-4	Dry- Fresh Black Walnut Deciduous Woodland
D	FOMM 2	Dry- Fresh White Pine-Hardwood Mixed Forest
E	FODM 7-3	Fresh- Moist Willow Lowland Deciduous Forest
F	CVR_3	Single Family Residential
G	CGL_4	Recreational

LEGEND

- STUDY AREA
- BREEDING BIRD POINT COUNT
- ECOLOGICAL LAND CLASSIFICATION

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed October, 2021.
2. Ecological Land Classification provided by Aboud & Associates, 2021

Title:
EXISTING CONDITIONS & SURVEY LOCATIONS

Project:
892 LOWER LIONS CLUB RD
CITY OF HAMILTON

Date: NOVEMBER 2021
Project: AA21-010A
Scale: 1 : 3000

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Figure No: 2

LEGEND

- STUDY AREA
- EASTERN MILKSNAKE
- EASTERN WOOD-PEWEE
- CANDIDATE BAT MATERNITY COLONY
- DEER WINTERING AREA & MOVEMENT CORRIDOR
- CANDIDATE REPTILE HIBERNACULUM
- SPECIAL CONCERN & RARE SPECIES EASTERN WOOD-PEWEE
- SPECIAL CONCERN & RARE SPECIES MONARCH

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed October, 2021.
2. Special Concern & Rare Species, Candidate Bat Maternity Colony, & Candidate Reptile Hibernaculum provided by Aboud & Associates, 2021
3. Deer Wintering Habitat & Movement Corridors provided by Land Information Ontario

Title:

SIGNIFICANT SPECIES & SIGNIFICANT WILDLIFE HABITAT

Project:

892 LOWER LIONS CLUB RD
CITY OF HAMILTON

Date: NOVEMBER 2021
Project: AA21-010A
Scale: 1 : 3000

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Figure No: 3

LEGEND

STUDY AREA

CANDIDATE SAR HABITAT

MEADOW/EDGE

WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed October, 2021.
2. Candidate SAR Habitat provided by Aboud & Associates, 2021

Title:

CANDIDATE SPECIES AT RISK HABITAT

Project:

892 LOWER LIONS CLUB RD
CITY OF HAMILTON

Date: NOVEMBER 2021

Project: AA21-010A

Scale: 1 : 3000

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Figure No: 4

APPENDIX 1

Terms of Reference and Approvals

ABOUD & ASSOCIATES INC.
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April 5, 2021

Our Project No.: AA21-010A
Sent by Email: catherine.plosz@hamilton.ca

Catherine Plosz
Natural Heritage Planner
City of Hamilton
71 Main Street West
Hamilton, ON L8P 4Y5

Re: Hamilton Conservation Area Additional Parking- 892 Lower Lion's Club Road, City of Hamilton
Terms of Reference - Scoped Environmental Impact Study

Dear Ms.Plosz:

This document outlines the Terms of Reference (ToR) of the scoped Environmental Impact Study (EIS) to assess the environmental conditions of the study area surrounding the Lower Lion's Club Road site, within the limits of the Dundas Valley Conservation Area, and its suitability in accommodating additional public parking. Please review the terms and circulate to the City of Hamilton staff for discussion and approval.

BACKGROUND

The Hamilton Region Conservation Authority (HRCA) is assessing the suitability of lands surrounding 892 Lower Lion's Club Road for accommodating additional public parking. Due to the study lands being partially within and adjacent to designated natural features, a scoped EIS is required to evaluate potential impacts to existing natural heritage features. A proposed layout has not been developed at this time,

Schedule A of the Rural Hamilton Official Plan (2018 consolidation) indicates that the study area is within the limits of the Niagara Escarpment Plan.

Schedule B of the Rural Hamilton Official Plan (2018 consolidation) indicates the study lands are designated as Core Areas. Per Schedules B-2 and B-6, the study area contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls), respectively. The study area is also adjacent to a reach of Tiffany Creek.

.

The study area is also within the Natural Heritage System as designated by the Ministry of Natural Resources and Forestry.

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial photography of the subject site.
- HRCA EIS Request for Proposals (RFP 2-1414-20-02)
- Lower Lions Club Road Property Drawing G02 (RFP 2-1414-20-02)
- HRCA Online Regulated Areas Mapping (accessed March 11, 2021) of natural heritage features (e.g. regulated limit, MNRF wetlands, watercourses).
- HRCA Planning & Regulation Policies and Guidelines (October 11, 2011)
- Background data provided by the HRCA, including vegetation, birds, herpetofauna, lepidoptera, odonata and mammal occurrences within the Ancaster ESA.
- Rural Hamilton Official Plan (2018 Consolidation)
- Natural Heritage Information Center, Make-a-map, accessed March 11, 2021.
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed March 11, 2021.
- Bird Studies Canada. Atlas of Breeding Birds of Ontario. 2008.
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- iNaturalist Species Observations (accessed March 11, 2021).
- eBird Species Observations (accessed March 11, 2021).
- Ontario Butterfly Atlas (accessed March 11, 2021).

STUDY AREA

The study area for field study purposes is the EIS Study Area defined by HRCA in the Lower Lion's Club Road Property Drawing G02 (RFP 2-1414-20-02) and adjacent lands up to 120m, where access is permitted (*Figure 1*).

As needed, the lands adjacent to the study area may require further access to assist with understanding the characteristics and functions of natural heritage features. Where access is not available, information will be acquired through existing background information and what can be observed from the edge of the accessible lands.

Lands outside of the field study area, or where access is not provided, will be reviewed from existing background information (e.g. City of Hamilton Official Plan).

PLANNING CONTEXT

Provincial Policy Statement (2020)

The Provincial Policy Statement (2020) indicates that natural heritage features shall be protected for the long term. Development may be permitted within or adjacent to Natural Heritage Features where it can be demonstrated that there will be no negative impacts on the natural heritage features or their ecological functions.

Niagara Escarpment Plan (2020 Consolidation)

Plan Map 2 of the Niagara Escarpment Plan (NEP) indicates that the study area contains lands designated as Escarpment Protection Area and Escarpment Natural Area. The study area is adjacent a Key Natural Heritage Feature in the form of a woodland. Section 1.4 indicates that the policies surrounding the Escarpment Protection Area aim to protect and enhance natural and hydrologic features and the open landscape character of the Escarpment and lands in its vicinity.

Section 2.7.2 states:

"Development is not permitted in key natural heritage features with the exception of the following, which may be permitted subject to compliance with all other relevant policies of this Plan:

a) *Development of a single dwelling and accessory facilities outside a wetland on an existing lot of record, provided that disturbance is minimal and where possible temporary;*
b) *Forest, fisheries and wildlife management to maintain or enhance the feature;*
c) *Conservation and flood or erosion control projects, after all alternatives have been considered;*
d) *The Bruce Trail, and other trails, boardwalks and docks on parks and open space lands that are part of the Parks and Open Space System; and*
e) *Infrastructure, where the project has been deemed necessary to the public interest and there is no other alternative."*

Section 2.7.6 states:

"If in the opinion of the implementing authority, a proposal for development within 120m of a key natural heritage feature has the potential to result in a negative impact on the feature and/or its functions, or on the connectivity between key natural heritage features and key hydrologic features, a natural heritage evaluation will be required that:

a) *Demonstrates that the development, including any alteration of the natural grade or drainage, will protect the key natural heritage feature or the related functions of that feature;*
b) *Identifies planning, design and construction practices that will minimize erosion, sedimentation and the introduction of nutrients or pollutants and protect and, where possible, enhance or restore the health, diversity and size of the key natural heritage feature;*

c) *Determines the minimum vegetation protection zone required to protect and where possible enhance the key natural heritage feature and its functions; and*

d) *Demonstrates that the connectivity between key natural heritage features and key hydrologic features located within 240m of each other will be maintained and where possible enhanced for the movement of native plants and animals across the landscape."*

Rural Hamilton Official Plan (2018 Consolidation)

The Rural Hamilton Official Plan Schedule A indicates that the study area is within the limits of the NEP and the Greenbelt Plan.

Chapter C, Section 1.1.1 states:
"Any development within the Niagara Escarpment Plan Area, as shown on Schedule A-Provincial Plans, shall meet the requirements of this Plan and the Niagara Escarpment Plan, and the Parkland, Open Space and Trails policies of the Greenbelt Plan. Where there is a discrepancy between this Plan and the Niagara Escarpment Plan, and the Parkland, Open Space and Trails policies of the Greenbelt Plan, the most restrictive policies will prevail."

Schedule B indicates the study area contains Core Areas. Furthermore, Schedules B-1, 2, 6, indicate that the study area is partially within a Key Natural Heritage Feature Life Science ANSI, within an Environmentally Significant Area and within Significant Woodlands, respectively.

Chapter C, Section 2.3.3 states:
Any development or site alteration within or adjacent to Core Areas shall not negatively impact their environmental features or ecological functions."

Chapter C, Section 2.3.4 states:
"New development or site alteration shall not be permitted within provincially significant wetlands, significant coastal wetlands, or significant habitat or threatened or endangered species, except in accordance with applicable provincial and federal regulations with respect to significant habitat of threatened or endangered species."

Hamilton Region Conservation Authority

Per the HRCA's Online Regulation Areas Mapping, the study area is located partially within the HRCA Regulated Area and contains a portion of an identified watercourse. The study area also contains Significant Woodlands and a portion of an Area of Natural and Scientific Interest.

Section 3.1.4 states:

a) *"Development and/or site alteration will not be permitted in significant woodlands unless it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions.*

b) *Development and/or site alteration will not be permitted on lands adjacent to significant woodlands (within 50m of the boundary of the woodland) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions …"*

Section 3.1.6 states:

a) *"The Authority will direct development and/or site alteration away from Provincially Significant Areas of Natural and Scientific Interest (ANSIs) unless it can be demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or the ecological functions."*

b) *Development and/or site alteration will not be permitted on lands adjacent to Provincially Significant ANSIs (within 50m of the boundary of the area) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or on their ecological functions."*

City of Hamilton Zoning By-law 05-200 (2005)

The City of Hamilton Interactive Zoning Mapping indicates that the majority of the study area is zoned as Conservation/Hazard Land (P6) with an area bordering the north and east limits zoned as Agriculture (A1).

Section 7.6 states:
"New development within the P6 Zone may require the approval of a Site Plan Control application, including the submission of an Environmental Impact Statement, to demonstrate that there will be no negative impact on Core Area features, as identified in the Rural Hamilton Official Plan, as a result of the proposed development, prior to the development proceeding."

Section 7.6.1 states permitted uses include Agriculture, Conservation, Flood and Erosion Control Facilities, Recreation (Passive), Secondary Uses to Agriculture and Single Detached Dwelling.

BACKGROUND REVIEW

Additional background natural heritage information related to the subject property and adjacent lands identified the following information:

1. The Ontario Reptile and Amphibian Atlas shows within a 10 km square of the subject lands, the recent and historical presence of 26 species within the 10km square containing the study area, including six species of Conservation Concern (Jefferson Salamander, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Milksnake and Western Chorus Frog).

2. The Natural Heritage Information Centre indicates the potential presence of 20 species of Conservation Concern within 1km of the study area (Nine-spotted Lady Beetle, American Burying Beetle, Transverse Lady Beetle, Snapping Turtle, Timber Rattlesnake, Northern Bobwhite, Cerulean Warbler, Louisiana Waterthrush, Eastern Meadowlark, Bobolink, Wood Thrush, Eastern Wood-pewee, Yellow-breasted Chat, Spotted Wintergreen, Broad Beech Fern, Perfoliate Bellwort, Eastern Flowering Dogwood, Northern Hawthorn, American Chestnut and Butternut).

3. The Ontario Breeding Bird Atlas shows within the 10km square containing the study area, the recent presence of 114 species of birds including 12 species of Conservation Concern (Barn Owl, Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Golden-winged Warbler, Louisiana Waterthrush, Yellow-breasted Chat, Grasshopper Sparrow, Bobolink and Eastern Meadowlark).

4. eBird records from the nearby Dundas Valley CA- Tiffany Falls hotspot (~400m from the study area) indicates the recent and historical presence of 102 species, including seven species of Conservation Concern (Eastern Wood-pewee, Louisiana Waterthrush, Chimney Swift, Barn Swallow, Wood thrush, Eastern Meadowlark and Bobolink).

5. iNaturalist observations within 2km of the area of works indicate the recent presence of 31 species of vascular plants, 15 species of insects six species of fungi, fives species of mosses and lichens, four species of reptiles/amphibians, three species of mammals and two species of birds. None of the species observed are considered species of Conservation Concern.

6. The Ontario Mammal Atlas indicates the recent and historical presence of 25 mammal species within the 10km square containing the study area with one species of Conservation Concern (Little Brown Myotis).

7. The Ontario Butterfly Atlas indicates the recent and historical presence of 72 butterfly species within the 10km square containing the study area one species of Conservation Concern (Monarch).

8. Background information provided by HRCA indicates the recent and historical presence of the following within the Ancaster ESA:

    a. 60 species of birds, including three species of Conservation Concern (Louisiana Waterthrush, Eastern Wood-pewee and Chimney Swift).
    b. 13 species of reptiles and amphibians, including two species of Conservation Concern (Midland Painted Turtle and Snapping Turtle)
    c. 41 species of butterflies and moths, including one species of Conservation Concern (Monarch)
    d. 10 species of mammals, none of which are species of Conservation Concern.

This information indicates that there is a potential presence of additional natural heritage features and constraints that may require investigation and/or comment.

PROPOSED TERMS OF REFERENCE

Scoped Environmental Impact Assessment

To fulfill the requirements of this study, we will:

1. Review background information
    a. Review existing terrestrial and aquatic ecology background information.
    b. Review wildlife atlases and citizen science databases.
    c. Review existing mapping data, GIS layers, planning and land use data.
    d. Review Federal, Provincial and Local land use policies and by-laws and City of Hamilton EIS requirements.
2. Complete a MNRF Request for Information to acquire information pertaining to the adjacent ANSI and watercourse, including fish dot information, if available.

3. Complete an MECP Request for Information and determine if any Species at Risk have been identified in the study area, and any studies required by the MECP under the ESA (2007)

4. Conduct 3 site visit to characterize the vegetation communities using the ELC system (MNRF) and complete a three-season (spring, summer and fall) botanical inventory of the Study Area.

5. Conduct a breeding bird survey of the study area, following the protocol of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2004), including both point counts and area searches. The breeding bird survey requires two, focused, early morning site visits during the period between late May and early July.

6. Investigate the study area for habitat that may support important life stages for Species at Risk identified during SAR site screening.
7. Investigate the study area for the presence of significant wildlife habitat; and complete a site assessment for all potential SWH (e.g. Bat Maternity Habitat, Amphibian Breeding Habitat, Turtle nesting, habitat for species of Conservation Concern) using the SWH Criteria schedules for Ecoregion 6E (2015).
8. Conduct one site visit to characterize the adjacent watercourse and identify fisheries constraints.
9. Conduct one site visit to investigate the hydrologic features and drainage present on site.
10. Conduct one site visit to inspect and assess the surficial soil conditions, possible groundwater seepage areas, and possible connection to adjacent surface water features.
11. Woodland Limit: Pre-stake the woodland dripline within the study area, and coordinate with the City to field-verify the woodland limit. Woodland limit to be surveyed by AA using a Trimble GeoXH GPS with submeter accuracy.
12. Record observations of incidental wildlife during site visits.
13. Communications with project team, HRCA and City as needed.
14. Analyze findings of field investigations and prepare mapping that shows:
    a. Identified natural heritage features, and functions and landscape level features.
    b. Potential development.
    c. ELC vegetation communities.
    d. Location of Breeding Bird Surveys
    e. Verified woodland limit.
    f. Locations of SAR habitat and SWH.
    g. Any significant observations.
    h. Other noteworthy features, as needed.

i. Locations of other natural heritage features from background literature searches (e.g. mammal atlas, herpetofaunal atlas, City OP, Zoning Bylaw.)

15. Complete an analysis of land uses surrounding the study areas.
16. Complete an ecosystem analysis of the study areas within the larger regional ecosystem.
17. Conduct an impact assessment by reviewing the potential development's direct, in-direct, and induced (i.e. residual, ongoing) impacts on the identified natural features within the study area. Conduct an analysis of the potential development and provide recommendations to minimize impacts as they relate to natural heritage features, including the provision of buffers where feasible.
18. Provide policy rationale for expected impacts to natural heritage features (e.g. removal of trees, disturbance to the adjacent watercourse and grading to accommodate the potential development, requirements).
19. Mitigation, Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments and mitigation measures may be needed to protect the existing natural features within the study area. Provide rationale and recommendations for tree compensation (e.g. where, why and how much).
20. With input from HRCA staff, advise on a recommended monitoring program for pre-construction, construction, and post-construction phases of the potential development.
21. Comment and advise on any other studies, permits and approvals that may be necessary by HRCA for the potential development.
22. Prepare a report of the scoped EIS that includes background information, methods, existing conditions, the potential development, impact assessment and mitigation measures, and appendices of field studies (e.g. ELC, flora list, Breeding Bird studies).
23. Prepare a scoped hydrogeological report under separate cover, discussing the hydrogeological conditions, the subsurface stratigraphy, and the soil physical properties with comparison to regional hydrogeology and soil stratigraphy.

Yours truly,

ABOUD & ASSOCIATES INC.

Shannon Davison, B.Env., Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner In-Training #0499
OMNR Certified Ecological Land Classification
OMNR Certified Wetland Evaluation

Cc: Kathy Smith, HRCA
Matt Hall, HRCA

Attachments:
Figure 1. Study Area

LEGEND

- PROJECT LOCATION
- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- ENVIRONMENTALLY SENSITIVE AREA
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed March, 2021.
2. Project location, trails, watercourses and waterbodies provided by Hamilton Conservation Authority March 2021
3. Environmentally Sensitive Areas and woodlands provided by the City of Hamilton, March 2021

Title:
STUDY AREA

Project:
892 LOWER LIONS CLUB ROAD
CITY OF HAMILTON

Date: APRIL 2021
Project: AA21-010A
Scale: 1 : 2500

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Figure No: 1

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T: 519.822.6839
info@aboudtng.com
www.aboudtng.com

April 5, 2021

Our Project No.: AA21-010A
Sent by Email: catherine.plosz@hamilton.ca

Catherine Plosz
Natural Heritage Planner
City of Hamilton
71 Main Street West
Hamilton, ON L8P 4Y5

Re: Hamilton Conservation Area Additional Parking- 892 Lower Lion's Club Road, City of Hamilton
Terms of Reference - Scoped Environmental Impact Study

Dear Ms.Plosz:

This document outlines the Terms of Reference (ToR) of the scoped Environmental Impact Study (EIS) to assess the environmental conditions of the study area surrounding the Lower Lion's Club Road site, within the limits of the Dundas Valley Conservation Area, and its suitability in accommodating additional public parking. Please review the terms and circulate to the City of Hamilton staff for discussion and approval.

BACKGROUND

The Hamilton Region Conservation Authority (HRCA) is assessing the suitability of lands surrounding 892 Lower Lion's Club Road for accommodating additional public parking. Due to the study lands being partially within and adjacent to designated natural features, a scoped EIS is required to evaluate potential impacts to existing natural heritage features. A proposed layout has not been developed at this time,

Schedule A of the Rural Hamilton Official Plan (2018 consolidation) indicates that the study area is within the limits of the Niagara carpment Plan.

Schedule B of the Rural Hamilton Official Plan (2018 consolidation) indicates the study lands are designated as Core Areas. Per Schedules B-2 and B-6, the study area contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls), respectively. The study area is also adjacent to a reach of Tiffany Creek.

.

The study area is also within the Natural Heritage System as designated by the Ministry of Natural Resources and Forestry.

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial photography of the subject site.
- HRCA EIS Request for Proposals (RFP 2-1414-20-02)
- Lower Lions Club Road Property Drawing G02 (RFP 2-1414-20-02)
- HRCA Online Regulated Areas Mapping (accessed March 11, 2021) of natural heritage features (e.g. regulated limit, MNRF wetlands, watercourses).
- HRCA Planning & Regulation Policies and Guidelines (October 11, 2011)
- Background data provided by the HRCA, including vegetation, birds, herpetofauna, lepidoptera, odonata and mammal occurrences within the Ancaster ESA.
- Rural Hamilton Official Plan (2018 Consolidation)
- Natural Heritage Information Center, Make-a-map, accessed March 11, 2021.
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed March 11, 2021.
- Bird Studies Canada. Atlas of Breeding Birds of Ontario. 2008.
- Dobbyn. J. Atlas of the Mammals of Ontario (1994).
- iNaturalist Species Observations (accessed March 11, 2021).
- eBird Species Observations (accessed March 11, 2021).
- Ontario Butterfly Atlas (accessed March 11, 2021).

STUDY AREA

The study area for field study purposes is the EIS Study Area defined by HRCA in the Lower Lion's Club Road Property Drawing G02 (RFP 2-1414-20-02) and adjacent lands up to 120m, where access is permitted (*Figure 1*).

As needed, the lands adjacent to the study area may require further access to assist with understanding the characteristics and functions of natural heritage features. Where access is not available, information will be acquired through existing background information and what can be observed from the edge of the accessible lands.

Lands outside of the field study area, or where access is not provided, will be reviewed from existing background information (e.g. City of Hamilton Official Plan).

PLANNING CONTEXT

Provincial Policy Statement (2020)

The Provincial Policy Statement (2020) indicates that natural heritage features shall be protected for the long term. Development may be permitted within or adjacent to Natural Heritage Features where it can be demonstrated that there will be no negative impacts on the natural heritage features or their ecological functions.

Niagara Escarpment Plan (2020 Consolidation)

Plan Map 2 of the Niagara Escarpment Plan (NEP) indicates that the study area contains lands designated as Escarpment Protection Area and Escarpment Natural Area. The study area is adjacent a Key Natural Heritage Feature in the form of a woodland. Section 1.4 indicates that the policies surrounding the Escarpment Protection Area aim to protect and enhance natural and hydrologic features and the open landscape character of the Escarpment and lands in its vicinity.

Section 2.7.2 states:

"Development is not permitted in key natural heritage features with the exception of the following, which may be permitted subject to compliance with all other relevant policies of this Plan:

a) *Development of a single dwelling and accessory facilities outside a wetland on an existing lot of record, provided that disturbance is minimal and where possible temporary;*
b) *Forest, fisheries and wildlife management to maintain or enhance the feature;*
c) *Conservation and flood or erosion control projects, after all alternatives have been considered;*
d) *The Bruce Trail, and other trails, boardwalks and docks on parks and open space lands that are part of the Parks and Open Space System; and*
e) *Infrastructure, where the project has been deemed necessary to the public interest and there is no other alternative."*

Section 2.7.6 states:

"If in the opinion of the implementing authority, a proposal for development within 120m of a key natural heritage feature has the potential to result in a negative impact on the feature and/or its functions, or on the connectivity between key natural heritage features and key hydrologic features, a natural heritage evaluation will be required that:

a) *Demonstrates that the development, including any alteration of the natural grade or drainage, will protect the key natural heritage feature or the related functions of that feature;*
b) *Identifies planning, design and construction practices that will minimize erosion, sedimentation and the introduction of nutrients or pollutants and protect and, where possible, enhance or restore the health, diversity and size of the key natural heritage feature;*

c) *Determines the minimum vegetation protection zone required to protect and where possible enhance the key natural heritage feature and its functions; and*

d) *Demonstrates that the connectivity between key natural heritage features and key hydrologic features located within 240m of each other will be maintained and where possible enhanced for the movement of native plants and animals across the landscape."*

Rural Hamilton Official Plan (2018 Consolidation)

The Rural Hamilton Official Plan Schedule A indicates that the study area is within the limits of the NEP and the Greenbelt Plan.

Chapter C, Section 1.1.1 states:
"Any development within the Niagara Escarpment Plan Area, as shown on Schedule A-Provincial Plans, shall meet the requirements of this Plan and the Niagara Escarpment Plan, and the Parkland, Open Space and Trails policies of the Greenbelt Plan. Where there is a discrepancy between this Plan and the Niagara Escarpment Plan, and the Parkland, Open Space and Trails policies of the Greenbelt Plan, the most restrictive policies will prevail."

Schedule B indicates the study area contains Core Areas. Furthermore, Schedules B-1, 2, 6, indicate that the study area is partially within a Key Natural Heritage Feature Life Science ANSI, within an Environmentally Significant Area and within Significant Woodlands, respectively.

Chapter C, Section 2.3.3 states:
Any development or site alteration within or adjacent to Core Areas shall not negatively impact their environmental features or ecological functions."

Chapter C, Section 2.3.4 states:
"New development or site alteration shall not be permitted within provincially significant wetlands, significant coastal wetlands, or significant habitat or threatened or endangered species, except in accordance with applicable provincial and federal regulations with respect to significant habitat of threatened or endangered species."

Hamilton Region Conservation Authority

Per the HRCA's Online Regulation Areas Mapping, the study area is located partially within the HRCA Regulated Area and contains a portion of an identified watercourse. The study area also contains Significant Woodlands and a portion of an Area of Natural and Scientific Interest.

Section 3.1.4 states:

a) *"Development and/or site alteration will not be permitted in significant woodlands unless it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions.*

b) *Development and/or site alteration will not be permitted on lands adjacent to significant woodlands (within 50m of the boundary of the woodland) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or their ecological functions …"*

Section 3.1.6 states:

a) *"The Authority will direct development and/or site alteration away from Provincially Significant Areas of Natural and Scientific Interest (ANSIs) unless it can be demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or the ecological functions."*

b) *Development and/or site alteration will not be permitted on lands adjacent to Provincially Significant ANSIs (within 50m of the boundary of the area) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through the submission of an EIS that there will be no negative impacts on the natural features or on their ecological functions."*

City of Hamilton Zoning By-law 05-200 (2005)

The City of Hamilton Interactive Zoning Mapping indicates that the majority of the study area is zoned as Conservation/Hazard Land (P6) with an area bordering the north and east limits zoned as Agriculture (A1).

Section 7.6 states:
"New development within the P6 Zone may require the approval of a Site Plan Control application, including the submission of an Environmental Impact Statement, to demonstrate that there will be no negative impact on Core Area features, as identified in the Rural Hamilton Official Plan, as a result of the proposed development, prior to the development proceeding."

Section 7.6.1 states permitted uses include Agriculture, Conservation, Flood and Erosion Control Facilities, Recreation (Passive), Secondary Uses to Agriculture and Single Detached Dwelling.

BACKGROUND REVIEW

Additional background natural heritage information related to the subject property and adjacent lands identified the following information:

1. The Ontario Reptile and Amphibian Atlas shows within a 10 km square of the subject lands, the recent and historical presence of 26 species within the 10km square containing the study area, including six species of Conservation Concern (Jefferson Salamander, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Milksnake and Western Chorus Frog).

2. The Natural Heritage Information Centre indicates the potential presence of 20 species of Conservation Concern within 1km of the study area (Nine-spotted Lady Beetle, American Burying Beetle, Transverse Lady Beetle, Snapping Turtle, Timber Rattlesnake, Northern Bobwhite, Cerulean Warbler, Louisiana Waterthrush, Eastern Meadowlark, Bobolink, Wood Thrush, Eastern Wood-pewee, Yellow-breasted Chat, Spotted Wintergreen, Broad Beech Fern, Perfoliate Bellwort, Eastern Flowering Dogwood, Northern Hawthorn, American Chestnut and Butternut).

3. The Ontario Breeding Bird Atlas shows within the 10km square containing the study area, the recent presence of 114 species of birds including 12 species of Conservation Concern (Barn Owl, Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Golden-winged Warbler, Louisiana Waterthrush, Yellow-breasted Chat, Grasshopper Sparrow, Bobolink and Eastern Meadowlark).

4. eBird records from the nearby Dundas Valley CA- Tiffany Falls hotspot (~400m from the study area) indicates the recent and historical presence of 102 species, including seven species of Conservation Concern (Eastern Wood-pewee, Louisiana Waterthrush, Chimney Swift, Barn Swallow, Wood thrush, Eastern Meadowlark and Bobolink).

5. iNaturalist observations within 2km of the area of works indicate the recent presence of 31 species of vascular plants, 15 species of insects six species of fungi, fives species of mosses and lichens, four species of reptiles/amphibians, three species of mammals and two species of birds. None of the species observed are considered species of Conservation Concern.

6. The Ontario Mammal Atlas indicates the recent and historical presence of 25 mammal species within the 10km square containing the study area with one species of Conservation Concern (Little Brown Myotis).

7. The Ontario Butterfly Atlas indicates the recent and historical presence of 72 butterfly species within the 10km square containing the study area one species of Conservation Concern (Monarch).

8. Background information provided by HRCA indicates the recent and historical presence of the following within the Ancaster ESA:

    a. 60 species of birds, including three species of Conservation Concern (Louisiana Waterthrush, Eastern Wood-pewee and Chimney Swift).
    b. 13 species of reptiles and amphibians, including two species of Conservation Concern (Midland Painted Turtle and Snapping Turtle)
    c. 41 species of butterflies and moths, including one species of Conservation Concern (Monarch)
    d. 10 species of mammals, none of which are species of Conservation Concern.

This information indicates that there is a potential presence of additional natural heritage features and constraints that may require investigation and/or comment.

PROPOSED TERMS OF REFERENCE

Scoped Environmental Impact Assessment

To fulfill the requirements of this study, we will:

1. Review background information
    a. Review existing terrestrial and aquatic ecology background information.
    b. Review wildlife atlases and citizen science databases.
    c. Review existing mapping data, GIS layers, planning and land use data.
    d. Review Federal, Provincial and Local land use policies and by-laws and City of Hamilton EIS requirements.
2. Complete a MNRF Request for Information to acquire information pertaining to the adjacent ANSI and watercourse, including fish dot information, if available.

3. Complete an MECP Request for Information and determine if any Species at Risk have been identified in the study area, and any studies required by the MECP under the ESA (2007)

4. Conduct 3 site visit to characterize the vegetation communities using the ELC system (MNRF) and complete a three-season (spring, summer and fall) botanical inventory of the Study Area.

5. Conduct a breeding bird survey of the study area, following the protocol of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2004), including both point counts and area searches. The breeding bird survey requires two, focused, early morning site visits during the period between late May and early July.

6. Investigate the study area for habitat that may support important life stages for Species at Risk identified during SAR site screening.
7. Investigate the study area for the presence of significant wildlife habitat; and complete a site assessment for all potential SWH (e.g. Bat Maternity Habitat, Amphibian Breeding Habitat, Turtle nesting, habitat for species of Conservation Concern) using the SWH Criteria schedules for Ecoregion 6E (2015).
8. Conduct one site visit to characterize the adjacent watercourse and identify fisheries constraints.
9. Conduct one site visit to investigate the hydrologic features and drainage present on site.
10. Conduct one site visit to inspect and assess the surficial soil conditions, possible groundwater seepage areas, and possible connection to adjacent surface water features.
11. Woodland Limit: Pre-stake the woodland dripline within the study area, and coordinate with the City to field-verify the woodland limit. Woodland limit to be surveyed by AA using a Trimble GeoXH GPS with submeter accuracy.
12. Record observations of incidental wildlife during site visits.
13. Communications with project team, HRCA and City as needed.
14. Analyze findings of field investigations and prepare mapping that shows:
    a. Identified natural heritage features, and functions and landscape level features.
    b. Potential development.
    c. ELC vegetation communities.
    d. Location of Breeding Bird Surveys
    e. Verified woodland limit.
    f. Locations of SAR habitat and SWH.
    g. Any significant observations.
    h. Other noteworthy features, as needed.

i. Locations of other natural heritage features from background literature searches (e.g. mammal atlas, herpetofaunal atlas, City OP, Zoning Bylaw.)

15. Complete an analysis of land uses surrounding the study areas.
16. Complete an ecosystem analysis of the study areas within the larger regional ecosystem.
17. Conduct an impact assessment by reviewing the potential development's direct, in-direct, and induced (i.e. residual, ongoing) impacts on the identified natural features within the study area. Conduct an analysis of the potential development and provide recommendations to minimize impacts as they relate to natural heritage features, including the provision of buffers where feasible.
18. Provide policy rationale for expected impacts to natural heritage features (e.g. removal of trees, disturbance to the adjacent watercourse and grading to accommodate the potential development, requirements).
19. Mitigation, Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments and mitigation measures may be needed to protect the existing natural features within the study area. Provide rationale and recommendations for tree compensation (e.g. where, why and how much).
20. With input from HRCA staff, advise on a recommended monitoring program for pre-construction, construction, and post-construction phases of the potential development.
21. Comment and advise on any other studies, permits and approvals that may be necessary by HRCA for the potential development.
22. Prepare a report of the scoped EIS that includes background information, methods, existing conditions, the potential development, impact assessment and mitigation measures, and appendices of field studies (e.g. ELC, flora list, Breeding Bird studies).
23. Prepare a scoped hydrogeological report under separate cover, discussing the hydrogeological conditions, the subsurface stratigraphy, and the soil physical properties with comparison to regional hydrogeology and soil stratigraphy.

Yours truly,

ABOUD & ASSOCIATES INC.

Shannon Davison, B.Env., Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner In-Training #0499
OMNR Certified Ecological Land Classification
OMNR Certified Wetland Evaluation

Cc: Kathy Smith, HRCA
Matt Hall, HRCA

Attachments:
Figure 1. Study Area

LEGEND

- PROJECT LOCATION
- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- ENVIRONMENTALLY SENSITIVE AREA
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed March, 2021.
2. Project location, trails, watercourses and waterbodies provided by Hamilton Conservation Authority March 2021
3. Environmentally Sensitive Areas and woodlands provided by the City of Hamilton, March 2021

Title:
STUDY AREA

Project:
892 LOWER LIONS CLUB ROAD
CITY OF HAMILTON

Date: APRIL 2021
Project: AA21-010A
Scale: 1 : 2500

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Figure No: 1

Shannon Davison

From: Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Sent: April-09-21 9:38 AM
To: Shannon Davison
Cc: Cheryl-Anne Ross; Kathy Smith; Matt Hall; Christy, June
Subject: RE: AA21-010A HRCA Additional Parking Scoped EIS Terms of Reference

External

Hi Shannon
Thanks for this. The reasons you give for not doing amphibian call counts are acceptable, so I agree that they can be excluded from the TOR.

I don't believe June Christy can provide any comments at this early stage. I suggest contacting the NEC first, to see if you need a NEC Permit. If so, you would go through that process, and the City would provide input through the NEC permit review. If NEC does not need a permit for parking areas, then you would need to apply with the City for minor site plan.

I am copying June, in case she has something to add/clarify.

Cathy

From: Shannon Davison <sdavison@aboudtng.com>
Sent: Thursday, April 8, 2021 1:18 PM
To: Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; Kathy Smith <Katherine.Smith@conservationhamilton.ca>; Matt Hall <matthall@conservationhamilton.ca>
Subject: RE: AA21-010A HRCA Additional Parking Scoped EIS Terms of Reference

Good afternoon Cathy,

We have reviewed your comments for each of the Terms of Reference and are hoping to provide some clarification surrounding Item 7 under the Proposed Terms of Reference in each document. In our investigations for potential Significant Wildlife Habitat we will be considering all forms of SWH as detailed in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, 2015) which is what we intended to convey with the listing of examples in the parentheses. Based on the mapping provided for each study area, Artaban Road is the only site which has potential habitat for amphibians. The pond within the Artaban Road study area is known as habitat for Jefferson Salamander, therefore affording it and the area surrounding it protection under the Endangered Species Act. As protection will already be enforced for the pond at Artaban Road and the study areas at Lower Lion's Club Road and Tews Falls don't contain suitable habitat for amphibian breeding we don't believe amphibian studies following the Marsh Monitoring Protocol should be included within our scope.

In addition, if you could let me know whether we should be expecting comments from June Christy that would be great.

Please let me know if you have any questions or would like to discuss this further.

Regards,

Shannon Davison B.Env. Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner- In Training #0499
MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification
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C : 226.581.0707 www.aboudtng.com sdavison@aboudtng.com

From: Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Sent: April-07-21 4:22 PM
To: Shannon Davison <sdavison@aboudtng.com>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; Kathy Smith <Katherine.Smith@conservationhamilton.ca>; Matt Hall <matthall@conservationhamilton.ca>
Subject: RE: AA21-010A HRCA Additional Parking Scoped EIS Terms of Reference

External

Hi Shannon,

I had a chance to review the TORs. They look good – just included some comments on the documents (attached).

I would suggest that you contact Niagara Escarpment Commission for all three projects first, since they are within the NEC development control area and an NEC permit may be required. If so, the NEC circulates the City and they are the main conduit for information. They may also have comments on the TOR.

Let me know if you have any questions,
Cathy

Catherine Plosz, R.P.P., M.Sc.
Natural Heritage Planner
Development Planning, Heritage and Design (Rural Team)
Planning and Economic Development Department
71 Main Street West, Hamilton, ON L8P 4Y5
Phone: (905) 546-2424 Ext. 1231
E-mail: Catherine.Plosz@hamilton.ca

Hamilton

The City of Hamilton encourages physical distancing and increased handwashing. Learn more about the City's response to COVID-19 www.hamilton.ca/coronavirus

From: Shannon Davison <sdavison@aboudtng.com>
Sent: Monday, April 5, 2021 9:20 AM
To: Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Cc: Cheryl-Anne Ross <Cheryl@aboudtng.com>; Kathy Smith <Katherine.Smith@conservationhamilton.ca>; Matt Hall <matthall@conservationhamilton.ca>
Subject: AA21-010A HRCA Additional Parking Scoped EIS Terms of Reference

Good morning Ms. Plosz,

Please find attached Terms of Reference for three scoped Environmental Impact Studies to assess environmental conditions of study areas surrounding 917 Artaban Road, 892 Lower Lion's Club Road and 581 Harvest Road, and their suitability in formalizing additional public parking. It would be appreciated if you could circulate to City staff and provide comments are your earliest convenience.

Please let me know if you have any questions.

Regards,

Shannon Davison B.Env. Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner- In Training #0499
MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification
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April 20, 2021

Our Project No.: AA21-010A
Sent by Email: Johnpaul.Loiacono@ontario.ca

Johnpaul Loiacono
Senior Planner
Niagara Escarpment Commission
232 Guelph Street
Georgetown, ON L7G 4B1

Re: Hamilton Conservation Area Additional Parking- 892 Lower Lion's Club Road, City of Hamilton
Terms of Reference - Scoped Environmental Impact Study

Dear Mr.Loiacono:

This document outlines the Terms of Reference (ToR) of the scoped Environmental Impact Study (EIS) to assess the environmental conditions of the study area surrounding the Lower Lion's Club Road site, within the limits of the Dundas Valley Conservation Area, and its suitability in accommodating additional public parking. Please review the terms and circulate to the City of Hamilton staff for discussion and approval.

BACKGROUND

The Hamilton Region Conservation Authority (HRCA) is assessing the suitability of lands surrounding 892 Lower Lion's Club Road for accommodating additional public parking. Due to the study lands being partially within and adjacent to designated natural features, a scoped EIS is required to evaluate potential impacts to existing natural heritage features. A proposed layout has not been developed at this time,

Schedule A of the Rural Hamilton Official Plan (2018 consolidation) indicates that the study area is within the limits of the Niagara Escarpment Plan.

Schedule B of the Rural Hamilton Official Plan (2018 consolidation) indicates the study lands are designated as Core Areas. Per Schedules B-2 and B-6, the study area contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls), respectively. The study area is also adjacent to a reach of Tiffany Creek.

.

The study area is also within the Natural Heritage System as designated by the Ministry of Natural Resources and Forestry.

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial photography of the subject site.
- HRCA EIS Request for Proposals (RFP 2-1414-20-02)
- Lower Lions Club Road Property Drawing G02 (RFP 2-1414-20-02)
- HRCA Online Regulated Areas Mapping (accessed March 11, 2021) of natural heritage features (e.g. regulated limit, MNRF wetlands, watercourses).
- HRCA Planning & Regulation Policies and Guidelines (October 11, 2011)
- Background data provided by the HRCA, including vegetation, birds, herpetofauna, lepidoptera, odonata and mammal occurrences within the Ancaster ESA.
- Rural Hamilton Official Plan (2018 Consolidation)
- Natural Heritage Information Center, Make-a-map, accessed March 11, 2021.
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed March 11, 2021.
- Bird Studies Canada. Atlas of Breeding Birds of Ontario. 2008.
- Dobbyn. J. Atlas of the Mammals of Ontario (1994).
- iNaturalist Species Observations (accessed March 11, 2021).
- eBird Species Observations (accessed March 11, 2021).
- Ontario Butterfly Atlas (accessed March 11, 2021).

STUDY AREA

The study area for field study purposes is the EIS Study Area defined by HRCA in the Lower Lion's Club Road Property Drawing G02 (RFP 2-1414-20-02) and adjacent lands up to 120m, where access is permitted (*Figure 1*).

As needed, the lands adjacent to the study area may require further access to assist with understanding the characteristics and functions of natural heritage features. Where access is not available, information will be acquired through existing background information and what can be observed from the edge of the accessible lands.

Lands outside of the field study area, or where access is not provided, will be reviewed from existing background information (e.g. City of Hamilton Official Plan).

BACKGROUND REVIEW

Additional background natural heritage information related to the subject property and adjacent lands identified the following information:

1. The Ontario Reptile and Amphibian Atlas shows within a 10 km square of the subject lands, the recent and historical presence of 26 species within the 10km square containing the study area, including six species of Conservation Concern (Jefferson Salamander, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Milksnake and Western Chorus Frog).

2. The Natural Heritage Information Centre indicates the potential presence of 20 species of Conservation Concern within 1km of the study area (Nine-spotted Lady Beetle, American Burying Beetle, Transverse Lady Beetle, Snapping Turtle, Timber Rattlesnake, Northern Bobwhite, Cerulean Warbler, Louisiana Waterthrush, Eastern Meadowlark, Bobolink, Wood Thrush, Eastern Wood-pewee, Yellow-breasted Chat, Spotted Wintergreen, Broad Beech Fern, Perfoliate Bellwort, Eastern Flowering Dogwood, Northern Hawthorn, American Chestnut and Butternut).

3. The Ontario Breeding Bird Atlas shows within the 10km square containing the study area, the recent presence of 114 species of birds including 12 species of Conservation Concern (Barn Owl, Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Golden-winged Warbler, Louisiana Waterthrush, Yellow-breasted Chat, Grasshopper Sparrow, Bobolink and Eastern Meadowlark).

4. eBird records from the nearby Dundas Valley CA- Tiffany Falls hotspot (~400m from the study area) indicates the recent and historical presence of 102 species, including seven species of Conservation Concern (Eastern Wood-pewee, Louisiana Waterthrush, Chimney Swift, Barn Swallow, Wood thrush, Eastern Meadowlark and Bobolink).

5. iNaturalist observations within 2km of the area of works indicate the recent presence of 31 species of vascular plants, 15 species of insects six species of fungi, fives species of mosses and lichens, four species of reptiles/amphibians, three species of mammals and two species of birds. None of the species observed are considered species of Conservation Concern.

6. The Ontario Mammal Atlas indicates the recent and historical presence of 25 mammal species within the 10km square containing the study area with one species of Conservation Concern (Little Brown Myotis).

7. The Ontario Butterfly Atlas indicates the recent and historical presence of 72 butterfly species within the 10km square containing the study area one species of Conservation Concern (Monarch).

8. Background information provided by HRCA indicates the recent and historical presence of the following within the Ancaster ESA:

    a. 60 species of birds, including three species of Conservation Concern (Louisiana Waterthrush, Eastern Wood-pewee and Chimney Swift).
    b. 13 species of reptiles and amphibians, including two species of Conservation Concern (Midland Painted Turtle and Snapping Turtle)
    c. 41 species of butterflies and moths, including one species of Conservation Concern (Monarch)
    d. 10 species of mammals, none of which are species of Conservation Concern.

This information indicates that there is a potential presence of additional natural heritage features and constraints that may require investigation and/or comment.

PROPOSED TERMS OF REFERENCE

Scoped Environmental Impact Assessment

To fulfill the requirements of this study, we will:

1. Review background information
    a. Review existing terrestrial and aquatic ecology background information.
    b. Review wildlife atlases and citizen science databases.
    c. Review existing mapping data, GIS layers, planning and land use data.
    d. Review Federal, Provincial and Local land use policies and by-laws and City of Hamilton EIS requirements.
2. Complete a MNRF Request for Information to acquire information pertaining to the adjacent ANSI and watercourse, including fish dot information, if available.

3. Complete an MECP Request for Information and determine if any Species at Risk have been identified in the study area, and any studies required by the MECP under the ESA (2007)

4. Conduct 3 site visit to characterize the vegetation communities using the ELC system (MNRF) and complete a three-season (spring, summer and fall) botanical inventory of the Study Area.

5. Conduct a breeding bird survey of the study area, following the protocol of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2004), including both point counts and area searches. The breeding bird survey requires two, focused, early morning site visits during the period between late May and early July.

6. Investigate the study area for habitat that may support important life stages for Species at Risk identified during SAR site screening.
7. Investigate the study area for the presence of significant wildlife habitat; and complete a site assessment for all potential SWH (e.g. Bat Maternity Habitat, Amphibian Breeding Habitat, Turtle nesting, habitat for species of Conservation Concern) using the SWH Criteria schedules for Ecoregion 6E (2015).
8. Conduct one site visit to characterize the adjacent watercourse and identify fisheries constraints. Visual observations within the study area will focus on the setback and adjacent area and the identification of unmapped drainage features and disturbed areas that could diminish the setback's buffer function in consideration of the proposed parking area. Remedial and/or project design measures will be recommended for such features. Qualitative visual observations of the watercourse, channel, ravine and anthropogenic features (e.g., culverts, ponds, weirs, stabilization works, barriers to upstream migration) will be used to describe the adjacent reach's site-specific context in relation to the broader existing fish community and distribution information, such as whether it appears to be accessible to fish or possesses potentially suitable spawning or nursery habitat.
9. Conduct one site visit to investigate the hydrologic features and drainage present on site.
10. Conduct one site visit to inspect and assess the surficial soil conditions, possible groundwater seepage areas, and possible connection to adjacent surface water features.
11. Woodland Limit: Pre-stake the woodland dripline within the study area, and coordinate with the City to field-verify the woodland limit. Woodland limit to be surveyed by AA using a Trimble GeoXH GPS with submeter accuracy.
12. Record observations of incidental wildlife during site visits.
13. Communications with project team, HRCA, MECP, NEC and City as needed.

14. Analyze findings of field investigations and prepare mapping that shows:
    a. Identified natural heritage features, and functions and landscape level features.
    b. Potential development.
    c. ELC vegetation communities.
    d. Location of Breeding Bird Surveys
    e. Verified woodland limit.
    f. Limits of Environmentally Sensitive Areas and Core Areas
    g. Locations of SAR habitat and SWH.
    h. Any significant observations.
    i. Other noteworthy features, as needed.
    j. Locations of other natural heritage features from background literature searches (e.g. mammal atlas, herpetofaunal atlas, City OP, Zoning Bylaw.)

15. Complete an analysis of land uses surrounding the study areas.
16. Complete an ecosystem analysis of the study areas within the larger regional ecosystem.
17. Conduct an impact assessment by reviewing the potential development's direct, in-direct, and induced (i.e. residual, ongoing) impacts on the identified natural features within the study area. Conduct an analysis of the potential development and provide recommendations to minimize impacts as they relate to natural heritage features, including the provision of buffers where feasible.
18. Provide policy rationale for expected impacts to natural heritage features (e.g. removal of trees, disturbance to the adjacent watercourse and grading to accommodate the potential development, requirements).
19. Mitigation, Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments and mitigation measures may be needed to protect the existing natural features within the study area. Provide rationale and recommendations for tree compensation (e.g. where, why and how much).
20. With input from HRCA staff, advise on a recommended monitoring program for pre-construction, construction, and post-construction phases of the potential development.
21. Comment and advise on any other studies, permits and approvals that may be necessary by HRCA for the potential development.
22. Prepare a report of the scoped EIS that includes background information, methods, existing conditions, the potential development, impact assessment and mitigation

measures, and appendices of field studies (e.g. ELC, flora list, Breeding Bird studies) and approved Terms of Reference.

23. Prepare a scoped hydrogeological report under separate cover, discussing the hydrogeological conditions, the subsurface stratigraphy, and the soil physical properties with comparison to regional hydrogeology and soil stratigraphy. Results of the scoped hydrogeological report will be discussed within the EIS.

Yours truly,

ABOUD & ASSOCIATES INC.

Shannon Davison, B.Env., Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner In-Training #0499
OMNR Certified Ecological Land Classification
OMNR Certified Wetland Evaluation

Cc: Kathy Smith, HRCA
Matt Hall, HRCA

Attachments:
Figure 1. Study Area

LEGEND

- PROJECT LOCATION
- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- ENVIRONMENTALLY SENSITIVE AREA
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed March, 2021.
2. Project location, trails, watercourses and waterbodies provided by Hamilton Conservation Authority March 2021
3. Environmentally Sensitive Areas and woodlands provided by the City of Hamilton, March 2021

Title:
STUDY AREA

Project:
892 LOWER LIONS CLUB ROAD
CITY OF HAMILTON

Date: APRIL 2021
Project: AA21-010A
Scale: 1 : 2500

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
190 Nickin Road, Guelph, Ontario, N1H 7L5 .519.822.6839 .www.aboudng.com

Figure No: 1

Shannon Davison

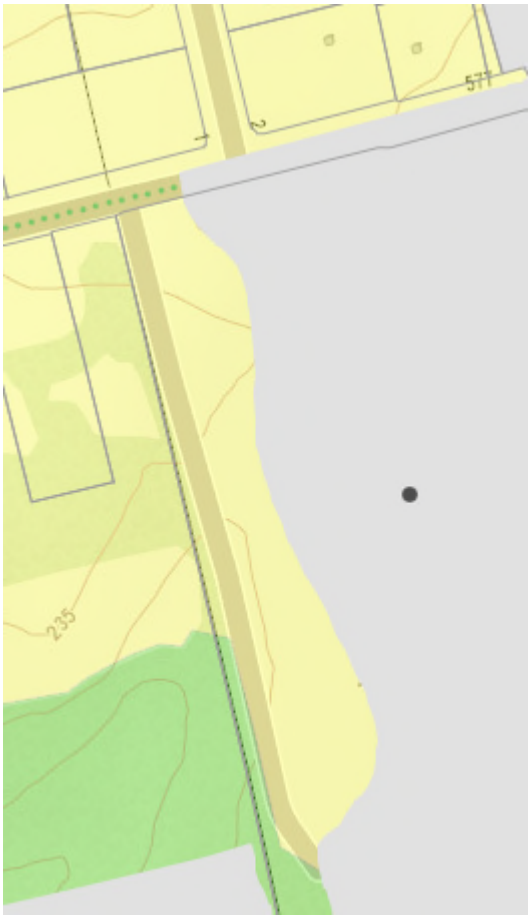
From: Loiacono, Johnpaul (MNRF) <Johnpaul.Loiacono@ontario.ca>
Sent: May-13-21 4:39 PM
To: Cheryl-Anne Ross; Matt Hall
Cc: Kathy Smith; Shannon Davison
Subject: RE: Terms of Reference, Hamilton Conservation Authority proposed parking lot formalization & expansion

External

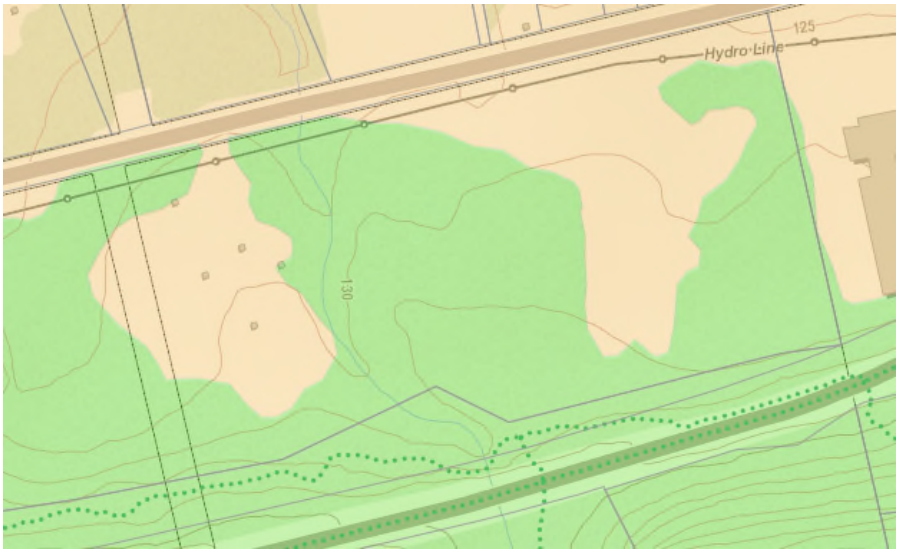
Hello Cheryl-Anne and Matt,

I don't have any concerns with the proposed TOR. However, I don't see reference in them to the Niagara Escarpment Plan (2017). Each site has a NEP land use designation. Those policies and the General Development Criteria policies found in part 2 of the plan apply to the respective sites. I've included snapshots from my online ArcMap tool (my desktop version isn't working at the moment to create maps). The gray area refers to the area of Development Control (DC). Any work in the gray area requires a NEC permit (with the exception of any exempt work per the regulation, which Matt is familiar with).

- 581 Harvest Road Project Location is designated mostly Escarpment Rural Area (yellow) with the exception of the small sliver of Escarpment Natural Area (green). Parts of the north east corner fall in the DC boundary.

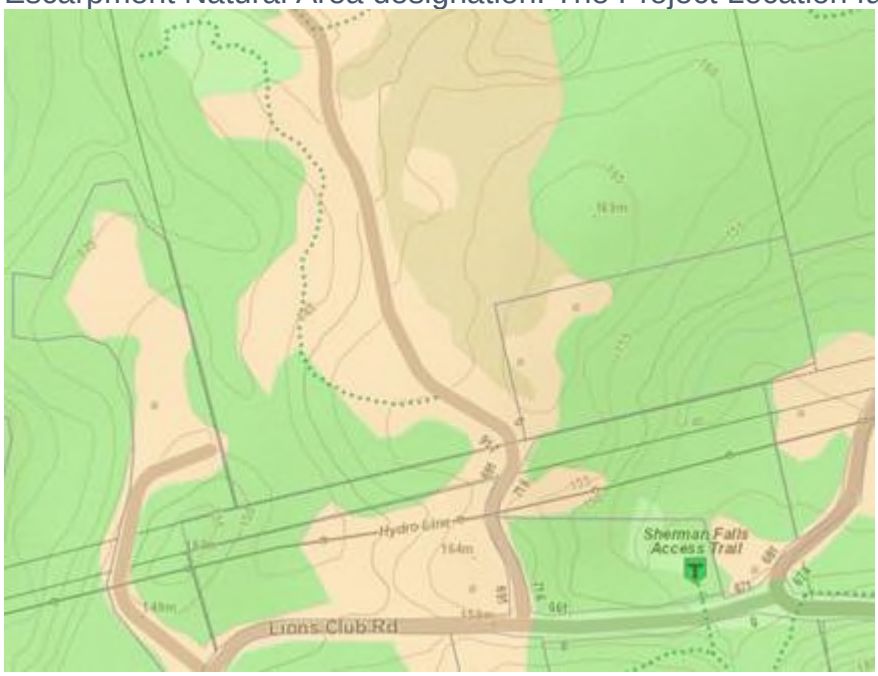


- 892 Lower Lion's Club Road Project Location is designated Escarpment Protection Area (brown) and Escarpment Natural Area. The designation of the Escarpment Natural Area lines up closely with the "Woodland" area in the TOR document. The Project Location fully falls within DC.



- 917 Artaban Road Project Location is designated Escarpment

Protection Area. The Woodland area in the TOR document does not line up as closely with our Escarpment Natural Area designation. The Project Location fully falls within DC.



Thanks,
Johnpaul

From: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Sent: April 21, 2021 10:09 AM
To: Loiacono, Johnpaul (MNRF) <Johnpaul.Loiacono@ontario.ca>
Cc: Kathy Smith <Katherine.Smith@conservationhamilton.ca>; Matt Hall <matthall@conservationhamilton.ca>; Shannon Davison <sdavison@aboudtng.com>
Subject: Terms of Reference, Hamilton Conservation Authority proposed parking lot formalization & expansion

Hello Johnpaul,

Please find attached Terms of Reference for three scoped Environmental Impact Studies to assess environmental conditions of study areas surrounding 917 Artaban Road, 892 Lower Lion's Club Road and 581 Harvest Road, and their suitability in formalizing additional public parking. The Terms of Reference have been reviewed by the City of Hamilton, and revised per Cathy Plosz comments. It would be appreciated if you could provide any additional comments of the NEC at your earliest convenience.

Please let me know if you have any questions.

Regards,

Cheryl-Anne Ross B.Sc. F.W.T.
Ecology Lead & Wildlife Ecologist
ISA Certified Arborist ON-2017A .
MNRF Certified Ecological Land Classification
MNRF Certified Ontario Wetland Evaluation System
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T: 519.822.6839
info@aboudtng.com
www.aboudtng.com

June 2, 2021 Our Project No.: AA21-010A
Sent by Email: Johnpaul.Loiacono@ontario.ca

Johnpaul Loiacono
Senior Planner
Niagara Escarpment Commission
232 Guelph Street
Georgetown, ON L7G 4B1

Re: Hamilton Conservation Area Additional Parking- 892 Lower Lion's Club Road, City of Hamilton
Terms of Reference - Scoped Environmental Impact Study

Dear Mr. Loiacono:

This document outlines the Terms of Reference (ToR) of the scoped Environmental Impact Study (EIS) to assess the environmental conditions of the study area surrounding the Lower Lion's Club Road site, within the limits of the Dundas Valley Conservation Area, and its suitability in accommodating additional public parking. Please review the terms and circulate to the City of Hamilton staff for discussion and approval.

BACKGROUND

The Hamilton Region Conservation Authority (HRCA) is assessing the suitability of lands surrounding 892 Lower Lion's Club Road for accommodating additional public parking. Due to the study lands being partially within and adjacent to designated natural features, a scoped EIS is required to evaluate potential impacts to existing natural heritage features. A proposed layout has not been developed at this time,

Schedule A of the Rural Hamilton Official Plan (2018 consolidation) indicates that the study area is within the limits of the Niagara Escarpment Plan.

Schedule B of the Rural Hamilton Official Plan (2018 consolidation) indicates the study lands are designated as Core Areas. Per Schedules B-2 and B-6, the study area contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls), respectively. The study area is also adjacent to a reach of Tiffany Creek.

.

Per the Niagara Escarpment Plan (2017) the project location is designated Escarpment Protection Area and is entirely within the Development Control area.

The study area is also within the Natural Heritage System as designated by the Ministry of Natural Resources and Forestry.

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial photography of the subject site.
- HRCA EIS Request for Proposals (RFP 2-1414-20-02)
- Lower Lions Club Road Property Drawing G02 (RFP 2-1414-20-02)
- HRCA Online Regulated Areas Mapping (accessed March 11, 2021) of natural heritage features (e.g. regulated limit, MNRF wetlands, watercourses).
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- Background data provided by the HRCA, including vegetation, birds, herpetofauna, lepidoptera, odonata and mammal occurrences within the Ancaster ESA.
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- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Accessed March 11, 2021.
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- iNaturalist Species Observations (accessed March 11, 2021).
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- Ontario Butterfly Atlas (accessed March 11, 2021).

STUDY AREA

The study area for field study purposes is the EIS Study Area defined by HRCA in the Lower Lion's Club Road Property Drawing G02 (RFP 2-1414-20-02) and adjacent lands up to 120m, where access is permitted (*Figure 1*).

As needed, the lands adjacent to the study area may require further access to assist with understanding the characteristics and functions of natural heritage features. Where access is not available, information will be acquired through existing background information and what can be observed from the edge of the accessible lands.

Lands outside of the field study area, or where access is not provided, will be reviewed from existing background information (e.g. City of Hamilton Official Plan).

BACKGROUND REVIEW

Additional background natural heritage information related to the subject property and adjacent lands identified the following information:

1. The Ontario Reptile and Amphibian Atlas shows within a 10 km square of the subject lands, the recent and historical presence of 26 species within the 10km square containing the study area, including six species of Conservation Concern (Jefferson Salamander, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Milksnake and Western Chorus Frog).

2. The Natural Heritage Information Centre indicates the potential presence of 20 species of Conservation Concern within 1km of the study area (Nine-spotted Lady Beetle, American Burying Beetle, Transverse Lady Beetle, Snapping Turtle, Timber Rattlesnake, Northern Bobwhite, Cerulean Warbler, Louisiana Waterthrush, Eastern Meadowlark, Bobolink, Wood Thrush, Eastern Wood-pewee, Yellow-breasted Chat, Spotted Wintergreen, Broad Beech Fern, Perfoliate Bellwort, Eastern Flowering Dogwood, Northern Hawthorn, American Chestnut and Butternut).

3. The Ontario Breeding Bird Atlas shows within the 10km square containing the study area, the recent presence of 114 species of birds including 12 species of Conservation Concern (Barn Owl, Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Golden-winged Warbler, Louisiana Waterthrush, Yellow-breasted Chat, Grasshopper Sparrow, Bobolink and Eastern Meadowlark).

4. eBird records from the nearby Dundas Valley CA- Tiffany Falls hotspot (~400m from the study area) indicates the recent and historical presence of 102 species, including seven species of Conservation Concern (Eastern Wood-pewee, Louisiana Waterthrush, Chimney Swift, Barn Swallow, Wood thrush, Eastern Meadowlark and Bobolink).

5. iNaturalist observations within 2km of the area of works indicate the recent presence of 31 species of vascular plants, 15 species of insects six species of fungi, fives species of mosses and lichens, four species of reptiles/amphibians, three species of mammals and two species of birds. None of the species observed are considered species of Conservation Concern.

6. The Ontario Mammal Atlas indicates the recent and historical presence of 25 mammal species within the 10km square containing the study area with one species of Conservation Concern (Little Brown Myotis).

7. The Ontario Butterfly Atlas indicates the recent and historical presence of 72 butterfly species within the 10km square containing the study area one species of Conservation Concern (Monarch).

8. Background information provided by HRCA indicates the recent and historical presence of the following within the Ancaster ESA:

    a. 60 species of birds, including three species of Conservation Concern (Louisiana Waterthrush, Eastern Wood-pewee and Chimney Swift).
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This information indicates that there is a potential presence of additional natural heritage features and constraints that may require investigation and/or comment.

PROPOSED TERMS OF REFERENCE

Scoped Environmental Impact Assessment

To fulfill the requirements of this study, we will:

1. Review background information
    a. Review existing terrestrial and aquatic ecology background information.
    b. Review wildlife atlases and citizen science databases.
    c. Review existing mapping data, GIS layers, planning and land use data.
    d. Review Federal, Provincial and Local land use policies and by-laws and City of Hamilton EIS requirements.
2. Complete a MNRF Request for Information to acquire information pertaining to the adjacent ANSI and watercourse, including fish dot information, if available.

3. Complete an MECP Request for Information and determine if any Species at Risk have been identified in the study area, and any studies required by the MECP under the ESA (2007)

4. Conduct 3 site visit to characterize the vegetation communities using the ELC system (MNRF) and complete a three-season (spring, summer and fall) botanical inventory of the Study Area.

5. Conduct a breeding bird survey of the study area, following the protocol of the Ontario Breeding Bird Atlas (Bird Studies Canada, 2004), including both point counts and area searches. The breeding bird survey requires two, focused, early morning site visits during the period between late May and early July.

6. Investigate the study area for habitat that may support important life stages for Species at Risk identified during SAR site screening.
7. Investigate the study area for the presence of significant wildlife habitat; and complete a site assessment for all potential SWH (e.g. Bat Maternity Habitat, Amphibian Breeding Habitat, Turtle nesting, habitat for species of Conservation Concern) using the SWH Criteria schedules for Ecoregion 6E (2015).
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9. Conduct one site visit to investigate the hydrologic features and drainage present on site.
10. Conduct one site visit to inspect and assess the surficial soil conditions, possible groundwater seepage areas, and possible connection to adjacent surface water features.
11. Woodland Limit: Pre-stake the woodland dripline within the study area, and coordinate with the City to field-verify the woodland limit. Woodland limit to be surveyed by AA using a Trimble GeoXH GPS with submeter accuracy.
12. Record observations of incidental wildlife during site visits.
13. Communications with project team, HRCA, MECP, NEC and City as needed.
14. Analyze findings of field investigations and prepare mapping that shows:

a. Identified natural heritage features, and functions and landscape level features.
b. Potential development.
c. ELC vegetation communities.
d. Location of Breeding Bird Surveys
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f. Limits of Environmentally Sensitive Areas and Core Areas
g. Locations of SAR habitat and SWH.
h. Any significant observations.
i. Other noteworthy features, as needed.
j. Locations of other natural heritage features from background literature searches (e.g. mammal atlas, herpetofaunal atlas, City OP, Zoning Bylaw.)

15. Complete an analysis of land uses surrounding the study areas.
16. Complete an ecosystem analysis of the study areas within the larger regional ecosystem.
17. Conduct an impact assessment by reviewing the potential development's direct, in-direct, and induced (i.e. residual, ongoing) impacts on the identified natural features within the study area. Conduct an analysis of the potential development and provide recommendations to minimize impacts as they relate to natural heritage features, including the provision of buffers where feasible.
18. Provide policy rationale for expected impacts to natural heritage features (e.g. removal of trees, disturbance to the adjacent watercourse and grading to accommodate the potential development, requirements).
19. Mitigation, Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments and mitigation measures may be needed to protect the existing natural features within the study area. Provide rationale and recommendations for tree compensation (e.g. where, why and how much).
20. With input from HRCA staff, advise on a recommended monitoring program for pre-construction, construction, and post-construction phases of the potential development.
21. Comment and advise on any other studies, permits and approvals that may be necessary by HRCA for the potential development.
22. Prepare a report of the scoped EIS that includes background information, methods, existing conditions, the potential development, impact assessment and mitigation measures, and appendices of field studies (e.g. ELC, flora list, Breeding Bird studies) and approved Terms of Reference.

23. Prepare a scoped hydrogeological report under separate cover, discussing the hydrogeological conditions, the subsurface stratigraphy, and the soil physical properties with comparison to regional hydrogeology and soil stratigraphy. Results of the scoped hydrogeological report will be discussed within the EIS.

Yours truly,

ABOUD & ASSOCIATES INC.

Shannon Davison, B.Env., Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner In-Training #0499
OMNR Certified Ecological Land Classification
OMNR Certified Wetland Evaluation

Cc: Kathy Smith, HRCA
Matt Hall, HRCA

Attachments:
Figure 1. Study Area

LEGEND

- PROJECT LOCATION
- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- ENVIRONMENTALLY SENSITIVE AREA
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed March, 2021.
2. Project location, trails, watercourses and waterbodies provided by Hamilton Conservation Authority March 2021
3. Environmentally Sensitive Areas and woodlands provided by the City of Hamilton, March 2021

Title:
STUDY AREA

Project:
892 LOWER LIONS CLUB ROAD
CITY OF HAMILTON

Date: APRIL 2021
Project: AA21-010A
Scale: 1 : 2500

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Consulting Arborists • Ecologists • Landscape Architects
190 Nickin Road, Guelph, Ontario, N1H 7L5 .519.822.6839 .www.aboudng.com

Figure No: 1

Shannon Davison

From: Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Sent: June-08-21 2:55 PM
To: Cheryl-Anne Ross; Johnpaul.Loiacono@ontario.ca
Cc: Kathy Smith; Matt Hall; Shannon Davison
Subject: RE: Finalized Terms of Reference HCA proposed parking lot formalization & Expansion

External

Hi Cheryl-Anne
Thanks for making the revisions. I don't have any further comments on the TOR.

Cathy

From: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Sent: Wednesday, June 2, 2021 11:13 AM
To: Johnpaul.Loiacono@ontario.ca; Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Cc: Kathy Smith <Katherine.Smith@conservationhamilton.ca>; Matt Hall <matthall@conservationhamilton.ca>; Shannon Davison <sdavison@aboudtng.com>
Subject: Finalized Terms of Reference HCA proposed parking lot formalization & Expansion

Hello Johnpaul and Cathy,

Please find attached the finalized, revised, Terms of Reference for three scoped Environmental Impact Studies to assess environmental conditions of study areas surrounding 917 Artaban Road, 892 Lower Lion's Club Road and 581 Harvest Road, and their suitability in formalizing additional public parking. The Terms have been revised to include information and commentary provided by the NEC and the City of Hamilton.

Please let me know if you have any questions.

Regards,

Cheryl-Anne Ross B.Sc. F.W.T.
Ecology Lead & Wildlife Ecologist
ISA Certified Arborist ON-2017A .
MNRF Certified Ecological Land Classification
MNRF Certified Ontario Wetland Evaluation System
ABOUD & ASSOCIATES INC. 190 Nicklin Road . Guelph . Ontario . N1H 7L5
C : 226.789.9294 . www.aboudtng.com .cheryl@aboudtng.com

Shannon Davison

From: Loiacono, Johnpaul (MNRF) <Johnpaul.Loiacono@ontario.ca>
Sent: June-08-21 12:49 PM
To: Cheryl-Anne Ross
Cc: Kathy Smith; Matt Hall; Shannon Davison; Plosz, Catherine
Subject: RE: Finalized Terms of Reference HCA proposed parking lot formalization & Expansion

External

Hello Cheryl-Anne,

I have no further comments.

Thanks,
Johnpaul

From: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Sent: June 2, 2021 11:13 AM
To: Loiacono, Johnpaul (MNRF) <Johnpaul.Loiacono@ontario.ca>; Plosz, Catherine <Catherine.Plosz@hamilton.ca>
Cc: Kathy Smith <Katherine.Smith@conservationhamilton.ca>; Matt Hall <matthall@conservationhamilton.ca>; Shannon Davison <sdavison@aboudtng.com>
Subject: Finalized Terms of Reference HCA proposed parking lot formalization & Expansion

Hello Johnpaul and Cathy,

Please find attached the finalized, revised, Terms of Reference for three scoped Environmental Impact Studies to assess environmental conditions of study areas surrounding 917 Artaban Road, 892 Lower Lion's Club Road and 581 Harvest Road, and their suitability in formalizing additional public parking. The Terms have been revised to include information and commentary provided by the NEC and the City of Hamilton.

Please let me know if you have any questions.

Regards,

Cheryl-Anne Ross B.Sc. F.W.T.
Ecology Lead & Wildlife Ecologist
ISA Certified Arborist ON-2017A .
MNRF Certified Ecological Land Classification
MNRF Certified Ontario Wetland Evaluation System
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APPENDIX 2

Background Wildlife List

SOURCE	COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES (BCR 13)	HAMILTON CA (2014)
	INSECTS										
NHIC (n.d)	American Burying Beetle	Nicrophorus americanus	EXT	EXT	EXT	SH					
iNat (2016)	European Mantis	Mantis religiosa				SNA	GNR				
iNat (2018)	Black-and-gold Flat Millipede	Apheloria virginiensis				SNR	G5				
iNat (2018)	Green Cone-headed Planthopper	Acanalonia conica									
iNat (2019)	Brown Leaf Weevil	Phyllobius oblongus				SNA	GNR				
iNat (2015)	Rough Hermit Beetle	Osmoderma scabra				S4S5	G5				
iNat (2020)	Black Firefly	Lucidota atra				S4S5	G5				
iNat (2020)	Bronzed Cutworm Moth	Nephelodes minians				S5	G5				
iNat (2020)	Greenhouse Millipede	Oxidus gracilis				SNA	G5				
	BUTTERFLIES & MOTHS										
OBA (2019)	Silver-spotted Skipper	Epargyreus clarus				S4	G5				C
OBA (1948)	Southern Cloudywing	Thorybes bathyllus				S3	G5				EXT
OBA (2018) HCA (2012)	Juvenal's Duskywing	Erynnis juvenalis				S5	G5				C
OBA (2019) HCA (2014)	Wild Indigo Duskywing	Erynnis baptisiae				S4	G5				U
OBA (1955)	Common Sootywing	Pholisora catullus				S4	G5				U
OBA (2019) HCA (1990)	Least Skipper	Ancyloxypha numitor				S5	G5				C
OBA (2018) HCA (2012)	European Skipper	Thymelicus lineola				SNA	G5				C
OBA (1968)	Leonard's Skipper	Hesperia leonardus				S4	G4				U
OBA (2019)	Peck's Skipper	Polites peckius				S5	G5				C
OBA (2018) HCA (2014)	Tawny-edged Skipper	Polites themistocles				S5	G5				C
OBA (1989)	Crossline Skipper	Polites origenes				S4	G4G5				C
OBA (1994)	Long Dash Skipper	Polites mystic				S5	G5				C

OBA (2018) HCA (2012)	Northern Broken-Dash	Wallengrenia egeremet				S5	G5				C
OBA (2019)	Little Glassywing	Pompeius verna				S4	G5				C
OBA (2018) HCA (1990)	Delaware Skipper	Anatrytone logan				S4	G5				C
OBA (2019) HCA (2014)	Hobomok Skipper	Poanes hobomok				S5	G5				C
OBA (1991)	Broad-winged Skipper	Poanes viator				S4	G5				C
OBA (1992)	Dion Skipper	Euphyes dion				S4	G4				U
OBA (2019) HCA (2012)	Dun Skipper	Euphyes vestris		THR	THR	S5	G5				C
OBA (2012)	Pipevine Swallowtail	Battus philenor				SNA	G5				R
OBA (2019)	Black Swallowtail	Papilio polyxenes				S5	G5				C
OBA (2019)	Giant Swallowtail	Papilio cresphontes				S4	G5				C
OBA (2019) HCA (2014)	Eastern Tiger Swallowtail	Papilio glaucus				S5	G5				C
HCA (2014)	Canadian Tiger Swallowtail	Papilio canadensis				S5	G5				
OBA (2017)	Spicebush Swallowtail	Papilio troilus				S4	G4?				R
OBA (2019) HCA (2014)	Cabbage White	Pieris rapae				SNA	G5				C
iNat (2019) OBA (2018) HCA (2012)	Clouded Sulphur	Colias philodice				S5	G5				C
OBA (1992) HCA (1990)	Orange Sulphur	Colias eurytheme				S5	G5				C
OBA (2018)	Harvester	Feniseca tarquinius				S4	G4				R
OBA (1992)	American Copper	Lycaena phlaeas				S5	G5				U
OBA (1955)	Bronze Copper	Lycaena hyllus				S5	G4G5				U
OBA (2001)	Acadian Hairstreak	Satyrium acadica				S4	G5				C
OBA (1969)	Coral Hairstreak	Satyrium titus				S5	G4G5				U
OBA (2019) HCA (1990)	Banded Hairstreak	Satyrium calanus				S4	G5				
OBA (2019) HCA (1991)	Hickory Hairstreak	Satyrium caryaevorus				S4	G4				U
OBA (2015) HCA (1990)	Striped Hairstreak	Satyrium liparops				S5	G5				C
OBA (1969)	Eastern Pine Elfin	Callophrys niphon				S5	G5				R
OBA (2019)	Eastern Tailed Blue	Cupido (Everes) comyntas				S5	G5				C

HCA (1990)	Spring Azure	Celastrina ladon				SU	G4G5				C
HCA (2014)	Summer Azure	Celastrina neglecta				S5	G5				C
OBA (2017)	Silvery Blue	Glaucopsyche lygdamus				S5	G5				U
OBA (2019)	American Snout	Libytheana carinenta				SNA	G5				R
OBA (2012)	Variegated Fritillary	Euptoieta claudia				SNA	G5				R
OBA (2019) HCA (1990)	Great Spangled Fritillary	Speyeria cybele				S5	G5				C
OBA (1974)	Aphrodite Fritillary	Speyeria aphrodite				S5	G5				U
OBA (1974)	Silver-bordered Fritillary	Boloria selene				S5	G5				U
OBA (2001)	Meadow Fritillary	Boloria bellona				S5	G5				C
OBA (1969)	Silvery Checkerspot	Chlosyne nycteis				S5	G5				EXT
OBA (1969)	Harris's Checkerspot	Chlosyne harrisii				S4	G4				
OBA (2018) HCA (1990)	Pearl Crescent	Phyciodes tharos				S4	G5				C
OBA (2016)	Northern Crescent	Phyciodes cocyta				S5	G5				C
OBA (1969)	Tawny Crescent	Phyciodes batesii				S4	G4				EXT
OBA (2001)	Baltimore Checkerspot	Euphydryas phaeton				S4	G4				U
OBA (2019) HCA (2012)	Question Mark	Polygonia interrogationis				S5	G5				C
OBA (2019)	Eastern Comma	Polygonia comma				S5	G5				C
OBA (1989)	Gray Comma	Polygonia progne				S5	G4G5				U
OBA (2019) HCA (1990)	Compton Tortoiseshell	Nymphalis l-album				S5	G5				U
OBA (2019) HCA (2014)	Mourning Cloak	Nymphalis antiopa				S5	G5				C
OBA (2016)	Milbert's Tortoiseshell	Aglais milberti				S5	G5				R
OBA (2019)	American Lady	Vanessa virginiensis				S5	G5				C
OBA (2019) HCA (2012)	Painted Lady	Vanessa cardui				S5	G5				C
OBA (2019) iNat (2016) HCA (2014)	Red Admiral	Vanessa atalanta				S5	G5				C
OBA (1984)	Common Buckeye	Junonia coenia				SNA	G5				U
OBA (2019)	Red-spotted Purple	Limenitis arthemis astyanax				S5	G5T5				C
OBA (2018)	Viceroy	Limenitis archippus				S5	G5				C
OBA (2019)	Northern Pearly-Eye	Enodia anthedon				S5	G5				C
OBA (1992)	Eyed Brown	Lethe eurydice				S5	G4				
OBA (2001)	Appalachian Brown	Lethe appalachia				S4	G4				

OBA (2019) HCA (2014)	Little Wood-Satyr	Megisto cymela				S5	G5				
OBA (2017) HCA (2012)	Common Ringlet	Coenonympha tullia				S5	G5				
OBA (2018) HCA (2012)	Common Wood-Nymph	Cercyonis pegala				S5	G5				
OBA (2019) HCA (2012)	Monarch	Danaus plexippus	SC	END	SC	S2N,S4B	G5				C
HCA (2012)	Cherry Gall Azure	Celastrina serotina				S4?	G5				U?
	DRAGONFLIES & DAMSELFLIES										
HCA (2014)	Familiar Bluet	Enallagma civile				S5	G5				C
HCA (2012)	Widow Skimmer	Libellula luctuosa				S5	G5				C
HCA (2014)	Eastern Forktail	Ischnura verticalis				S5	G5				C
HCA (2014)	Emerald Spreadwing	Lestes dryas				S5	G5				C
HCA (2014)	Common Green Darner	Anax junius				S5	G5				C
HCA (2014)	Common Whitetail	Plathemis lydia				S5	G5				C
HCA (2014)	Ebony Jewelwing	Calopteryx maculata				S5	G5				C
HCA (2012)	Twelve-spotted Skimmer	Libellula pulchella				S5	G5				C
HCA (2014)	Common Baskettail	Epitheca cynosura				S5	G5				C
	AMPHIBANS										
ORAA (2019)	Jefferson Salamander	Ambystoma jeffersonianum	END	END	END	S2	G4				R
ORAA (2016)	Blue-spotted Salamander	Ambystoma laterale				S4	G5				R
ORAA (2018) HCA (1990)	Spotted Salamander	Ambystoma maculatum				S4	G5				R
NHIC (n.d)	Unisexual Ambystoma, Jefferson dependent population	Ambystoma laterale - (2) jeffersonianum	END	END		S2	G5				
ORAA (1963)	Four-toed Salamander	Hemidactylium scutatum	NAR	NAR		S4	G5				R
ORAA (2019) iNat (2019) HCA (2014)	Eastern Red-backed Salamander	Plethodon cinereus				S5	G5				C
iNat (2020) ORAA (2018) HCA (1990)	Red-spotted Newt	Notophthalmus viridescens viridescens				S5	G5				R
ORAA (2019) HCA (2014)	American Toad	Anaxyrus americanus				S5	G5				A
ORAA (2019) HCA (2012)	Gray Treefrog	Hyla versicolor				S5	G5				A
ORAA (2017)	Spring Peeper	Pseudacris crucifer				S5	G5				A

ORAA (2013)	Western Chorus Frog - Great Lakes / St. Lawrence - Canadian Shield Population	Pseudacris triseriata pop. 2	NAR	THR	THR	S3	G5TNR				C
ORAA (2013)	American Bullfrog	Lithobates catesbeianus				S4	G5	✓			U
ORAA (2019) iNat (2018) HCA (2012)	Green Frog	Lithobates clamitans				S5	G5				A
ORAA (1999)	Pickerel Frog	Lithobates palustris	NAR	NAR		S4	G5				R
ORAA (2015) HCA (1991)	Northern Leopard Frog	Lithobates pipiens	NAR	NAR		S5	G5				A
ORAA (2016)	Wood Frog	Lithobates sylvaticus				S5	G5				C
	SNAKES AND LIZARDS										
ORAA (2017) HCA (1989)	Ring-necked Snake	Diadophis punctatus				S4	G5T5				R
ORAA (2018)	Milksnake	Lampropeltis triangulum	NAR	SC	SC	S3	G5T5				U
ORAA (2019) HCA (1991)	DeKay's Brownsnake	Storeria dekayi	NAR	NAR		S5	G5T5				R
ORAA (2018) HCA (1987)	Northern Red-bellied Snake	Storeria occipitomaculata occipitomaculata				S5	G5				R
ORAA (2019) iNat (2016) HCA (1989)	Eastern Gartersnake	Thamnophis sirtalis sirtalis				S5	G5T5				A
ORAA (1948)	Smooth Greensnake	Opheodrys vernalis				S4	G5				R
	TURTLES										
ORAA (2019) HCA (1990)	Snapping Turtle	Chelydra serpentina	SC	SC	SC	S3	G5T5				C
ORAA (2018) HCA (2012)	Midland Painted Turtle	Chrysemys picta marginata		SC		S5	G5T5				C
ORAA (2018)	Northern Map Turtle	Graptemys geographica	SC	SC	SC	S3	G5	✓			R
ORAA (1950)	Eastern Musk Turtle	Sternotherus odoratus	SC	SC	SC	S3	G5				R
ORAA (2016)	Pond Slider	Trachemys scripta				SNA	SNA				
	BIRDS										
eBird (1975)	Common Loon	Gavia immer	NAR	NAR		S5B,S5N	G5	✓			
HCA (2012) OBBA (2007)	Green Heron	Butorides virescens				S4B	G5				U
eBird (1952)	Tundra Swan	Cygnus columbianus				S4	G5				
OBBA (2007)	Mute Swan	Cygnus olor				SNA	G5				R
eBird (2019) OBBA (2007)	Canada Goose	Branta canadensis				S5	G5				C

OBBA (2007)	Wood Duck	Aix sponsa				S5	G5				U
eBird (2019) OBBA (2007) HCA (1991)	Mallard	Anas platyrhynchos				S5	G5				C
eBird (2021) HCA (2014) OBBA (2007)	Turkey Vulture	Cathartes aura				S5B	G5				U
OBBA (2007)	Northern Harrier	Circus cyaneus	NAR	NAR		S4B	G5	✓	>30ha	✓	R
eBird (2017) OBBA (2007) HCA (2001)	Sharp-shinned Hawk	Accipiter striatus	NAR			S5	G5	✓	>30ha		R
HCA (2014) OBBA (2007)	Cooper's Hawk	Accipiter cooperii	NAR	NAR		S4	G5	✓	>10ha		U
eBird (1952)	Northern Goshawk	Accipiter gentilis	NAR	NAR		S4	G5	✓	>100ha		R
OBBA (2007)	Broad-winged Hawk	Buteo platypterus				S5B	G5	✓	>100ha		C
eBird (2021) HCA (2014) OBBA (2007)	Red-tailed Hawk	Buteo jamaicensis	NAR	NAR		S5	G5				C
eBird (2017) HCA (2014)	American Kestrel	Falco sparverius				S4	G5			✓	U
OBBA (2007) eBird (1975)	Ring-necked Pheasant	Phasianus colchicus				SNA	G5				
OBBA (2007)	Ruffed Grouse	Bonasa umbellus				S4	G5				U
eBird (2020) iNat (2019) HCA (2014)	Wild Turkey	Meleagris gallopavo				S5	G5				C
NHIC (n.d)	Northern Bobwhite	Colinus virginianus	END	END	END	S1	G4G5			✓	EXT
OBBA (2007)	Virginia Rail	Rallus limicola				S5B	G5				U
OBBA (2007)	Sora	Porzana carolina				S4B	G5				U
OBBA (2007) eBird (1975)	Killdeer	Charadrius vociferus				S5B,S5N	G5				A
eBird (1987)	Solitary Sandpiper	Tringa solitaria				S4B	G5				
OBBA (2007) HCA (1991)	Spotted Sandpiper	Actitis macularius				S5	G5				C
OBBA (2007)	Upland Sandpiper	Bartramia longicauda				S4B	G5	✓	>25ha		R
OBBA (2007) eBird (1952)	American Woodcock	Scolopax minor				S4B	G5				C
eBird (2019)	Ring-billed Gull	Larus delawarensis				S5B,S4N	G5				A

eBird (2019)	Herring Gull	Larus argentatus				S5B,S5N	G5				C
eBird (2019) HCA (2014) OBBA (2007)	Rock Pigeon	Columba livia				SNA	G5				A
HCA (2014) OBBA (2007) eBird (1975)	Mourning Dove	Zenaida macroura				S5	G5				A
OBBA (2007)	Black-billed Cuckoo	Coccyzus erythropthalmus				S5B	G5			✓	U
OBBA (2007)	Yellow-billed Cuckoo	Coccyzus americanus				S4B	G5				R
OBBA (2007)	Barn Owl	Tyto alba	END	END	END	S1	G5			✓	EXT
eBird (2015) OBBA (2007)	Eastern Screech-Owl	Megascops asio	NAR	NAR		S4	G5				U
OBBA (2007)	Great Horned Owl	Bubo virginianus				S4	G5				C
HCA (2014) OBBA (2007) eBird (1975)	Chimney Swift	Chaetura pelagica	THR	THR	THR	S4B,S4N	G4G5			✓	U
OBBA (2007)	Ruby-throated Hummingbird	Archilochus colubris				S5B	G5				U
OBBA (2007) HCA (1991)	Belted Kingfisher	Megaceryle alcyon				S4B	G5			✓	U
eBird (1975)	Red-headed Woodpecker	Melanerpes erythrocephalus	SC	THR	THR	S4B	G5			✓	R
eBird (2021) HCA (2014) OBBA (2007)	Red-bellied Woodpecker	Melanerpes carolinus				S4	G5				U
eBird (2020) HCA (2014) OBBA (2007)	Downy Woodpecker	Picoides pubescens				S5	G5				C
eBird (2020) HCA (2014) OBBA (2007)	Hairy Woodpecker	Picoides villosus				S5	G5	✓	4-8ha		U
eBird (2019) HCA (2012) OBBA (2007)	Northern Flicker	Colaptes auratus				S4B	G5			✓	C
iNat (2021) eBird (2018) OBBA (2007)	Pileated Woodpecker	Dryocopus pileatus				S5	G5	✓	>40ha		U

eBird (2018) HCA (2014) OBBA (2007) NHIC (n.d)	Eastern Wood-pewee	Contopus virens	SC	SC		S4B	G5			✓	C
OBBA (2007)	Alder Flycatcher	Empidonax alnorum				S5B	G5				U
OBBA (2007)	Willow Flycatcher	Empidonax traillii				S5B	G5			✓	C
OBBA (2007) eBird (1975)	Least Flycatcher	Empidonax minimus				S4B	G5	✓	>100ha		U
eBird (2021) HCA (2012) OBBA (2007)	Eastern Phoebe	Sayornis phoebe				S5B	G5				U
iNat (2018) HCA (2014) OBBA (2007) eBird (1989)	Great Crested Flycatcher	Myiarchus crinitus				S4B	G5				C
eBird (2017) HCA (2012) OBBA (2007)	Eastern Kingbird	Tyrannus tyrannus				S4B	G5			✓	A
OBBA (2007)	Horned Lark	Eremophila alpestris				S5B	G5				C
HCA (2014)	Purple Martin	Progne subis				S3S4B	G5				U
HCA (2014) OBBA (2007)	Tree Swallow	Tachycineta bicolor				S4B	G5				A
OBBA (2007) HCA (1991)	Northern Rough-winged Swallow	Stelgidopteryx serripennis				S4B	G5				C
OBBA (2007)	Bank Swallow	Riparia riparia	THR	THR	THR	S4B	G5			✓	U
OBBA (2007) eBird (1975)	Barn Swallow	Hirundo rustica	THR	THR	THR	S4B	G5				C
eBird (2021) HCA (2014) OBBA (2007)	Blue Jay	Cyanocitta cristata				S5	G5				A
eBird (2020) HCA (2014) OBBA (2007)	American Crow	Corvus brachyrhynchos				S5B	G5				C
eBird (2019)	Common Raven	Corvus corax				S5	G5				R
eBird (2021) HCA (2014) OBBA (2007)	Black-capped Chickadee	Poecile atricapillus				S5	G5				A

HCA (2014) OBBA (2007)	Tufted Titmouse	Baeolophus bicolor				S4	G5	✓	>4ha		R
eBird (2019) OBBA (2007)	Red-breasted Nuthatch	Sitta canadensis				S5	G5	✓	>10ha		U
eBird (2020) HCA (2014) OBBA (2007)	White-breasted Nuthatch	Sitta carolinensis				S5	G5	✓	>10ha		C
OBBA (2007) eBird (1974)	Brown Creeper	Certhia americana				S5B	G5	✓	>30ha		U
eBird (2021) HCA (2012) OBBA (2007)	Carolina Wren	Thryothorus ludovicianus				S4	G5				R
eBird (2019) HCA (2014) OBBA (2007)	House Wren	Troglodytes aedon				S5B	G5				C
eBird (2020) OBBA (2007)	Winter Wren	Troglodytes troglodytes				S5B	G5	✓	>30ha		U
OBBA (2007)	Sedge Wren	Cistothorus platensis	NAR	NAR		S4B	G5				R
OBBA (2007)	Marsh Wren	Cistothorus palustris				S4B	G5				U
eBird (2020)	Golden-crowned Kinglet	Regulus satrapa				S5B	G5				R
eBird (1975)	Ruby-crowned Kinglet	Regulus calendula				S4B	G5				
OBBA (2007)	Blue-gray Gnatcatcher	Polioptila caerulea				S4B	G5	✓	>30ha		U
eBird (2019) OBBA (2007)	Eastern Bluebird	Sialia sialis	NAR	NAR		S5B	G5				U
eBird (2019) OBBA (2007)	Veery	Catharus fuscescens				S4B	G5	✓	>10ha		C
eBird (1975)	Gray-cheeked Thrush	Catharus minimus				S4B	G5				
eBird (2019)	Swainson's Thrush	Catharus ustulatus				S4B	G5				
eBird (2020)	Hermit Thrush	Catharus guttatus				S5B	G5	✓	>100ha		
HCA (2014) OBBA (2007) eBird (1975) NHIC (n.d)	Wood Thrush	Hylocichla mustelina	SC	THR	THR	S4B	G4			✓	C
eBird (2020) HCA (2014) OBBA (2007)	American Robin	Turdus migratorius				S5B	G5				A

eBird (2019) HCA (2014) OBBA (2007)	Gray Catbird	Dumetella carolinensis				S4B	G5				A
OBBA (2007)	Northern Mockingbird	Mimus polyglottos				S4	G5				U
OBBA (2007) eBird (1975)	Brown Thrasher	Toxostoma rufum				S4B	G5			✓	U
eBird (2019) HCA (2014) OBBA (2007)	Cedar Waxwing	Bombycilla cedrorum				S5B	G5				C
eBird (2019) HCA (2014) OBBA (2007)	European Starling	Sturnus vulgaris				SNA	G5				A
eBird (2019)	Blue-headed Vireo	Vireo solitarius				S5B	G5	✓	>100ha		R
OBBA (2007) eBird (1975)	Yellow-throated Vireo	Vireo flavifrons				S4B	G5	✓	>30ha		U
HCA (2014) OBBA (2007) eBird (1975)	Warbling Vireo	Vireo gilvus				S5B	G5				C
eBird (2019) HCA (2014) OBBA (2007)	Red-eyed Vireo	Vireo olivaceus				S5B	G5				C
OBBA (2007) HCA (1990)	Blue-winged Warbler	Vermivora pinus				S4B	G5			✓	U
OBBA (2007)	Golden-winged Warbler	Vermivora chrysoptera	SC	THR	THR	S4B	G4			✓	R
eBird (1959)	Tennessee Warbler	Vermivora peregrina				S5B	G5				
eBird (1974)	Orange-crowned Warbler	Vermivora celata				S4B	G5				
eBird (1975)	Nashville Warbler	Vermivora ruficapilla				S5B	G5				U
HCA (2014) OBBA (2007) eBird (1975)	Yellow Warbler	Dendroica petechia				S5B	G5				A
HCA (2012) OBBA (2007) eBird (1975)	Chestnut-sided Warbler	Dendroica pensylvanica				S5B	G5				U
OBBA (2007) eBird (1975)	Magnolia Warbler	Dendroica magnolia				S5B	G5	✓	>30ha		R
eBird (2019)	Cape May Warbler	Dendroica tigrina				S5B	G5				
eBird (2019) OBBA (2007)	Black-throated Blue Warbler	Dendroica caerulescens				S5B	G5	✓	>100ha		R

eBird (2019)	Yellow-rumped Warbler	Dendroica coronata				S5B	G5				R
HCA (2012) OBBA (2007) eBird (1975)	Black-throated Green Warbler	Dendroica virens				S5B	G5	✓	>30ha		R
eBird (1975)	Blackburnian Warbler	Dendroica fusca				S5B	G5	✓	>50ha		R
HCA (2014) OBBA (2007)	Pine Warbler	Dendroica pinus				S5B	G5	✓	15-30ha		U
eBird (1956)	Prairie Warbler	Dendroica discolor	NAR	NAR		S3B	G5			✓	R
eBird (1975)	Western Palm Warbler	Dendroica palmarum palmarum				S5B	G5T5				
eBird (1959)	Bay-breasted Warbler	Dendroica castanea				S5B	G5				
NHIC (n.d)	Cerulean Warbler	Dendroica cerulea	THR	END	END	S3B	G4	✓	>100ha	✓	R
eBird (2019) OBBA (2007)	Black-and-white Warbler	Mniotilta varia				S5B	G5	✓	>100ha		U
eBird (2019) OBBA (2007)	American Redstart	Setophaga ruticilla				S5B	G5	✓	>100ha		U
OBBA (2007) eBird (1975)	Ovenbird	Seiurus aurocapilla				S4B	G5	✓	>70ha		C
eBird (2019)	Northern Waterthrush	Seiurus noveboracensis				S5B	G5				C
OBBA (2007) eBird (1995) HCA (1995) NHIC (n.d)	Louisiana Waterthrush	Seiurus motacilla	THR	THR	SC	S3B	G5			✓	R
OBBA (2007)	Mourning Warbler	Oporornis philadelphia				S4B	G5				U
HCA (2012) OBBA (2007) ebird (1975)	Common Yellowthroat	Geothlypis trichas				S5B	G5				C
OBBA (2007)	Hooded Warbler	Wilsonia citrina				S4B	G5			✓	R
OBBA (2007) NHIC (n.d)	Yellow-breasted Chat	Icteria virens	END	END	END	S1B	G5			✓	R
HCA (2012) OBBA (2007)	Scarlet Tanager	Piranga olivacea				S4B	G5	✓	>20ha		U
eBird (2019) HCA (2014) OBBA (2007)	Northern Cardinal	Cardinalis cardinalis				S5	G5				A
eBird (2019) HCA (2012) OBBA (2007)	Rose-breasted Grosbeak	Pheucticus ludovicianus				S4B	G5			✓	C

HCA (2014) OBBA (2007)	Indigo Bunting	Passerina cyanea				S4B	G5				C
OBBA (2007) eBird (1975)	Eastern Towhee	Pipilo erythrophthalmus				S4B	G5			✓	U
eBird (2019) HCA (2014) OBBA (2007)	Chipping Sparrow	Spizella passerina				S5B	G5				A
OBBA (2007)	Clay-colored Sparrow	Spizella pallida				S4B	G5				R
HCA (2012) OBBA (2007) eBird (1975)	Field Sparrow	Spizella pusilla				S4B	G5			✓	C
OBBA (2007)	Vesper Sparrow	Pooecetes gramineus				S4B	G5			✓	U
OBBA (2007) eBird (1975)	Savannah Sparrow	Passerculus sandwichensis				S4B	G5	✓	>50ha	✓	A
OBBA (2007)	Grasshopper Sparrow	Ammodramus savannarum	SC	SC	SC	S4B	G5	✓	>10ha	✓	U
eBird (2019) HCA (2014) OBBA (2007)	Song Sparrow	Melospiza melodia				S5B	G5				A
OBBA (2007)	Swamp Sparrow	Melospiza georgiana				S5B	G5				C
eBird (2019) OBBA (2007)	White-throated Sparrow	Zonotrichia albicollis				S5B	G5				U
eBird (1975)	White-crowned Sparrow	Zonotrichia leucophrys				S4B	G5				
eBird (2020)	Dark-eyed Junco	Junco hyemalis				S5B	G5				
OBBA (2007) eBird (1974)	Bobolink	Dolichonyx oryzivorus	THR	THR	THR	S4B	G5	✓	>10ha	✓	U
eBird (2019) HCA (2014) OBBA (2007)	Red-winged Blackbird	Agelaius phoeniceus				S4	G5				A
OBBA (2007) eBird (1975)	Eastern Meadowlark	Sturnella magna	THR	THR	THR	S4B	G5	✓	>10ha	✓	U
eBird (2017)	Rusty Blackbird	Euphagus carolinus	SC	SC	SC	S4B	G4				
eBird (2019) HCA (2014) OBBA (2007)	Common Grackle	Quiscalus quiscula				S5B	G5				A
eBird (2019) HCA (2014) OBBA (2007)	Brown-headed Cowbird	Molothrus ater				S4B	G5				A

OBBA (2007) HCA (1998) eBird (1992)	Orchard Oriole	Icterus spurius				S4B	G5				U
eBird (2019) HCA (2014) OBBA (2007)	Baltimore Oriole	Icterus galbula				S4B	G5			✓	C
eBird (1975)	Purple Finch	Carpodacus purpureus				S4B	G5				R
eBird (2019) HCA (2014) OBBA (2007)	House Finch	Carpodacus mexicanus				SNA	G5				A
eBird (2019)	Pine Siskin	Carduelis pinus				S4B	G5				IB
eBird (2019) HCA (2014) OBBA (2007)	American Goldfinch	Carduelis tristis				S5B	G5				A
eBird (2019) HCA (2014) OBBA (2007)	House Sparrow	Passer domesticus				SNA	G5				A
	MAMMALS										
OMA (1994)	Virginia Opossum	Didelphis virginiana				S4	G5				C
OMA (1994)	Masked Shrew	Sorex cinereus				S5	G5				C
HCA (2001) OMA (1994)	Northern Short-tailed Shrew	Blarina brevicauda				S5	G5				C
OMA (1994)	Little Brown Myotis	Myotis lucifugus	END	END	END	S4	G3G4				UNK
OMA (1994)	Silver-haired Bat	Lasionycteris noctivagans				S4	G4				UNK
OMA (1994)	Big Brown Bat	Eptesicus fuscus				S5	G5				UNK
OMA (1994)	Eastern Red Bat	Lasiurus borealis				S4	G4				UNK
HCA (2004) OMA (1994)	Eastern Cottontail	Sylvilagus floridanus				S5	G5				C
HCA (2014) OMA (1994)	Eastern Chipmunk	Tamias striatus				S5	G5				C
OMA (1994) HCA (1991)	Woodchuck	Marmota monax				S5	G5				C
HCA (2014) OMA (1994)	Eastern Gray Squirrel	Sciurus carolinensis				S5	G5				C
iNat (2019) HCA (2014) OMA (1994)	Red Squirrel	Tamiasciurus hudsonicus				S5	G5				C

HCA (2014) OMA (1994)	Deer Mouse	Peromyscus maniculatus				S5	G5				C
HCA (2001) OMA (1994)	White-footed Mouse	Peromyscus leucopus				S5	G5				C
OMA (1994)	Meadow Vole	Microtus pennsylvanicus				S5	G5				C
OMA (1994)	Woodland Vole	Microtus pinetorum	SC	SC	SC	S3?	G5				R
OMA (1994)	Muskrat	Ondatra zibethicus				S5	G5				C
OMA (1994)	House Mouse	Mus musculus				SNA	G5				C
OMA (1994)	Meadow Jumping Mouse	Zapus hudsonius				S5	G5				C
OMA (1994)	Coyote	Canis latrans				S5	G5				C
iNat (2019) OMA (1994)	Red Fox	Vulpes vulpes				S5	G5				C
HCA (2014) OMA (1994)	Northern Raccoon	Procyon lotor				S5	G5				C
OMA (1994)	American Mink	Mustela vison				S4	G5				C
OMA (1994)	Striped Skunk	Mephitis mephitis				S5	G5				C
iNat (2019) HCA (2014) OMA (1994)	White-tailed Deer	Odocoileus virginianus				S5	G5				C
	VASCULAR PLANTS										
NHIC (n.d)	American Chestnut	Castanea dentata	END	END	END	S1S2	G4				
NHIC (n.d)	Broad Beech Fern	Phegopteris hexagonoptera	SC	SC	SC	S3	G5				
NHIC (n.d)	Eastern Flowering Dogwood	Cornus florida	END	END	END	S2?	G5				
NHIC (n.d.)	Northern Hawthorn	Crataegus pruinosa var. dissona				S3	G--T4G5				
NHIC (n.d.)	Perfoliate Bellwort	Uvularia perfoliata				S1S2	G5				
NHIC (n.d)	Spotted Wintergreen	Chimaphila maculata	THR	THR	THR	S2?	G5				
iNat (2017)	Brown Knapweed	Centaurea jacea				SNA	GNR				
iNat (2014)	Wild Ginger	Asarum canadense				S5	G5				
iNat (2014)	Twoleaf Miterwort	Mitella diphylla				S5	G5				
iNat (2018)	Virginia Bluebells	Mertensia virginica				S3	G5				
iNat (2020)	Jack-in-the-Pulpit	Arisaema triphyllum				S5	G5				
iNat (2018)	Wild Geranium	Geranium maculatum				S5	G5				
iNat (2018)	Sensitive Fern	Onoclea sensibilis				S5	G5				
iNat (2018)	Swamp Milkweed	Aslepias incarnata				S5	G5				
iNat (2020)	Purple-flowered Raspberry	Rubus odoratus				S5	G5				
iNat (2018)	Scarlet Pimpernel	Lysimachia arvensis				SNA	GNR				
iNat (2018)	Wild Four o'Clock	Mirabilis nyctaginea				S2	G5				
iNat (2014)	Red Oak	Querbus rubra				S5	G5				

iNat (2019)	Red Elderberry	Sambucus racemosa				S5	G5				
iNat (2019)	Yellow Trout Lily	Erythronium americanum				S5	G5				
iNat (2019)	Virginia Spring Beauty	Claytonia virginica				S5	G5				
iNat (2019)	Canada Violet	Viola canadensis				S5	G5T5				
iNat (2019)	Dame's Rocket	Hesperis matronalis				SNA	G4G5				
iNat (2019)	Common Blue Violet	Viola sororia				S5	G5				
iNat (2019)	Garlic Mustard	Alliaria petiolata				SNA	GNR				
iNat (2019)	May-apple	Podophyllum peltatum				S5	G5				
iNat (2019)	Common Lilac	Syringa vulgaris				SNA	GNR				
iNat (2019)	Black Raspberry	Rubus occidentalis				S5	G5				
iNat (2019)	Tall Bellflower	Campanulastrum americanum				S4	G5				
iNat (2019)	Early Meadow-rue	Thalictrum dioicum				S5	G5				
iNat (2019)	Bittersweet Nightshade	Solanum dulcamara				SNA	GNR				
iNat (2019)	Pale Jewelweed	Impatiens pallida				S4	G5				
iNat (2019)	White Vervain	Verbena urticifolia				S5	G5				
iNat (2019)	Japanese Barberry	Berberis thunbergii				SNA	GNR				
iNat (2019)	Multiflora Rose	Rosa multiflora				SNA	GNR				
iNat (2019)	Manitoba Maple	Acer negundo				S5	G5				
iNat (2020)	Black Locust	Robinia pseudoacacia				SNA	G5				
iNat (2020)	Common Ragweed	Ambrosia artemisifolia				S5	G5				
iNat (2020)	White Baneberry	Actaea pachypoda				S5	G5				
iNat (2020)	Wood Nettle	Laportea canadensis				S5	G5				
iNat (2021)	Colt's-foot	Tussilago farfara				SNA	GNR				
iNat (2021)	Small White Leek	Allium tricoccum				S4	G--T5				
	FUNGI										
iNat (2018)	Black Knot	Apiosporina morbosa									
iNat (2019)	Scaly Ink Cap	Coprinopsis variegata									
iNat (2014)	Chicken of the Woods	Laetiporus sulphureus									
iNat (2019)	Orange Jelly Spot	Dacrymyces chrysospermus									
iNat (2020)	Hemlock Varnish Shelf	Ganoderma tsugae									
iNat (2020)	Violet-toothed Polypore	Trichaptum biforme									
iNat (2020)	Resinous Polypore	Ischnoderma resinosum									
	MOSSES AND LICHENS										
iNat (2019)	Fluffy Dust Lichen	Lepraria finkii				S5	G5				
iNat (2019)	Sulphur Firedot	Gyalolechia flavovirescens				S5	G5				
iNat (2019)	Hedwig's Fringelead Moss	Hedwigia ciliata				S5	G5				
iNat (2019)	Sessile Grimmia	Schistidium apocarpum				S5	G5				
iNat (2020)	Goose Egg Moss	Arrhenopterum heterostichum				S3	G5				

Legend:
COSARO: Committee on Species at Risk Ontario
COSEWIC: Committee on the status of endangered wildlife in Canada
SARA: Species at Risk Act
ESA: Endangered Species Act
END: Endangered
THR: Threatened
SC: special Concern
NAR: Not At Risk
NL: Not listed
DD: Data Deficient

S-Rank:
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the province
SX: Presumed extirpated
SH: Possibly Extirpated (Historical)
SNR: Unranked
SU: Unrankable—Currently unrankable due to lack of information
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
S#B- Breeding status rank
S#N- Non Breeding status rank
?: Indicates uncertainty in the assigned rank

G-Rank:
G1: Extremely rare globally
G1G2: Extremely rare to very rare globally
G2: Very rare globally
G2G3: Very rare to uncommon globally
G3: Rare to uncommon globally
G3G4: Rare to common globally
G4: Common globally
G4G5: Common to very common globally

G5: Very common globally; demonstrably secure
T: Denotes that the rank applies to a subspecies or variety

Source codes
OBA: Ontario butterfly Atlas Online
ORAA: Ontario Reptile and Amphibian Atlas
OMA: Ontario Mammal Atlas
OBBA: Ontario Breeding Bird Atlas
HCA: Hamilton Conservation Authority

Hamilton Conservation Area Abundance Codes:
R = Rare. 1-10 areas, locally significant.
U = Uncommon. 11-25 natural areas, may become significant.
C = Common. Present in 26-200 squares.
A= abundant. Occur in more than 200 squares
EXT=Extirpated.

Sources:

1.Colin Jones, Ross Layberry, and Alan Macnaughton. Ontario Butterfly Atlas Online. (April 30, 2015).
(Available online here: Toronto Entomologists' Association: http://www.ontarioinsects.org/atlas_online.htm)

2.Ontario Nature. 2019. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature, Ontario. (Available onlnie here: http://www.ontarionature.org/atlas).

3.Dobbyn,J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists, Altona Manitoba, Canada.
(available online here: http://www.ontarionature.org/discover/resources/publications.php)

4.Cadman, M.D.,D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier. 2007. The Atlas of the Breeding Birds Ontario 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto,xxii + 706pp. (Available online here: http://www.birdsontario.org/atlas/datasummaries.jsp)

(Available online: http://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map)

6. Hamilton Conservation Authority, 2014. Hamilton Natural Areas Inventory

7. eBird, 2021. (Available online: http://www.ebird.org/home)

8. iNaturalist, 2021. (Available online: http://www.inaturalist.org)

APPENDIX 3

Ecological Land Classification Forms

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: HCA PARKING AREAS- LOWER LION'S CLUB ROAD		POLYGON: A
	SURVEYOR(S): SD, KS	DATE: MAY 12, 2021	PHOTO #:
	START: 13:27	END: 15:27	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	■ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		■ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		■ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	■ MEADOW
	☐ BASIC BEDRK.	☐ ALVAR		☐	☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
	☐ CARB BEDRK.	☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	■ OPEN
☐ SHALLOW WATER	☐ SHRUB
■ SURFICIAL DEP.	☐ TREED
☐ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	1	ACER SACCHARUM > AILANTHUS ALTISSIMA
2	SUBCANOPY	3	2	JUGLANS NIGRA > RHAMNUS CATHARTICA
3	UNDERSTOREY	4	3	RUBUS IDAEUS > ROSA MULTIFLORA > PRUNUS VIRGINIANA > ACER NEGUNDO
4	GRD. LAYER	6	4	POA COMPRESSA > SOLIDAGO SP. > DAUCUS CAROTA > DIPSACUS FULLONUM

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	R	<10	R	10-24	N	25-50	N	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	R	<10	R	10-24	N	25-50	N	>50
COMM. AGE.								

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: MEADOW		CODE: ME
COMMUNITY SERIES: GRAMINOID MEADOW		CODE: MEG
ECOSITE: DRY- FRESH GRAMINOID MEADOW		CODE: MEGM3
VEGETATION TYPE:		CODE:
INCLUSION		CODE:
COMPLEX		CODE:

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
JUGLANS NIGRA		O-R		
PRUNUS SEROTINA			R	R
ACER SACCHARUM	R			
FRAXINUS AMERICANA				R
CRATAEGUS SP.			R	
ACER NEGUNDO			R	
AILANTHUS ALTISSIMA	R			
RUBUS IDAEUS			A-O	
ROSA MULTIFLORA			O	
RHAMNUS CATHARTICA		O		
PRUNUS VIRGINIANA			R	
FORSYTHIA SUSPENSA			R	

SPECIES	LAYER			
	C	SC	U	GL
TARAXACUM OFFICINALE				O
SOLIDAGO CANADENSIS				O
DIPSACUS FULLONUM				R
DAUCUS CAROTA				O
PLANTAGO MAJOR				O-R
TRIFOLIUM REPENS				R
POA PRATENSIS				O
POA COMPRESSA				A-O
PHALARIS ARUNDINACEA				O-R
ALLIARIA PETIOLATA				R
POTENTILLA RECTA				R
GLECHOMA HEDERACEA				R
ALLIUM VINEALE				R

NOTES:
ALIEN SPECIES- OCCASIONAL, WIDESPREAD
TRACKS/TRAILS- FAINT TRAILS (ATV), LOCAL
DUMPING- MODERATE, WIDESPREAD (METAL SHEETING)
NOISE- SLIGHT, LOCAL

NO CANDIDATE BAT MATERNITY HABITAT PRESENT

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Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: HCA PARKING AREAS- LOWER LION'S CLUB ROAD		POLYGON: B
	SURVEYOR(S): SD, KS	DATE: MAY 12, 2021	PHOTO #:
	START: 13:27	END: 15:27	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	■ VALLEYSLOPE		☐ FORB	☐ MARSH
		☐ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ BASIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
	☐ CARB BEDRK.	☐ TALUS		■ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR		☐	☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			■ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
■ SURFICIAL DEP.	■ TREED
☐ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	FRAXINUS AMERICANA > ACER SACCHARUM > SALIX X FRAGILIS
2	SUBCANOPY	3	3	FRAXINUS AMERICANA > ACER NEGUNDO >MALUS PUMILA >THUJA OCCIDENTALIS
3	UNDERSTOREY	4	3	VITIS RIPARIA > RUBUS IDAEUS > ROSA MULTIFLORA > LONICERA TATARICA
4	GRD. LAYER	7	4	ALLIARIA PETIOLATA > MYOSOTIS SCORPOIDES >> TARAXACUM OFFICINALE > LEONURUS CARDIACA

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	A	<10	A	10-24	O	25-50	R	>50
STANDING SNAGS:	O	<10	O	10-24	R	25-50	N	>50
DEADFALL/LOGS:	A	<10	O	10-24	R	25-50	N	>50
COMM. AGE.	MID-AGED							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS:	FOREST	CODE:	FO
COMMUNITY SERIES:	DECIDUOUS FOREST	CODE:	FOD
ECOSITE:	DRY- FRESH SUGAR MAPLE DECIDUOUS FOREST	CODE:	FODM 5
VEGETATION TYPE:	DRY- FRESH SUGAR MAPLE- HARDWOOD DECIDUOUS FOREST	CODE:	FODM 5-9
INCLUSION		CODE:	
COMPLEX		CODE:	

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER C	SC	U	GL
THUJA OCCIDENTALIS		R		
SALIX X FRAGILIS	O-R			
MALUS PUMILA		O-R		
ACER NEGUNDO		O	R	R
FRAXINUS AMERICANA	A	O		O-R
ACER SACCHARUM	A-O			
RUBUS IDAEUS			O	
ROSA MULTIFLORA			O-R	
VITIS RIPARIA			O	
LONICERA TATARICA			O-R	

SPECIES	LAYER C	SC	U	GL
GLECHOMA HEDERACEA				O-R
TARAXACUM OFFICINALE				O
MYOSOTIS ARVENSIS				A-O
ALLIARIA PETIOLATA				A-O
LEONURUS CARDIACA				O-R
ALLIUM VINEALE				R
ARISAEMA TRIPHYLLUM				R
TOXICODENDRON RADICANS				R

NOTES:

ALIEN SPECIES- ABUNDANT, WIDESPREAD
GAPS IN CANOPY- SMALL, LOCAL
NOISE- MODERATE, LOCAL
DEATH/DISEASE OF TREES- LIGHT, LOCAL
DEER BROWSE- LIGHT, WIDESPREAD

EACO (SCAT)

CANDIDATE BAT HABITAT PRESENT

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Representative Photographs of Vegetation Community:

ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

PROJ. NO./NAME: HCA PARKING AREAS- LOWER LION'S CLUB ROAD		**POLYGON:** C
SURVEYOR(S): SD, KS	**DATE:** MAY 12, 2021	**PHOTO #:**
START: 13:27	**END:** 15:27	**ZONE & UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
	☐ ACIDIC BEDRK.	■ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		■ CONIFEROUS	☐ BARREN
	☐ BASIC BEDRK.	☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR		☐	☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
	☐ CARB BEDRK.	☐ SAND DUNE			■ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
■ SURFICIAL DEP.	■ TREED
☐ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	JUGLANS NIGRA >> ACER SACCHARUM
2	SUBCANOPY	3	2	JUGLANS NIGRA >> POPULUS BALSAMIFERA
3	UNDERSTOREY	4	4	RUBUS IDAEUS > LONICERA TATARICA > RUBUS OCCIDENTALIS > LONICERA SP.
4	GRD. LAYER	6	4	GRASS SP. > MYOSOTIS SCORPOIDES > DAUCUS CAROTA > SOLIDAGO SP.

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	A	<10	A	10-24	O	25-50	R	>50
STANDING SNAGS:	R	<10	O	10-24	R	25-50	N	>50
DEADFALL/LOGS:	O	<10	O	10-24	R	25-50	N	>50
COMM. AGE.	YOUNG							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g=**	**G=**
MOISTURE:	**DEPTH OF ORGANICS:**	(cm)	
HOMOGENOUS/VARIABLE	**DEPTH TO BEDROCK**	(cm)	

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: WOODLAND		**CODE:** WO
COMMUNITY SERIES: DECIDUOUS WOODLAND		**CODE:** WOD
ECOSITE: DRY- FRESH DECIDUOUS WOODLAND		**CODE:** WODM 4
VEGETATION TYPE: DRY- FRESH BLACK WALNUT DECIDUOUS WOODLAND		**CODE:** WODM 4-4
INCLUSION		**CODE:**
COMPLEX		**CODE:**

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER C	SC	U	GL
JUGLANS NIGRA	D	D-A		
ACER SACCHARUM	R			
FRAXINUS AMERICANA			O-R	
POPULUS BALSAMIFERA		R		
RUBUS IDAEUS			A-O	
RUBUS OCCIDENTALIS			R	
LONICERA SP.			R	
RUBUS ALLEGHENIENSIS				R
LONICERA TATARICA			O-R	

SPECIES	LAYER C	SC	U	GL
TARAXACUM OFFICINALE				O-R
DAUCUS CAROTA				O
SOLIDAGO CANADENSIS				O
MYOSOTIS ARVENSIS				A-O
MAIANTHEMUM CANADENSE				R
POA COMPRESSA				A-O
ALLIARIA PETIOLATA				O-R
GALIUM APARINE				O-R
LEONURUS CARDIACA				R
ERYTHRONIUM AMERICANUM				R

NOTES:

ALIEN SPECIES- OCCASIONAL, WIDESPREAD
GAPS IN THE FOREST CANOPY- SMALL, LOCAL
TRACKS/TRAILS- FAINT TRAILS, LOCAL
DUMPING- LIGHT, LOCAL (LITTER)
NOISE- SLIGHT, LOCAL

WTDE TRACKS

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Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: HCA PARKING AREAS- LOWER LION'S CLUB ROAD		POLYGON: D
	SURVEYOR(S): SD, KS	DATE: MAY 12, 2021	PHOTO #:
	START: 13:27	END: 15:27	ZONE & UTM:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		■ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ BASIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
	☐ CARB BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
		☐ ALVAR		■	☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			■ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
■ SURFICIAL DEP.	■ TREED
☐ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1	4	PINUS STROBUS > ACER SACCHARUM
2	SUBCANOPY	2	3	ACER RUBRUM > PINUS STROBUS > THUJA OCCIDENTALIS > PICEA GLAUCA
3	UNDERSTOREY	4	2	RUBUS IDAEUS > RHAMNUS CATHARTICA
4	GRD. LAYER	7	3	POA PRATENSIS > ALLIARIA PETIOLATA > SOLIDAGO SP. > TARAXACUM OFFICINALE

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	O	<10	A	10-24	O	25-50	R	>50
STANDING SNAGS:	R	<10	R	10-24	N	25-50	N	>50
DEADFALL/LOGS:	O	<10	R	10-24	N	25-50	N	>50
COMM. AGE.	MATURE							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK		(cm)

COMMUNITY CLASSIFICATION

COMMUNITY CLASS:	FOREST	CODE: FO
COMMUNITY SERIES:	MIXED FOREST	CODE: FOM
ECOSITE:	DRY- FRESH WHITE PINE- HARDWOOD MIXED FOREST	CODE: FOMM 2
VEGETATION TYPE:		CODE:
INCLUSION		CODE:
COMPLEX		CODE:

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER C	SC	U	GL
PINUS STROBUS	A	O		
THUJA OCCIDENTALIS		O		
ACER SACCHARUM	A-O			
ACER RUBRUM		O		
PICEA GLAUCA		O-R		
RUBUS IDAEUS			O	
RHAMNUS CATHARTICA			O-R	

SPECIES	LAYER C	SC	U	GL
ALLIARIA PETIOLATA				O
POA PRATENSIS				A-O
TARAXACUM OFFICINALE				R
SOLIDAGO CANADENSIS				O-R

NOTES:

SURVEY COMPLETED FROM THE ROADSIDE, SOME TREE SPECIES WERE PLANTED.

ALIEN SPECIES- OCCASIONAL, WIDESPREAD
NOISE- MODERATE, WIDESPREAD

CANDIDATE BAT HABITAT MAY BE PRESENT IN FEATURE

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ELC
COMMUNITY DESCRIPTION & CLASSIFICATION

PROJ. NO./NAME: HCA PARKING AREAS- LOWER LION'S CLUB ROAD		**POLYGON:** E
SURVEYOR(S): SD, KS	**DATE:** MAY 12, 2021	**PHOTO #:**
START: 13:27	**END:** 15:27	**ZONE & UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
	☐ ACIDIC BEDRK.	■ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		■ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	☐ MEADOW
	☐ BASIC BEDRK.	☐ ALVAR		☐	☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
	☐ CARB BEDRK.	☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			■ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
☐ SHALLOW WATER	☐ SHRUB
■ SURFICIAL DEP.	■ TREED
☐ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	SALIX X FRAGILIS >> ACER SACCHARUM
2	SUBCANOPY	3	3	ACER NEGUNDO = RHAMNUS CATHARTICA > ACER SACCHARUM
3	UNDERSTOREY	4	3	RHAMNUS CATHARTICA = RUBUS IDAEUS > VITIS RIPARIA
4	GRD. LAYER	6	4	ALLIARIA PETIOLATA > SOLIDAGO SP. > GRASS SP. > TARAXACUM OFFICINALE

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	A	<10	A	10-24	O	25-50	R	>50
STANDING SNAGS:	R	<10	R	10-24	R	25-50	N	>50
DEADFALL/LOGS:	A	<10	O	10-24	R	25-50	N	>50
COMM. AGE.	MATURE							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g=**	**G=**
MOISTURE:	**DEPTH OF ORGANICS:**	(cm)	
HOMOGENOUS/VARIABLE	**DEPTH TO BEDROCK**	(cm)	

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: FOREST		**CODE:** FO
COMMUNITY SERIES: DECIDUOUS FOREST		**CODE:** FOD
ECOSITE: FRESH- MOIST LOWLAND DECIDUOUS FOREST		**CODE:** FODM 7
VEGETATION TYPE: FRESH- MOIST WILLOW LOWLAND DECIDUOUS FOREST		**CODE:** FODM 7-3
INCLUSION		**CODE:**
COMPLEX		**CODE:**

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
SALIX X FRAGILIS	A-O			
ACER NEGUNDO		O		
ACER SACCHARUM	R	R		
RHAMNUS CATHARTICA		O	O	
RUBUS IDAEUS			O	
VITIS RIPARIA			O-R	

SPECIES	LAYER			
	C	SC	U	GL
SOLIDAGO CANADENSIS				O
ALLIARIA PETIOLATA				A-O
GALIUM MOLLUGO				R
MATTEUCCIA STRUTHIOPTERIS				R
TARAXACUM OFFICINALE				O-R
POA COMPRESSA				O

NOTES: ALIEN SPECIES- MODERATE, WIDESPREAD
NOISE- MODERATE, LOCAL

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APPENDIX 4

Vascular Plant List

Season			Plant Type [1]	Scientific Name	Common Name	CC [2]	CW [3]	SARO Status [4]	SARA Status [5]	Global Rank [6]	Prov. Rank [7]	Hamilton CA (2014)
Spring	Summer	Fall										
✓	✓	✓	TR	Acer negundo	Manitoba Maple	0	0	NL	NL	G5	S5	
✓			TR	Acer rubrum	Red Maple	4	0	NL	NL	G5	S5	
	✓	✓	TR	Acer saccharinum	Silver Maple	5	-3	NL	NL	G5	S5	
✓	✓	✓	TR	Acer saccharum	Sugar Maple	4	3	NL	NL	G5	S5	
	✓	✓	FO	Achillea millefolium	Common Yarrow	0	3	NL	NL	G5	SNA	I
✓	✓	✓	TR	Ailanthus altissima	Tree-of-heaven	*	5	NL	NL	GNR	SNA	I
✓	✓	✓	FO	Alliaria petiolata	Garlic Mustard	*	0	NL	NL	GNR	SNA	I
✓	✓		FO	Allium vineale	Wild Garlic	*	3	NL	NL	GNR	SNA	I
	✓		FO	Anemone virginiana	Tall Anemone	4	3	NL	NL	G5T5	S5?	
		✓	FO	Arctium minus	Common Burdock	*	3	NL	NL	GNR	SNA	I
✓			FO	Arisaema triphyllum	Jack-in-the-Pulpit	5	-3	NL	NL	G5	S5	
	✓	✓	FO	Asclepias syriaca	Common Milkweed	0	5	NL	NL	G5	S5	
	✓		FE	Athyrium felix-femina	Common Lady Fern	4	0	NL	NL	G5T5	S5	
	✓		GR	Bromus erectus	Meadow Brome	*	5	NL	NL	GNR	SNA	
	✓	✓	GR	Bromus inermis	Awnless Brome	*	5	NL	NL	GNR	SNA	I
	✓		FO	Campanula rapunculoides	Creeping Bellflower	*	5	NL	NL	GNR	SNA	I
	✓	✓	FO	Cichorium intybus	Chicory	*	5	NL	NL	GNR	SNA	I
	✓		FO	Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	3	NL	NL	GNR	S5	
	✓	✓	FO	Cirsium arvense	Canada Thistle	*	3	NL	NL	G5	SNA	I
	✓	✓	FO	Clinopodium vulgare	Field Basil	4	5	NL	NL	G5	S5	
	✓		SH	Cornus alternifolia	Alternate-leaved Dogwood	6	3	NL	NL	G5	S5	
	✓		SH	Cornus racemosa	Gray Dogwood	2	0	NL	NL	G5?	S5	
		✓	SH	Cornus sericea	Red-osier Dogwood	2	-3	NL	NL	G5	S5	
	✓	✓	GR	Dactylis glomerata	Orchard Grass	*	3	NL	NL	GNR	SNA	I
	✓	✓	FO	Daucus carota	Wild Carrot	*	5	NL	NL	GNR	SNA	I
	✓		FO	Dianthus armeria	Deptford Pink	*	5	NL	NL	GNR	SNA	I
✓	✓	✓	FO	Dipsacus fullonum	Common Teasel		3	NL	NL	GNR	SNA	I

	✓	✓	FO	Echium vulgare	Common Viper's Bugloss	*	5	NL	NL	GNR	SNA	I
		✓	GR	Elymus hystrix	Bottlebrush Grass	5	5	NL	NL	G5	S5	
	✓		FO	Erigeron annuus	Annual Fleabane	0	3	NL	NL	G5	S5	
		✓	FO	Euthamia graminifolia	Grass-leaved Goldenrod	2	0	NL	NL	G5	S5	
✓			SH	Forsythia suspensa	Weeping Forsythia		5	NL	NL	GNR	SNA	
✓	✓		FO	Fragaria virginiana	Wild Strawberry	2	3	NL	NL	G5	S5	
✓	✓	✓	TR	Fraxinus americana	White Ash	4	3	NL	NL	G5	S4	
✓			FO	Galium aparine	Cleavers	4	3	NL	NL	G5	S5	
	✓		FO	Geranium robertianum	Herb-robert	2	3	NL	NL	G5	S5	I
	✓		FO	Geum canadense	White Avens	3	0	NL	NL	G5	S5	
✓		✓	FO	Glechoma hederacea	Ground Ivy	*	3	NL	NL	GNR	SNA	I
	✓	✓	FO	Hesperis matronalis	Dame's Rocket	*	3	NL	NL	G4G5	SNA	I
	✓		FO	Hieracium sp.	Hawkweed species							
	✓		FO	Hypericum perforatum	Common St.John's-wort	*	5	NL	NL	GNR	SNA	
✓	✓	✓	TR	Juglans nigra	Black Walnut	5	3	NL	NL	G5	S4?	
	✓		FO	Lathyrus latifolius	Everlasting Pea	*	5	NL	NL	GNR	SNA	I
✓	✓		FO	Leonurus cardiaca	Common Motherwort	*	5	NL	NL	GNR	SNA	I
	✓		FO	Leucanthemum vulgare	Oxeye Daisy		5	NL	NL	GNR	SNA	I
		✓	FO	Linaria vulgaris	Butter-and-eggs	*	5	NL	NL	GNR	SNA	I
✓	✓		SH	Lonicera tatarica	Tartarian Honeysuckle	*	3	NL	NL	GNR	SNA	I
✓			FO	Maianthemum canadense	Wild Lily-of-the-valley	5	3	NL	NL	G5	S5	
✓			TR	Malus pumila	Common Apple	*	5	NL	NL	G5	SNA	I
	✓	✓	FO	Medicago lupulina	Black Medic	*	3	NL	NL	GNR	SNA	I
	✓		FO	Mentha arvensis	Field Mint	3	-3	NL	NL	G5T5	S5	
	✓	✓	FO	Monarda fistulosa	Wild Bergamot	6	3	NL	NL	G5T5	SU	
✓			FO	Myosotis avensis	Rough Forget-me-not	*	0	NL	NL	GNR	SNA	I
	✓		FO	Oxalis stricta	Upright Yellow Wood-sorrel	0	3	NL	NL	G5	S5	
	✓	✓	VW	Parthenocissus quinquefolia	Virginia Creeper	6	3	NL	NL	G5	S4?	
✓	✓		GR	Phalaris arundinacea	Reed Canary Grass	0	-3	NL	NL	G5	S5	
	✓		GR	Phleum pratense	Common Timothy	*	3	NL	NL	GNR	SNA	
✓	✓	✓	TR	Picea abies	Norway Spruce	6	3	NL	NL	G5	S5	I
	✓	✓	TR	Picea pungens	Blue Spruce		3	NL	NL	G5	SNA	I
✓	✓	✓	TR	Pinus strobus	Eastern White Pine	4	3	NL	NL	G5	S5	
✓			FO	Plantago major	Common Plantain	*	3	NL	NL	G5	S5	I

✓			GR	Poa compressa	Canada Bluegrass	0	3	NL	NL	GNR	SNA	
✓	✓		GR	Poa pratensis ssp. pratensis	Kentucky Bluegrass	0	3	NL	NL	G5T5	SNA	I
✓			TR	Populus balsamifera	Balsam Poplar	4	-3	NL	NL	G5	S5	
✓	✓		FO	Potentilla recta	Sulphur Cinquefoil	*	5	NL	NL	GNR	SNA	I
✓			TR	Prunus serotina	Black Cherry	3	3	NL	NL	G5	S5	
✓			SH	Prunus virginiana	Choke Cherry	2	3	NL	NL	G5	S5	
	✓		FO	Ranunculus acris	Tall Buttercup	*	0	NL	NL	G5	SNA	I
✓	✓	✓	SH	Rhamnus cathartica	Common Buckthorn	*	0	NL	NL	GNR	SNA	I
	✓	✓	SH	Rhus typhina	Staghorn Sumac	1	3	NL	NL	G5	S5	
✓	✓	✓	SH	Rosa multiflora	Multiflora Rose	*	3	NL	NL	GNR	SNA	I
✓			SH	Rubus allegheniensis	Alleghany Blackberry	2	3	NL	NL	G5	S5	
✓	✓	✓	SH	Rubus idaeus ssp. strigosus	Wild Red Raspberry	2	3	NL	NL	G5T5	S5	
✓	✓	✓	SH	Rubus occidentalis	Black Raspberry	2	5	NL	NL	G5	S5	
✓	✓		TR	Salix X fragilis	Crack Willow	*		NL	NL	GNR	SNA	
	✓		VI	Solanum dulcamara	Bittersweet Nightshade	*	0	NL	NL	GNR	SNA	I
		✓	FO	Solidago altissima	Late Goldenrod	1	3	NL	NL	G-T5	S5	
✓	✓	✓	FO	Solidago canadensis	Canada Goldenrod	1	3	NL	NL	G5T5	S5	
		✓	FO	Symphyotrichum ericoides	White Heath Aster	4	3	NL	NL	G5T5	S5	
		✓	FO	Symphyotrichum novae-angliae	New England Aster	2	-3	NL	NL	G5	S5	
		✓	FO	Symphyotrichum urophyllum	Arrow-leaved Aster	6	5	NL	NL	G4G5	S4	
✓		✓	FO	Taraxacum officinale	Common Dandelion	*	3	NL	NL	G5	SNA	I
✓	✓		TR	Thuja occidentalis	Eastern White Cedar	4	-3	NL	NL	G5	S5	
✓			VW	Toxicodendron radicans	Eastern Poison Ivy	5	-1	NL	NL	G5	S5	
	✓	✓	FO	Trifolium pratense	Red Clover	*	3	NL	NL	GNR	SNA	I
✓			FO	Trifolium repens	White Clover	*	3	NL	NL	GNR	SNA	I
	✓		TR	Ulmus americana	American Elm	3	-3	NL	NL	G5	S5	
	✓	✓	FO	Verbena urticifolia	White Vervain	4	0	NL	NL	G5	S5	
	✓		FO	Vicia cracca	Tufted Vetch	*	5	NL	NL	GNR	SNA	I
✓	✓	✓	VW	Vitis riparia	Riverbank Grape	0	0	NL	NL	G5	S5	

1. Plant Types: AL = Algae; FE = Fern; FO = Forb; GR = Grass; LC = Lichen; LV = Liverwort; MO = Moss; RU = Rush; SE = Sedge; SH = Shrub; TR = Tree; VI = Herbaceous vine; VW = Woody Vine
2. CC: Coefficient of Conservatism reflects a species' fidelity to a specific habitat. Range from 0 to 10; 10 = very conservative, not likely in disturbed habitats, 1 = least conservative, likely found in a broad range of habitat. * = value not assigned because they are non-native
3. CW: Coefficient of Wetness reflects a species' affinity for wet soil conditions. Range from -5 to 5; -5 = obligate wetland species, 5 = obligate upland species.

4.	SARO: Status under the Provincial Endangered Species Act, listed on the Species at Risk in Ontario (SARO) list. In order of severity, statuses include: EXP = Extirpated; END = Endangered; THR = Threatened; SC = Special Concern
5.	SARA: Status under the National Species at Risk Act (SARA), assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In order of severity, statuses include: EXP = Extirpated; END = Endangered; THR = Threatened; SC = Special Concern
6.	Global rarity rank. Range from G1 to G5; G1 = Extremely rare, G5 = Very Common. NR = Unranked; U = Unrankable.
7.	Provincial rarity rank. Range from S1 to S5; S1 = Extremely rare, S5 = Very Common. NR = Unranked; U = Unrankable.
8.	Hamilton Natural Areas Inventory (HCA, 2014): I= Introduced

APPENDIX 5

Significant Wildlife Habitat Assessment

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
SEASONAL CONCENTRATION AREAS OF ANIMALS								
1	Waterfowl stopover and Staging Areas (terrestrial)	- Fields with Sheet water in spring (incl. agricultural)	- Mixed species aggregations of 100 or more individuals confirms SWH	flooded field ecosite and 100-300m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
2	Waterfowl Stopover and Staging (Aquatic)	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	- Aggregations of 100 or more listed species for 7 days (ie. >700 waterfowl use days) confirms SWH	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat	- 3 or more listed species and >1000 shorebird use days, or >100 whimbrel, confirms SWH	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
4	Raptor Wintering Area	- Combination of upland field and woodland habitat >20ha total (includes,>15ha upland field) - least disturbed sites, idle, fallow or lightly grazed field/meadow best	- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH	Ecosite communities (field and woodland) is the SWH	Upland meadow communities within Study Area >15ha in area.	No	None required.	No
5	Bat Hibernacula	- Caves, mine shafts, underground foundations, karsts - buildings are not SWH	- All sites with confirmed hibernating bats, confirms SWH	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>25cm DBH) in early stages of decay (class 1-3) - buildings are not SWH	- >10 Big Brown Bats, >20 Little Brown Myotis, >5 adult female Silver-haired Bats confirms SWH	Entire woodland or forest stand ELC ecosite containing colony is the SWH	Forested ecosites present in Study area with trees >10cm DBH.	Yes	Studies recommended pre-construction in areas where tree removal/damage to occur in candidate habitat.	unknown

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	Decommissioned well present within the Study Area which may provide suitable habitat	Yes	No surveys complete, pre-construction emergence surveys recommended if proposed development is within 120m of candidate habitat.	unknown
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river (natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of Lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM, FOC, SWM, SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	Deer Wintering Area (Stratum 2) present in majority of the Study Area	Yes	None required.	Yes
RARE VEGETATION COMMUNITIES								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	- Ground cover dominated by prairie grasses with <25% tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more prairie indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	- Field Studies Confirming ELC vegetation type is a rare vegetation community	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
SPECIALIZED HABITAT FOR WILDLIFE								
23	Waterfowl Nesting Areas	- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM) - Extends 120m from a wetland (>0.5ha) and any small wetlands (<0.5ha) within a cluster of at least 3 - Upland area at least 120m wide	- Presence of 3 or more nesting pairs of listed species excluding Mallards - Presence of 10 or more nesting pairs including mallards - Any active Black Duck nesting site	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No wetland communities adjacent the treed communities within the Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	- Forest communities, adjacent to riparian areas - Osprey nests usually at top of tree - Bald Eagle nest usually in super canopy tree in a notch within canopy	- Studies confirm one or more active Bald Eagle or Osprey nest - Alternate nests included in SWH - Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	- One or more active nest of listed species	Nest protection radius: - Red-Shouldered Hawk, Northern Goshawk 400m - Barred Owl 200m - Broad-winged Hawk, Coopers Hawk 100m - Sharp-shinned Hawk 50	Forested habitat may provide opportunities for woodland raptor nesting	No	No stick nests observed during ELC or SWH Assessment	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	- Exposed Mineral soil (sand or gravel) adjacent (<100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities - Located in open sunny areas, away from roads and less prone to predation - Municipal and provincial road shoulders are not SWH.	- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	- Areas where ground water comes to the surface - Any forested area within the headwaters of a stream or river system	- Confirm site with 2 or more seeps/springs. -	Area of ELC forest ecosite containing seep/spring is the SWH	Seeps and springs possible within forested and wetland communities	Yes	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	- Breeding pools within woodlands - Wetland, pond or pool >500m^2 within or adjacent (<120m) to a woodland. - Woodlands with permanent ponds, or those with water until mid-July more likely to be used.	- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3. - Wetland adjacent to woodlands includes travel corridor connecting features as SWH.	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities. - Typically isolated from woodlands (>120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands. - Wetlands >500m2 - Presence of shrubs & logs - Bullfrogs require permanent water bodies and abundant emergent vegetation.	- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3 - Or any wetland with confirmed breeding Bullfrog.	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No isolated wetland communities >120m from the forested communities within the Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	- Habitats where interior breeding birds are breeding - Large mature(>60 years) forest stands or woodlots >30ha - Forest and swamp ELC communities - Interior habitat at least 200m from edge	- Presence of nesting or breeding pairs of 3 or more of the listed species - Any site with Cerulean Warbler or Canada Warbler is SWH -	ELC ecosite is the SWH	No interior habitat (>200m) identified in study area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								
31	Marsh Bird Breeding Habitat	- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics) - Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation - Green heron at edge of water sheltered by shrubs and trees.	- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species - Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	Breeding Bird surveys completed.	No
32	Open Country Bird Breeding Habitat	- Grassland area >30ha (natural & cultural fields and meadows) - Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing) - Mature hayfields or pasture at least 5 years old	- Nesting or breeding of 2 or more of the listed species - Field with 1 or more Short-eared Owls	Contiguous ELC ecosite is the SWH	Meadow communities within Study Area < 30ha in area.	No	Breeding Bird Surveys complete	No
33	Shrub/Early Successional Bird Breeding Habitat	- Cultural thickets, savannah and woodland habitat - Large field area succeeding to shrub and thicket habitat >10ha in size - Patches of shrub ecosite may be complexed into larger old field ecosites for some species	- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species - Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities - Cultural meadow with inclusions of meadow marsh may be used - Wet edges of marshes and wet meadows should be surveyed for crayfish	- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
35	Special Concern & Rare Wildlife Species	- All Special concern and Provincially Rare plant and animal species - Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites	- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable - Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 12 Special concern species within 10km of the Study Area - Monarch (OBA, HCA) - Milksnake (ORAA) - Snapping Turtle (ORAA, HCA) - Northern Map Turtle (ORAA) - Eastern Musk Turtle (ORAA) - Red-headed Woodpecker (eBird) - Eastern Wood-pewee (eBird, OBBA, HCA, NHIC) - Wood Thrush (HCA, OBBA, eBird, NHIC) - Golden-winged Warbler (OBBA) - Grasshopper Sparrow (OBBA) - Rusty Blackbird (eBird) - Woodland Vole (OMA)	Yes-Meadow communities may provide suitable habitat for Milksnake. Forested communities may provide suitable habitat for Eastern Wood-pewee and Wood Thrush.	ELC Three season Botanical Survey Breeding Bird Survey Incidental wildlife	Eastern Wood-pewee identified in the Sugar Maple-Hardwood deciduous forest. Milksnake identified along the southern edge of Lower Lions Club Road, east of Tiffany Creek.

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
ANIMAL MOVEMENT CORRIDORS								
36	Amphibian Movement Corridor	- Corridors may occur in all ecosites associated with water - Presence of significant amphibian breeding indicates the requirement for identifying corridors - Movement corridors between breeding habitat and summer habitat	- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant - At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of <20m - Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	- May occur in all forested ecosites - Determined when deer wintering habitat is confirmed as SWH	- Corridors at least 200m wide with gaps <20m leading to wintering habitat - Unbroken by roads and residential areas - Shorter corridors are more significant	Corridor is the SWH	Potential Corridors within the Study Area contain roads.	No	None required	No

APPENDIX 6

Species at Risk Habitat Assessment

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Amphibians										
Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	S2	ORAA (2019) MNRF Species Occurrence Mapping	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander *Ambystoma jeffersonianum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 38 pp.
'Unisexual Ambystoma, Jefferson dependent population	*'Ambystoma laterale - (2) jeffersonianum*	END	END	S2	NHIC (n.d.) MNRF Species Occurrence Mapping	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation in order to breed (COSEWIC 2016).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2016. COSEWIC assessment and status report on the unisexual Ambystoma, Ambystoma laterale, Small-mouthed Salamander–dependent population, Jefferson Salamander–dependent population and the Blue-spotted Salamander–dependent population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxii + 61 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	*Pseudacris triseriata pop. 2*	NAR	THR	S4	ORAA (2013) MNRF Species Occurrence Mapping	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog Pseudacris triseriata Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
Butterflies, Bees, Damselflies, Dragonflies & Insects										
Monarch	*Danaus plexippus*	SC	SC	S2N, S4B	OBA (2019) HRCA (2012) MNRF Species Occurrence Mapping	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	The Graminoid Meadow communities may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	Multiple individuals observed in the western meadow.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch Danaus plexippus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
West Virginia White	*Pieris virginenisis*	SC	NAR	S3	MNRF Species Occurrence Mapping	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort (*Cardamine diphylla*) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White (Pieris virginiensis) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
Yellow-banded Bumble Bee	*Bombus terricola*	SC	SC	S3S5	MNRF Species Occurrence Mapping	Occur in a diverse range of habitat, including mixed woodlands, farmlands, urban areas, montane meadows, prairie grasslands and boreal habitats. Queens overwinter underground and in decomposing organic material such as rotting lots (COSEWIC 2015)	Meadow communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2015. COSEWIC assessment and status report on the Yellow-banded Bumble Bee *Bombus terricola* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 60 pp. *rank considered out of date
Birds										
Bald Eagle	*Haliaeetus leucocephalus*	SC	NAR	S2N, S4B	MNRF Species Occurrence Mapping	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle (Haliaeetus leucocephalus) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Bank Swallow	*Riparia riparia*	THR	THR	S4B	OBBA (2007) MNRF Species Occurrence Mapping	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required. Breeding Bird studies completed.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow Riparia riparia in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	*Hirundo rustica*	THR	THR	S5B	OBBA (2007) eBird (1975) MNRF Species Occurrence Mapping	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	*Tyto alba*	END	END	S1	OBBA (2007)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Barn Owl *Tyto alba* (Eastern population and Western population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	OBBA (2007) eBird (1974) MNRF Species Occurrence Mapping	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Meadow communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink (Dolichonyx oryzivorus), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: http://bna.birds.cornell.edu/bna/species/176
Canada Warbler	*Wilsonia canadensis*	SC	THR	S4B	MNRF Species Occurrence Mapping	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler Wilsonia Canadensis in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Cerulean Warbler	*Setophaga cerulea*	THR	END	S3B	NHIC (n.d.) MNRF Species Occurrence Mapping	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler Dendroica cerulea in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	*Chaetura pelagica*	THR	THR	S4B, S4N	HRCA (2014) OBBA (2007) eBird (1975)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed by AA. HCA noted observation in the surrounding area in 2014.	MNRF, 2013. General Habitat Description for the Chimney Swift *(Chaeture pelagica)*. Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	*Chordeiles minor*	SC	THR	S4B	MNRF Species Occurrence Mapping	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk *Chordeiles minor* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4B	OBBA (2007) eBird (1975) MNRF Species Occurrence Mapping	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Meadow communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	Jaster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark (*Sturnella magna*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/easmea
Eastern Whip-poor-will	*Caprimulgus vociferus*	THR	THR	S4B	MNRF Species Occurrence Mapping	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will Caprimulgus vociferus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	*Contopus virens*	SC	SC	S4B	eBird (2018) HRCA (2014) OBBA (2007) NHIC (n.d.) MNRF Species Occurrence Mapping	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple (Acer), Elm (Ulmus) or Oak (Quercus), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	The forested community within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	One individual observed in the Sugar Maple-Hardwood Forest.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee Contopus virens in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Golden-winged Warbler	*Vermivora chrysoptera*	SC	THR	S4B	OBBA (2007)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird studies completed.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler Vermivora chrysoptera in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC	S4B	OBBA (2007) MNRF Species Occurrence Mapping	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow (*Ammodramus savannarum*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/239\
Henslow's Sparrow	*Ammodramus henslowii*	END	END	SHB	MNRF Species Occurrence Mapping	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow *Ammodramus henslowii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 37 pp.
Least Bittern	*Ixobrychus exilis*	THR	THR	S4B	MNRF Species Occurrence Mapping	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern Ixobrychus exilis in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Louisiana Waterthrush	*Seirus motacilla*	SC	THR	S3B	OBBA (2007) eBird (1995) HRCA (1995) NHIC (n.d.) MNRF Species Occurrence Mapping	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed by AA. HCA noted observations in the surrounding area in 1995.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush Seiurus motacilla in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

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Northern Bobwhite	*Colinus virginianus*	END	END	S1	NHIC (n.d)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COEWSIC 2003).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite Colinus virginianus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	*Contopus cooperi*	SC	THR	S4B	MNRF Species Occurrence Mapping	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher Contopus cooperi in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Peregrine Falcon	*Falco peregrinus*	SC	SC	S3B	MNRF Species Occurrence Mapping	Nests on cliff-ledges (50-200m preferred) near foraging areas. Also nests on anthropomorphic structures, such as tall building ledges, bridges, quarries, mines and cuts for road beds (COSEWIC, 2007a).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Peregrine Falcon *Falco peregrinus* (*pealei* subspecies - *Falco peregrinus* and *pealei anatum/tundrius* -*Falco peregrinus anatum/tundrius*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 45 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Piping Plover	*Charadrius melodus*	END	END	S1B	MNRF Species Occurrence Mapping	Nesting habitat occurs in complex and dynamic beach-dune ecosystems that are maintained by coastal, climate-related, processes such as storm events, water and wave-action, ice-scouring and wind (Kirk, 2013).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	Kirk, D. A. 2013. Recovery Strategy for the Piping Plover (*Charadrius melodus*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. Vi + 61 pp.
Prothonotary Warbler	*Protonotaria citrea*	END	END	S1B	MNRF Species Occurrence Mapping	Occupies large, mature and semi-mature, deciduous swamp forest and riparian floodplains. Permanent and semi-permanent pools of open water are characteristics, and nests are typically situated over standing or slow-moving water (COSEWIC 2007)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2007. COSEWIC assessment and update status report on the Prothonotary Warbler *Prothonotaria citrea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC	THR	S4B	eBird (1975) MNRF Species Occurrence Mapping	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Rusty blackbird	*Euphagus carolinus*	SC	SC	S4B	eBird (2017)	Breeding habitat there is characterized by coniferous-dominated forests adjacent to wetlands, such as slow-moving streams, peat bogs, sedge meadows, marshes, swamps and beaver ponds. On migration, the Rusty Blackbird is primarily associated with wooded wetlands (COSSARO 2017).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSSARO 2017. Ontario Species at Risk Evaluation Report for Rusty Blackbird (Euphagus carolinus)
Short-eared Owl	*Asio flammeus*	SC	SC	S2N, S4B	MNRF Species Occurrence Mapping	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl Asio flammeus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.

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Wood Thrush	*Hylocichla mustelina*	SC	THR	S4B	HRCA (2014) OBBA (2007) eBird (1975) NHIC (n.d.) MNRF Species Occurrence Mapping	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed by AA. HCA noted observations in the surrounding area in 2014.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush Hylocichla mustelina in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	*Icteria virens*	END	END	S1B	OBBA (2007) NHIC (n.d) MNRF Species Occurrence Mapping	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	Meadow communities within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding Bird studies completed.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat auricollis subspecies Icteria virens auricollis and the Yellow-breasted Chat virens subspecies Icteria virens virens in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Fish										
American Eel	*Anguilla rostrata*	THR	END	S1S2	MNRF Species Occurrence Mapping	During the freshwater portion of their life phase, preferred habitat can be found in lakes and rivers including all waters extending from the high-water mark down to at least 10 m depth (COSEWIC, 2012).	No habitat matching criteria identified in Study Area	Aquatic Habitat Assessment completed.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the American Eel Anguilla rostrata in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 109 pp.
Northern Sunfish (Great Lakes- Upper St. Lawrence Population)	*Lepomis peltastes*	SC	SC	S3	MNRF Species Occurrence Mapping	Prefers shallow, vegetated areas of warm lakes, ponds, and slowly flowing watercourses. Usually occurs in clear waters and is considered intolerant of siltation. Substrate usually consists of sand and gravel, as in the Thames River (COSEWIC 2016)	No habitat matching criteria identified in Study Area.	Aquatic Habitat Assessment completed.	None observed.	COSEWIC. 2016. COSEWIC assessment and status report on the Northern Sunfish *Lepomis peltastes*, Saskatchewan- Nelson River populations and the Great Lakes- Upper St. Lawrence populations, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xv + 51 pp.
Redside Dace	*Clinostomus elongatus*	END	END	S1	MNRF Species Occurrence Mapping	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area.	Aquatic Habitat Assessment completed.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace clinostomus elongatus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Shortnose Cisco	*Coregonus reighardi*	END	END	SH	MNRF Species Occurrence Mapping	Reported at depth ranging from 22m to 146m. Lives in clear coldwater environment year-round. No further information is known about its habitat preferences (COSEWIC 2005)	No habitat matching criteria identified in Study Area.	Aquatic Habitat Assessment completed.	None observed	COSEWIC. 2005. COSEWIC assessment and update status report on the shortnose cisco *Coregonus reighardi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 14 pp.
Molluscs										
Fawnsfoot	*Truncilla donaciformis*	END	END	S2	MNRF Species Occurrence Mapping	Occurs in areas of moderate to low flows in medium and large rivers at depths ranging from less than 1m to greater than 5m, although they can adapt to low flow environments such as lakes and reservoirs. Associated with substrates of sand or mud (COSEWIC 2008)	No habitat matching criteria identified in Study Area.	Aquatic Habitat Assessment completed.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Fawnsfoot *Truncilla donaciformis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 39 pp.
Mammals										
Eastern Small-footed Myotis	*Myotis leibii*	END	NA	S2S3	MNRF Species Occurrence Mapping	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located n cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	Forested communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Little Brown Myotis	*Myotis lucifugus*	END	END	S3	OMA (1994) MNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	Forested communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Northern Myotis	*Myotis septentrionalis*	END	END	S3	MNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	Forested communities within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Tri-colored Bat	*Perimyotis subflavus*	END	END	S3?	MNRF Species Occurrence Mapping	Hibernate in caves, abandoned mines, wells and tunnels. Summer roosts include clumps of dead foliage and lichens, typically found in forested habitat close to water sources. May also use anthropogenic structures such as barns for maternity roosts. Foraging habitat includes forested riparian areas over water in relatively open areas (Environment Canada.2015).	Forest communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	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
Woodland Vole	*Microtus pinetorum*	SC	SC	S3?	OMA (1994) MNRF Species Occurrence Mapping	Associated with deciduous forests but also inhabit scrubby sand dunes, swamps, and orchards. Prefers areas with dense herbaceous vegetation and friable soils with low saturation (COSEWIC 2010)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Woodland Vole *Microtus pinetorum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 35 pp.
Reptiles										
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	S3	MNRF Species Occurrence Mapping	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle Emydoidea blandingii in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Eastern Musk Turtle	*Sternotherus odoratus*	SC	SC	S3	ORAA (1950) MNRF Species Occurrence Mapping	Highly aquatic species, that occupies the littoral zone of waterways. Including rivers, lakes, bays, streams, ponds, canals and swamps with little to no current and soft bottoms. Typically found close to shore, and do not emerge on land except to nest or accesses adjacent wetlands (COSEWIC 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Musk Turtle Sternotherus odoratusin Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 68 pp.(Species at Risk Public Registry).
Northern Map Turtle	*Graptemys geographica*	SC	SC	S3	ORAA (2018) MNRF Species Occurrence Mapping	Highly aquatic species, found in deep, large waterbodies, including Lakes and large rivers, with abundant basking sites. Emerge onto land only during nesting, which occurs in soft sand or soil. Waterbodies with slow currents, soft mud bottoms and abundant aquatic vegetation are preferred (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the northern map turtle Graptemys geographica in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Snapping Turtle	*Chelydra serpentina*	SC	SC	S4	ORAA (2019) HRCA (1990) MNRF Species Occurrence Mapping	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed by AA. HCA noted observations in the surrounding area in 1990.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle Chelydra serpentina in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Spiny Softshell	*Apalone spinifera spinifera*	THR	THR	S2	MNRF Species Occurrence Mapping	Inhabit a variety of aquatic habitats, including rivers and bays. Soft bottoms, some aquatic vegetation and expanses of sandflats or mudflats are important habitat features (COSEWIC 2002a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the spiny softshell turtle Apalone spinifera in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Wood Turtle	*Glyptemys insculpta*	END	THR	S2	MNRF Species Occurrence Mapping	Generally found in forested landscapes, associated with clear freshwater streams and associated floodplains. Preferential to streams with year-round current, with sandy or gravelly-sandy bottoms. Streams used are typically meandering with frequent oxbows. Overwintering associated with stable, high concentration dissolved oxygen in pools, under mud or under overhanging banks. Nesting occurs in open areas with high sun exposure, typically within 10 to 50m of aquatic habitat. Home ranges are typically linear, following streams (Environment Canada, 2016).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Environment Canada. 2016. Recovery Strategy for the Wood Turtle (Glyptemys insculpta) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 48 pp.
Eastern hog-nosed Snake	*Heterodon platirhinos*	THR	THR	S3	MNRF Species Occurrence Mapping	Preferred habitat includes, sandy or loose, well-drained soil, with semi-open vegetation cover, including open woodlands, forest edges and savannahs. In shoreline areas, ground cover, and dune areas are important features. Prey specialist, and habitat for toads is also a factor in habitat selection (COSEWIC 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007e COSEWIC assessment and update status report on the Eastern Hog-nosed Snake Heterodon platirhinos in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 36 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Eastern Ribbonsnake	*Thamnophis sauritus*	SC	SC	S4	MNRF Species Occurrence Mapping	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake Thamnophis sauritus. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Milksnake	*Lampropeltis triangulum*	SC	SC	S4	ORAA (2018) MNRF Species Occurrence Mapping	Habitat generalists often associated with edge habitat, meadows, prairies, pastures, rocky outcrops and human disturbances such as hydro corridors and railway embankments. Habitat is usually close to a water source. Hibernation occurs in a variety of natural and man-made features, including rotting logs, old foundations, basements and burrows (COSEWIC 2014).	Meadow communities within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	One individual was observed along the southern edge of Lower Lion's Club Road immediately east of Tiffany Creek.	COSEWIC. 2014. COSEWIC assessment and status report on the Eastern Milksnake Lampropeltis triangulum in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 61 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Gray Ratsnake (Carolinian population)	Pantherophis spiloides (pop. 2)	END	END	S1	MNRF Species Occurrence Mapping	Semi-arboreal and usually found in a wide variety of woodland habitats across its range. Prefers a mosaic of forest and open habitat. Use standing snags, hollow logs, rock crevices as shelter during the active season. Hibernation occurs in communal hibernacula below ground (COSEWIC 2018)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2018. COSEWIC assessment and status report on the Gray Ratsnake *Pantherophis spiloides*, Great Lakes/St. Lawrence and Carolinian population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 44 pp.
Vascular Plants										
American Chestnut	*Castanea dentata*	END	END	S1S2	NHIC (n.d.) MNRF Species Occurrence Mapping	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut Castanea dentata in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
American Columbo	*Frasera carolinensis*	END	END	S2	MNRF Species Occurrence Mapping	Associated with open forested slopes and forest edges. May also occur in thickets and clearings (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and update status report on the American Columbo Frasera caroliniensis in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
American Ginseng	*Panax quinquefolius*	END	END	S2	MNRF Species Occurrence Mapping	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng Panax quinquefolius in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Broad Beech Fern	*Phegopteris hexagonoptera*	SC	SC	S3	NHIC (n.d.) MNRF Species Occurrence Mapping	Prefers rich, undisturbed deciduous forest, particularly mature Beech-maple forests. Typically occurs in moister areas such as lower valley slopes, bottomlands and even swamps. Primarily a shade-tolerant species and is unlikely to withstand major opening of the forest canopy (van Overbeeke et. al., 2013)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	van Overbeeke, J.C., J.V. Jalava and R.H. Donley. 2013. Management Plan for the Broad Beech Fern (*Phegopteris hexagonoptera*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. V + 25 pp.
Butternut	*Juglans cinerea*	END	END	S2?	MNRF Species Occurrence Mapping	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut Juglans cinerea in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
Eastern Flowering Dogwood	*Cornus florida*	END	END	S2?	NHIC (n.d.) MNRF Species Occurrence Mapping	Occurs in the understory or edges of mid-age to mature dry, deciduous woodlands, with sandy to sandy-loam soils (COSEWIC 2007c).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the eastern flowering dogwood Comus florida in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 22 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Few-flowered club rush	*Trichophorum planifolium*	END	END	S1	MNRF Species Occurrence Mapping	Found in open-canopied forest with little shrub cover and excellent drainage. Grows on semi-open south- or west-facing slopes in deciduous and mixed woods (COSEWIC 2000)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2000. COSEWIC assessment and status report on the bashful bulrush *Trichoporum planifolium* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 8 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Forked Three-awned Grass	*Aristida basiramea*	END	END	S2	MNRF Species Occurrence Mapping	Restricted to dry, open, acidic sand barrens, but will exploit weedy habitats associated with the sites, including roadside ditches and old fields. The 5 native populations in Canada occur on low, sand ridges or dunes, associated with post-glacial shorelines of Algoniquin or Nipissing age (COSEWIC 2002)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2002. COSEWIC assessment and status report on the forked three-awned grass *Aristida basiramea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 29 pp.
Green Dragon	*Arisaema dracontium*	SC	SC	S3	MNRF Species Occurrence Mapping	Occurs along creek, river and clay floodplains in moist to wet deciduous woodlands and thickets. Grows in shaded to partly shaded, seasonally wet areas (Donley et. al. 2013).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Donley, R., J.V. Jalava and J. van Overbeeke. 2013. Management Plan for the Green Dragon (Arisaema dracontium) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 43 pp.
Hoary Mountain-mint	*Pycnanthemum incanum*	END	END	S1	MNRF Species Occurrence Mapping	Requires dry, open, sandy-clay habitats in open-canopied deciduous woods on warmer-than-normal slopes. In Ontario, 2 out of 3 habitats are Dry Black Oak-White Oak Tallgrass Woodland with the third being a Mineral Treed Bluff (Thompson and Rothfels, 2006)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Thompson, M.J. and C.J. Rothfels. 2006. Recovery Strategy for Hoary Mountain-mint (*Pycnanthemum incanum* (L.) Michx.) in Canada. Hoary Mountain-mint Recovery Team, vii + 18 pp.
Spotted Wintergreen	*Chimaphila maculata*	THR	THR	S2	NHIC (n.d.) MNRF Species Occurrence Mapping	Woodland understorey species typically associated with dry-fresh oak and oak-pine mixed forests and woodlands. Tends to occur on well-drained sandy soils free of coarse fragments, with low organic content and poor nutrient status (COSEWIC 2017)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2017. COSEWIC assessment and status report on the Spotted Wintergreen *Chimaphila maculate* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 39 pp.
Tuberous Indian Plantain	*Arnoglossum plantagineum*	SC	SC	S2	MNRF (Grey County)	Habitat includes open, sunny areas in wet calcareous soils, including wet meadows and shoreline fens (COSEWIC 2002).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the tuberous Indian-plantain Arnoglossum plantagineum in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 11 pp.
White Wood Aster	*Eurybia divaricata*	THR	THR	S3	MNRF Species Occurrence Mapping	Inhabits dry to moist deciduous woodlands with well-drained soils and relatively open canopies (COSEWIC 2002)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2002. COSEWIC assessment and update status report on the white wood aster *Eurybia divaricate* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 23 pp.

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APPENDIX 7

Breeding Bird Call Codes & Results

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES	HAMILTON CA (2014)	PC 6	Habitat:woodland/meadow													PC 7	Habitat: woodland										SITE SUMMARY	
											R1	date: June 4, 2021					R2	date: June 24, 2021					Max Sum.		R1	date: June 4, 2021					R2	date: June 24, 2021				Max Sum.			
											>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	>50	50-100	>100	FO	total	HBE	>50	50-100	>100	FO	total	HBE	TOTAL	HBE	TOTAL	HBE
Yellow-bellied Sapsucker	Sphyrapicus varius				S5B	G5	✓	2-5ha		R					0	NA					0	NA	0	NA					0	NA	1				1	H	1	H	1	H
Eastern Wood-pewee	Contopus virens	SC	SC		S4B	G5			✓	C		1			1	S					0	NA	1	S					0	NA					0	NA	0	NA	1	S
Alder Flycatcher	Empidonax alnorum				S5B	G5				U		1			1	S					0	NA	1	S					0	NA					0	NA	0	NA	1	S
Eastern Kingbird	Tyrannus tyrannus				S4B	G5			✓	A					0	NA					0	NA	0	NA	1				1	S					0	NA	1	S	1	S
Blue Jay	Cyanocitta cristata				S5	G5				A					0	NA		2			2	A	2	A		1			1	H					0	NA	1	H	3	A
Gray Catbird	Dumetella carolinensis				S4B	G5				A					0	NA					0	NA	0	NA	1	1			2	S					0	NA	2	S	2	S
Brown Thrasher	Toxostoma rufum				S4B	G5			✓	U	1				1	S					0	NA	1	S					0	NA					0	NA	0	NA	1	S
Cedar Waxwing	Bombycilla cedrorum				S5B	G5				C					0	NA					0	NA	0	NA	3				3	H					0	NA	3	H	3	H
Red-eyed Vireo	Vireo olivaceus				S5B	G5				C		1			1	S					0	NA	1	S					0	NA					0	NA	0	NA	1	S
Yellow Warbler	Dendroica petechia				S5B	G5				A	2				2	S	2	1			3	S	3	T	2				2	S	2				2	S	2	T	5	T
Common Yellowthroat	Geothlypis trichas				S5B	G5				C					0	NA					0	NA	0	NA	1				1	S					0	NA	1	S	1	S
Northern Cardinal	Cardinalis cardinalis				S5	G5				A					0	NA					0	NA	0	NA		3			3	S		1			1	S	3	T	3	T
Indigo Bunting	Passerina cyanea				S4B	G5				C		1			1	S		2			2	S	2	T	1				1	S	1				1	S	1	T	3	T
Field Sparrow	Spizella pusilla				S4B	G5			✓	C	1				1	S		2			2	S	2	T					0	NA		1			1	S	1	S	3	T
Savannah Sparrow	Passerculus sandwichensis				S4B	G5	✓	>50ha	✓	A					0	NA	1				1	S	1	S					0	NA					0	NA	0	NA	1	S
Song Sparrow	Melospiza melodia				S5B	G5				A	1				1	A	2				2	S	2	A	3				3	S					0	NA	3	S	5	A
Red-winged Blackbird	Agelaius phoeniceus				S4	G5				A	2	1			3	S		2			2	A	3	A					0	NA	3				3	H	3	H	6	A
Common Grackle	Quiscalus quiscula				S5B	G5				A					0	NA					0	NA	0	NA					0	NA	1				1	H	1	H	1	H
Brown-headed Cowbird	Molothrus ater				S4B	G5				A					0	NA					0	NA	0	NA	2				2	H					0	NA	2	H	2	H
Baltimore Oriole	Icterus galbula				S4B	G5			✓	C					0	NA	4				4	FY	4	FY	2				2	P	1				1	S	2	P	6	FY
American Goldfinch	Carduelis tristis				S5B	G5				A	1				1	H					0	NA	1	H					0	NA		2			2	H	2	H	3	H

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES (BCR 13)	HAMILTON CA(2014)	**Polygon: A** Date: June 4, 2021		**Habitat:** Date: June 24, 2021		**Totals**	**Totals**
											COUNT	HBE	COUNT	HBE	MAX	HBE
Downy Woodpecker	Picoides pubescens				S5	G5				C			1	H	1	H
Northern Flicker	Colaptes auratus				S4B	G5			✓	C	1	H			1	H
Alder Flycatcher	Empidonax alnorum				S5B	G5				U	1	S			1	S
American Crow	Corvus brachyrhynchos				S5B	G5				C	1	S			1	S
Black-capped Chickadee	Poecile atricapillus				S5	G5				A	1	H			1	H
House Wren	Troglodytes aedon				S5B	G5				C	2	P			2	P
American Robin	Turdus migratorius				S5B	G5				A			1	S	1	S
Gray Catbird	Dumetella carolinensis				S4B	G5				A	2	S	1	S	2	S
Brown Thrasher	Toxostoma rufum				S4B	G5			✓	U	1	S			1	S
Red-eyed Vireo	Vireo olivaceus				S5B	G5				C	1	S			1	S
Yellow Warbler	Dendroica petechia				S5B	G5				A	3	S	1	S	3	S
Chestnut-sided Warbler	Dendroica pensylvanica				S5B	G5				U			1	S	1	S
Northern Cardinal	Cardinalis cardinalis				S5	G5				A	1	S			1	S
Field Sparrow	Spizella pusilla				S4B	G5			✓	C	1	S	1	S	1	S
Song Sparrow	Melospiza melodia				S5B	G5				A	1	S	1	S	1	S
Red-winged Blackbird	Agelaius phoeniceus				S4	G5				A	2	S	9	A	9	A
Brown-headed Cowbird	Molothrus ater				S4B	G5				A	1	S			1	S
Baltimore Oriole	Icterus galbula				S4B	G5			✓	C	1	S	1	A	1	A

Breeding Bird Evidence Codes

Possible

H- Species observed in suitable nesting habitat during breeding season

S- Singing male or adult producing other sounds associated with breeding

Probable

P- pair observed in suitable nesting habitat

T- Presumed territory based on the presence of an adult bird in the same suitable nesting habitat

A- Agitated behaviour or alarm calls of an adult

Confirmed

FY- Recently fledged young or downy young

APPENDIX 8

Site Investigation Details

Survey	Time	Date	Staff	Temp. (°C)	Wind (Beaufort)	Cloud Cover %	Precipitation	Past Precipitation
On-site Scoping Meeting	1:55-2:45	15-Mar-21	CAR, SD	4	1	40	None	None
Ecological Land Classification, Spring Botanical, SWH & SAR Assessments	1:25-3:30	12-May-21	SD, KS	15	1	10	None	Light rain
Breeding Bird Survey #1	9:11-9:51	04-Jun-21	CAR	17	1	80	None	Rain
Breeding Bird Survey #2	9:03-9:31	24-Jun-21	CAR	17	1	80	None	None
Summer Botanical	10:49-1:30	09-Jul-21	SD, KS	22	1	100	None	Rain
Fall Botanical	10:40-11:45	21-Sep-21	SD	19	1	100	None	Rain
Woodland Dripline Delineation & Verification	9:30-11:30 & 1:30-2:30	28-Oct-21	SD	9	2	100	None	None

APPENDIX 9

MNRF Request for Information

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects

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N1H 7L5

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WETLAND EVALUATION
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PARKS AND OPEN SPACES
TRAIL SYSTEMS
GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

19/04/2021

Our Project #:AA21-010A
Sent by email: esa.guelph@ontario.ca

Ministry of Natural Resources and Forestry
Guelph District
Ontario Government Bldg, 1 Stone Road W.
Guelph, ON N1G 4Y2

Re: Hamilton Conservation Area Additional Parking- 892 Lower Lion's Club Rd
City of Hamilton
Request for Local Site Information

To whom it may concern,
Please accept this request for Information regarding:

☐ Wetland Mapping and/or Evaluation and Data Records
☒ Fish Dot Information
☐ ANSI Mapping and/or check-sheet
☒ Other:

Any other possible site constraints or information would also be greatly appreciated. As it applies to an Environmental Impact Study to assess the environmental condition of the study area surrounding the existing parking area at 892 Lower Lions Club Road, within the limits of the Dundas Valley Conservation Area, and its suitability in formalizing additional parking (*Figure 1*). The information provided will be used to inform the Environmental Impact Study, which will be prepared in consultation with the Hamilton Region Conservation Authority (HRCA) and the City of Hamilton.

Project Description

The existing parking lot is located at 892 Lower Lions Club Road. HRCA is investigating the surrounding environmental conditions and potential suitability for the creation of a formalized parking area.

Township: Ancaster

UTM Coordinates: 584324.72 E 4788212.81 N

Background Information

Per HRCA and City of Hamilton mapping, the study area is partially within and adjacent to designated natural heritage features and is within the limits of the Niagara Escarpment Plan. The City of Hamilton Official Plan indicates the study area is designated as Core Areas and contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls) and a reach of Tiffany Creek (*Figure 1*).

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

Shannon Davison B. Env., Eco. Rest. Cert.
Ecologist
C: 226.581.0707

Attachment: Figure 1

LEGEND

- PROJECT LOCATION
- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- ENVIRONMENTALLY SENSITIVE AREA
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed March, 2021.
2. Project location, trails, watercourses and waterbodies provided by Hamilton Conservation Authority March 2021
3. Environmentally Sensitive Areas and woodlands provided by the City of Hamilton, March 2021

Title:
STUDY AREA

Project:
892 LOWER LIONS CLUB ROAD
CITY OF HAMILTON

Date: APRIL 2021
Project: AA21-010A
Scale: 1 : 2500

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
190 Nickin Road, Guelph, Ontario, N1H 7L5 .519.822.6839 .www.aboudng.com

Figure No: 1

Shannon Davison

From: ESA Guelph (MNRF) <ESAGUELPH@ontario.ca>
Sent: April-22-21 3:55 PM
To: Shannon Davison
Subject: RE: AA21-010A Lower Lions Club Road EIS Request for Information

Follow Up Flag: Follow up
Flag Status: Flagged

External

Hello Shannon,

In response to your inquiry, I have provided a summary of the fisheries information available for the identified study area at 892 Lower Lions Club Road, in the City of Hamilton.

Tiffany Creek: Warm Water Thermal Regime

Fish Species Present: Blacknose Dace, Brook Stickleback, Creek Chub and Fathead Minnow

For your study site, the recommended in-water work timing restrictions are as follows:

Tiffany Creek: (warmwater system): April 1st to June 30th.

Note that the above date represents the time period when in-water work should not be undertaken.

Other natural heritage features within the vicinity of this site include the regionally significant Ancaster Creek Valley Life Science ANSI and a White-tailed Deer Wintering Area (Stratum 2)

I hope this information is of assistance.

Best regards,

David Denyes
Management Biologist
Ministry of Natural Resources and Forestry
Vineland Field Office
4890 Victoria Avenue North
Vineland Station ON, L0R 2E0
Tel: (289) 241-6872
david.denyes@ontario.ca

From: Shannon Davison <sdavison@aboudtng.com>
Sent: April 19, 2021 2:39 PM

To: ESA Guelph (MNRF) <ESAGUELPH@ontario.ca>
Subject: AA21-010A Lower Lions Club Road EIS Request for Information

Good afternoon,

Please find attached a Request for Information for an EIS located at 892 Lower Lions Club Road in the City of Hamilton. Any relevant fisheries information you can provide would be appreciated.

Regards,

Shannon Davison B.Env. Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner- In Training #0499
MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification
ABOUD & ASSOCIATES INC. 190 Nicklin Road . Guelph . Ontario . N1H 7L5
C : 226.581.0707 www.aboudtng.com sdavison@aboudtng.com

APPENDIX 10

MECP Request for Information

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EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

13/04/2021

Our Project #:AA21-010A
Sent by email: SAROntario@ontario.ca

Ministry of the Environment, Conservation and Parks
Permissions and Compliance Section, Species at Risk Branch

Re: Hamilton Conservation Area Additional Parking- 892 Lower Lion's Club Rd Tews Falls, City of Hamilton
Request for Species at Risk and Local Site Information

To whom it may concern:
Please accept this request for Information regarding:
☒ Species at Risk

Any other possible site constraints or information would also be greatly appreciated. As it applies to an Environmental Impact Study to assess the environmental condition of the study area surrounding the existing parking area at 892 Lower Lion's Club Road, within the limits of the Dundas Valley Conservation Area, and its suitability in formalizing additional parking (*Figure 1*). The information provided will be used to inform the Environmental Impact Study, which will be prepared in consultation with the Hamilton Region Conservation Authority (HRCA) and the City of Hamilton.

Project Proponent and Location

Proponent: HRCA

Township: Dundas

UTM Coordinates: 584324.72 E 4788212.81 N

Proposed Activity

The existing parking lot is located at 892 Lower Lion's Club Road. HRCA is investigating the surrounding environmental conditions and potential suitability for the creation of a formalized parking area.

Existing Site Conditions

Per HRCA and City of Hamilton mapping, the study area is partially within and adjacent to designated natural heritage features and is within the limits of the Niagara Escarpment Plan. The City of Hamilton Official Plan indicates the study area is designated as Core Areas and contains Significant Woodlands and a portion of an Environmentally Significant Area (Tiffany Falls) and a reach of Tiffany Creek (*Figure 1*).

Background Information

A thorough background search has been completed; using available resources provided online related to the subject lands and adjacent lands and is listed below:

1. The Ontario Reptile and Amphibian Atlas shows within a 10 km square of the subject lands, the recent and historical presence of 26 species (including complexes) of reptiles and amphibians. Including eight species of Conservation Concern (Jefferson Salamander, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Milksnake and Western Chorus Frog).

2. The Natural Heritage Information Center indicates the presence of 20 species of Conservation Concern within 1km of the Study Area (Nine-spotted Lady Beetle, American Burying Beetle, Transverse Lady Beetle, Snapping Turtle, Timber Rattlesnake, Northern Bobwhite, Cerulean Warbler, Louisiana Waterthrush, Eastern Meadowlark, Bobolink, Wood Thrush, Eastern Wood-pewee, Yellow-breasted Chat, Spotted Wintergreen, Broad Beech Fern, Perfoliate Bellwort, Eastern Flowering Dogwood, Northern Hawthorn, American Chestnut and Butternut).

3. The Ontario Breeding Bird Atlas shows within a 10 km square of the subject lands, the recent and historical presence of 114 species of birds, including 12 species of Conservation Concern (Barn Owl, Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Golden-winged Warbler, Louisiana Waterthrush, Yellow-breasted Chat, Bobolink, Eastern Meadowlark and Grasshopper Sparrow).

4. The Ontario Mammal Atlas indicates the recent and historical presence of 25 mammal species within the 10km square containing the study area with one species of Conservation (Little Brown Myotis).

5. eBird records from the nearby Dundas Valley CA- Tiffany Falls hotspot (~400m from the subject structure) indicate the recent and historical presence of 102 species, including seven species of

Conservation Concern (Eastern Wood-pewee, Louisiana Waterthrush, Chimney Swift, Barn Swallow, Wood Thrush, Bobolink and Eastern Meadowlark).

6. iNaturalist observations (research grade) within 2km of the study area indicate the recent presence of 31 species of vascular plants, 15 species of insects, six species of fungi, five species of mosses and lichens, four species of reptiles/amphibians, three species of mammals and two species of birds. None of the species observed are considered species of Conservation Concern.

7. The Ontario Butterfly Atlas indicates the recent and historical presence of 72 butterfly species within a 10km square of the subject structure with one species of Conservation Concern (Monarch).

8. Background information from the HRCA indicates the recent and historical presence of the following within the Ancaster ESA:
    a. 60 species of birds, including three species of Conservation Concern (Chimney Swift, Louisiana Waterthrush and Eastern Wood-pewee)
    b. 13 species of reptiles and amphibians, including two species of Conservation Concern (Midland Painted Turtle and Snapping Turtle)
    c. 41 species of butterflies and moths, including one species of Conservation Concern (Monarch)
    d. 10 species of mammals, none of which are species of Conservation Concern.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

Shannon Davison B. Env., Eco. Rest. Cert.
Ecologist
T:519.822.6839
C: 226.581.0707

LEGEND

- PROJECT LOCATION
- STUDY AREA
- BRUCE TRAIL
- HCA TRAIL
- WATERCOURSE
- ENVIRONMENTALLY SENSITIVE AREA
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Title:
STUDY AREA

Project:
892 LOWER LIONS CLUB ROAD
CITY OF HAMILTON

Date: APRIL 2021
Project: AA21-010A
Scale: 1 : 2500

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Figure No: 1

Shannon Davison

From: Brothers, Brianne (MECP) <Brianne.Brothers@ontario.ca>
Sent: September-29-21 1:40 PM
To: Shannon Davison
Subject: RE: MECP Request for Information- 892 Lower Lion's Club Road

External

Hi Shannon,

Similar to the last email, MECP agrees with the species listed in the screening. Again, I would add all SAR bats:

- Little brown myotis
- Northern myotis
- Tri-coloured bat
- Eastern small-footed myotis

Thanks,

Brianne

From: Shannon Davison <sdavison@aboudtng.com>
Sent: April 13, 2021 3:07 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: MECP Request for Information- 892 Lower Lion's Club Road

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

Please find attached a Request for Information pertaining to an EIS being completed to determine the existing conditions and suitability for a formalized parking area at 892 Lower Lion's Club Road within the limits of the Dundas Valley Conservation Area in the City of Hamilton. Any information you can provide would be appreciated.

Regards,

Shannon Davison B.Env. Eco. Rest. Cert.
Ecologist
Certified Ecological Restoration Practitioner- In Training #0499
MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification
ABOUD & ASSOCIATES INC. 190 Nicklin Road . Guelph . Ontario . N1H 7L5
C : 226.581.0707 www.aboudtng.com sdavison@aboudtng.com

APPENDIX 11

Glossary of Terms and Impacts

Glossary of Terms and Impacts

Duration of Impact
ST – Short-term (define based on project)
LT- Long-term (define based on project)

Reversibility
R- Reversible
P – Permanent

Geographic Extent of Influence
SA– Subject Area (physical disturbance area)
AA- Assessment Area (120m zone of influence)
LA – Landscape Area (Area outside AA that may be affected)

Frequency of Disturbance
O - Occurs once.
S - Occurs sporadically at irregular intervals.
R - Occurs on a regular basis and at regular intervals.
C – Continuous, ongoing and all the time.

Existing Ecological Site Context
U - Undisturbed: Area relatively or not adversely affected by human activity.
PD – Past Disturbance: Area Adversely affected by human activity in recent past, but regeneration has occurred.
D -Disturbed: Area has been substantially previously disturbed by human development or human development is still present.

Likelihood of impact occurring
If the Proposed activity occurs, the likelihood of the impact occurring is:
L: Low probability of occurrence.
M: Medium probability of occurrence.
H: High probability of occurrence.

Cumulative Environmental Effects
Will the proposed activity interact with other impacts?
Y: Potential for environmental effect to interact with the environmental effects of other past, present or foreseeable future activities
N: Environmental effect will not or is not likely to interact with the environmental effects of other past, present or foreseeable future activities.

Impact Rating
None: An event that, if it occurs, will cause no foreseeable impact.
Minor: An event that, if it occurs, will cause small, reversible and geographically localized impact that can be easily mitigated.
Moderate: Significant but reversible, OR irreversible and geographically localized, impact that requires significant mitigation.
Severe: Significant AND irreversible impact on the environment, impacts cannot be fully mitigated.

Potential vs. Actual impact
[1] *Potential Impact* is a relative rating of the expected impact to occur in the absence of any mitigation measures.
[2] *Actual Impact* is the expected impact in consideration of implementation of mitigation measures or where potential impact may cause little to no actual impact.

- Urban Forestry
- Ecological Restoration
- Landscape Architecture
- Environmental Studies
- Expert Opinion

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