APPENDIX C

Natural Environment Impact Assessment Report

Municipal Class Environmental Assessment

Highway 404 Ramp Extension at Major Mackenzie Drive

City of Markham

Natural Environment Impact Assessment R2

Prepared for:

City of Markham

Project Number:

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Any conclusions or recommendations made in this report reflect Aboud & Associates judgment based on conditions observed at the time of the Site visit on the date(s) set out in this report and on the interpretation of data made in the reports, based on the studies specifically identified in the report.

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1.0 Introduction

Aboud & Associates Incorporated (AA) was retained by Gannett Fleming to complete a Natural Environment Impact Assessment (NEIA) as part of an addendum for the Municipal Class Environmental Assessment for the Highway 404 and Major Mackenzie Drive Ramp Extension. Due to the presence of an unevaluated wetland feature and a woodland feature, a NEIA is required by the Toronto and Region Conservation Authority (TRCA) and City of Markham.

1.1 Proposed Development

The project proposes an extension of the Highway 404 ramp at Major Mackenzie Drive. The 2009 Municipal Class Environmental Assessment (MCEA) confirmed the need for a road extension and identified a preferred alternative. The extension will consist of two-lanes and a 20m right-of-way. Due to changes in the study environment from development in the area and a lapse of over 10 years since the approval, an addendum to the MCEA is currently being completed by the City of Markham. The proposed ramp extension will bisect lands containing natural features including an unevaluated wetland and a woodland feature.

1.1.1 Background Review

1.1.1.1 Proposed Stormwater Management Plan

A Drainage & Stormwater Management Report for the proposed road extension was completed by Gannett Fleming (September 2024). The report identifies that the road extension will require the implementation of a new storm sewer system which will capture and convey runoff. Additionally, low impact infrastructure including infiltration trenches along the corridor or oil-grit separators (OGS) have been recommended. The Drainage & Stormwater Management Report is assessed in greater detail in Section 4.5.

1.1.1.2 Geotechnical Investigation

A Geotechnical Site Investigation was completed by GEMTEC Consulting Engineers and Scientists Limited (GEMTEC, 2024) to support the proposed road alignment and development. The investigation identified general subsurface soil and groundwater conditions and provided geotechnical engineering design comments and recommendations based on the data obtained.

Section 4.1 of the report (GEMTEC, 2024) notes that the subsurface conditions consist of fill materials underlain by native interlayered sand and silty sand, and predominantly silt clay, all underlain by a silty sand till deposit.

1.2 Existing Land Use and Study Area

For the purpose of this NHIS, the study area includes the proposed alignment and up to 120 metres adjacent to the proposed alignment. As needed, the lands adjacent to the proposed alignment were reviewed to assist with understanding the characteristics and functions of the natural heritage features. Where access was restricted, information was acquired through existing background information and observations from the limits of the accessible lands. The study area is detailed on *Figure 1*.

The majority of the study area contains existing natural heritage features in the form of an unevaluated wetland, and row crop agriculture. At the outset of this study, a deciduous woodland feature was also present and considered as part of our assessment; however, it was noted through the analysis of 2024 aerial imagery that the feature has since been removed. The northern portion of the study area consists of single-family residential dwellings north of Markland Street, while the southern portion of the study area consists of the existing on-ramp to Highway 404 north from Major Mackenzie Drive East. *Figure 1* illustrates the extent of the existing natural features per available mapping; however, through the completion of the NEIA, the limits of the wetland feature were refined through on-site delineation and verification by TRCA.

1.2.1 Rouge River State of the Watershed Report (2007)

Per the TRCA's Watershed mapping, the study area is located within the Middle Tributaries subwatershed planning unit of the Rouge River watershed. The State of the Watershed report is a characterization of watershed systems and evaluation of current conditions prepared with the latest available technical information.

The study area is located within the Peel Plain physiographic region which is characterized by flatter topography consisting of thin layers of silt and clay lacustrine deposits deposited over the till. The soils are predominantly clay with localized clay loam and loam, which can result in low infiltration.

Section 9.4.4 notes that the soils within the Peel Plain physiographic region are highly fertile and desirable from an agricultural standpoint which is why very little forest and wetland cover remains in this area of the watershed. The majority of the Peel Plain is still farmed or being converted to urban development.

1.2.2 Environmental Impact Statement - Highway 404 & Major Mackenzie Drive (2023)

GeoProcess Research Associates Research Associates Inc. (GRA) completed an EIS to support potential development within the property that includes the preferred alignment for the proposed ramp extension in 2023. Field investigations for the EIS

consisted of a botanical inventory, breeding bird surveys, amphibian surveys, bat habitat and acoustic monitoring surveys, a Species at Risk habitat assessment and Significant Wildlife Habitat Assessment. Suitable habitat for Bats, including Bat Species at Risk, was identified within the woodland feature. Based on the results of the acoustic monitoring surveys, the Bat species detected included Big Brown Bat, Hoary Bat and Silver-haired Bat, none of which are currently listed as Species at Risk under the ESA or SARA. The report identified the presence of Eastern Wood-pewee (*Contopus virens*), listed as Special Concern under the ESA and SARA, incidentally within the woodland feature. Significant Wildlife Habitat in the form of Bat Maternity Colonies was confirmed within the woodland feature.

1.3 Existing Regulations

The Provincial Planning Statement (PPS 2024), Endangered Species Act (ESA 2007), Species at Risk Act (SARA 2002), Migratory Bird Conservation Act (MBCA 1994) & Migratory Bird Regulations (MBR 2022), policies of the Toronto and Region Conservation Authority (TRCA), Ontario Regulation 41/24, York Regional Official Plan (2022) and City of Markham Official Plan (2018 Consolidation) are applicable to the proposed development. The policy, sections, applicable details, conformity and any proposed mitigation or permitted requirements as it relates to these policies were reviewed and included in *Appendix 1*.

1.4 Terms of Reference

Based upon the above regulations, Terms of Reference (ToR) for the Scoped NEIA were developed and submitted on April 19, 2023 to Patrick Wong, Senior Planner, Natural Heritage Department, City of Markham, and to Joshua Lacaria, Planner, TRCA.

The City of Markham provided comments on April 20, 2023 including to ensure that the Greenway System and Wetland policies of the Official Plan are included within the NEIA as well as the evaluation of the significance of natural features located within the study area. In addition, the City noted that an analysis of the wetland hydrology and associated impacts as well as mitigation measures during and post-construction are to be included in the NEIA.

The TRCA provided approval of the TOR on October 24, 2023, indicating that the TRCA was satisfied with the TOR as a wetland feature identification and analysis were included within the scope. Furthermore, TRCA noted that all other natural features outlined in the TOR are the responsibility of the Municipality.

The TOR and agency correspondence are provided in *Appendix 2*.

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,
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019a),
- Ontario Reptile and Amphibian Atlas Interactive map (Ontario Nature, 2019b),
- Ontario Mammal Atlas (1994),
- Natural Heritage Information Centre (NHIC) database, (2024),
- Ontario Butterfly Atlas. Toronto Entomologists' Association, 2011 (accessed April 2023),
- eBird. Cornell Lab of Ornithology (accessed April 2023),
- iNaturalist (accessed April 2023),
- Bumble Bee Watch (accessed October 2024),
- TRCA Conceptual Regulation Mapping (accessed October 28, 2024),
- TRCA, Flora and Fauna Species- Scoring and Ranking (2023)
- Living City Policies for Planning and Development in the Watersheds of the TRCA (2014),
- York Region Official Plan (2024 Consolidation),
- City of Markham Official Plan (2018 Consolidation),
- Rouge River State of the Watershed Report (TRCA, 2007),
- GeoProcess Research Associates. Environmental Impact Statement Highway 404 and Major Mackenzie Drive, Markham ON (2023).

2.2 Vegetation

2.2.1 Ecological Land Classification

Vegetation communities within the study area were characterized and delineated by staff certified in Ecological Land Classification through field investigation, following the Ecological Land Classification (ELC) system for Southern Ontario 1st approximation; community codes used generally follow the 2nd approximation (Lee et al., 1998, 2008). Boundaries of ELC communities were mapped using aerial images and field observations (*Figure 3*). Digitized ELC data sheets are provided in *Appendix 4*. Detailed survey dates and weather information are provided in *Appendix 3*.

2.2.2 Botanical Inventory

The study area was inventoried where access was permitted, and from the property limits and roadside, to provide a comprehensive one season botanical inventory. Detailed survey dates and weather information are provided in *Appendix 3*.

Identified vascular plant species were compared to provincial and federal SAR lists (COSSARO, SARA), provincial ranks (NHIC 2023), global ranks, the Distribution and Status of the Vascular Plants of the Greater Toronto Area (OMNR, 2004), and the TRCA 2023 Flora Ranks to assess the 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 5*. The list provides botanical names, common names, provincial rarity rank (S-Rank), global rarity rank (G-Rank), provincial Species at Risk status (SARO), federal Species at Risk status (SARA), TRCA 2023 Flora Ranks, significance within the Greater Toronto Area (OMNR 2004), coefficient of conservatism (CC) and coefficient of wetness (CW). Plant species that could only be identified to genus were not assigned the above information. Photos of communities are shown in *Appendix 4*.

2.2.3 Tree Inventory

A total of 51 trees with a diameter at breast height (DBH) of 10cm of greater were inventoried within 6m of the preferred alignment by Sergio Barajas, ISA Certified Arborist on August 8, 2023. DBH, species, overall condition and estimated crown reserve were collected for each tree.

2.3 Wetland Boundary

Per the Natural Heritage Information Centre and TRCA mapping, an unevaluated wetland is present within the study area. Shannon Davison, MNRF Certified Ontario Wetland Evaluator, Aboud and Associates, performed a staking of the unevaluated wetland feature on August 24, 2023, followed by confirmation of the boundary with

TRCA staff on August 24, 2023. Boundaries were determined using the vegetation species present and soil probes to depths of up to 60 cm for water and hydric soil detection, as per the Ontario Wetland Evaluation System (OWES 2013). The wetland boundary was established where vegetation was comprised of 50% wetland and 50% upland species, and where soils displayed hydric conditions (e.g. presence of mottles and/or gleys), per the Ontario Wetland Evaluation System (OWES 2013). Detailed survey dates and weather information are provided in *Appendix 3*.

2.4 Woodland Significance

Through comments provided in response to the Terms of Reference, the City of Markham requested that the significance of the woodland feature within and adjacent to the study area be evaluated. As noted in Section 1.2, the entirety of the woodland feature has since been removed. As such, significance of the feature was not assessed, as it is no longer present.

2.5 Wildlife Habitat

2.5.1 Incidental Wildlife Observations

Incidental observations of mammals, birds, amphibians, and reptiles were recorded during field visits.

2.5.2 Significant Wildlife Habitat

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

2.5.3 Species at Risk Habitat Assessment

The proposed development and immediately adjacent lands (within 120m) were reviewed for the presence of habitat that may be suitable for Species at Risk (SAR). A review of the site, along with habitat requirements for each species was conducted. A variety of sources, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) documents were used to determine habitat suitability. The site was then evaluated for potential habitat using Ecological Land Classification, guidance from MNRF documents, and on-site knowledge acquired through field surveys. An assessment of the study area of candidate habitat for SAR is provided in *Appendix 8.*

3.0 Existing Conditions

The following sections detail the results of the desktop review of background sources and field investigations completed for the NHIS.

3.1 Background Review

The following sections provide the results of the background review completed using the resources identified in Section 2.1 as well as correspondence with the Ministry of Environment Conservation and Parks.

3.1.1 Ministry of the Environment, Conservation and Parks

A request for information was sent to the Ministry of the Environment, Conservation and Parks on October 18, 2023, to inquire whether any additional Species at Risk occur within the study area. The MECP provided a generalized response on October 18, 2023 noting that the proponent is responsible for determining whether SAR and their habitat are present on or around the site of the activity, ultimately ensuring their actions do not contravene the ESA. The request for information and response are provided in *Appendix 9*.

3.1.2 Species Conservation Concern

A thorough background search has been completed for the study area using available resources identified in Section 2.1. The species of conservation concern, including those listed under COSSARO, ESA, COSEWIC, SARA and species with S-Ranks of S1-S3, identified in the background search are shown in *Table 1*. *Table 1* includes the identified species, their current status under COSSARO, ESA, COSEWIC and SARA, as well as their provincial, national and global ranks.

Table 1. Species at Risk Identified in Background Search

Source	Common Name	Scientific Name	COSSARO[1]	ESA[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	Area sensitive[8]	Area required (ha)	PIF Species (BCR 13)[9]
OBA (2021)	Monarch	*Danaus plexippus*	SC	SC	END	SC	S2N, S4B	G5	N3B, NNRM			
NHIC, ORAA (2019)	Snapping Turtle	*Chelydra serpentina*	NL	SC	SC	SC	S4	G5T5	N4			
ORAA (2018)	Midland Painted Turtle	*Chrysemys picta marginata*	NAR	NAR	SC	SC	S4	G5T5	N4			
ORAA (2002)	Blanding's Turtle	*Emydoidea blandingii*	THR	THR	END	END	S3	G4	N3			
OBBA	Blue-winged Teal	*Anas discors*	NAR	NAR	NAR	NAR	S3B, S4M	G5	N5B, N5M			
OBBA, eBird (2020)	Chimney Swift	*Chaetura pelagica*	THR	THR	THR	THR	S3B	G4G5	N4BN3M			✓
eBird (2020)	Olive-sided Flycatcher	*Contopus cooperi*	SC	SC	SC	THR	S4B	G4	N4B, N3M			
NHIC, OBBA, eBird (2022)	Eastern Wood-pewee	*Contopus virens*	SC	SC	SC	SC	S4B	G5	N5B, N5M			✓
OBBA, eBird (2020)	Bank Swallow	*Riparia riparia*	THR	THR	THR	THR	S4B	G5	N5B, N5M			✓
OBBA, eBird (2020)	Barn Swallow	*Hirundo rustica*	SC	SC	THR	THR	S4B	G5	N3N4B, N3N4M			
OBBA	Wood Thrush	*Hylocichla mustelina*	SC	SC	THR	THR	S4B	G4	N4B, NUM			✓
eBird (2020)	Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	SC	SC	S4	G5	N4B, N4N, NUM			
OBBA	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	THR	S4B	G5	N5B, N4N5M	✓	>10ha	✓
NHIC, OBBA	Eastern Meadowlark	*Sturnella magna*	THR	THR	THR	THR	S4B, S3N	G5	N4B, NUM	✓	>10ha	✓
eBird (2022)	Canada Warbler	*Wilsonia canadensis*	SC	SC	SC	THR	S4B	G5	N4B, N3M	✓	>30ha	
NHIC, DFO	Redside Dace	*Clinostomus elongatus*	END	END	END	END	S1	G3G4	N1			

Legend:

COSSARO: 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
EXP: Extirpated

N- and S-Rank:

S1: Critically Imperiled—Critically imperiled in the jurisdiction (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the jurisdiction, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the jurisdiction, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the jurisdiction
SX: Presumed Extirpated
SH: Possibly Extirpated (Historical)
SNR: Unranked
SU: Unrankable—Currently unrankable due to lack of information
SNA: Not Applicable—The species is not a suitable target for conservation activities
S#S#: Range Rank—Indicates a 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
ORAA: Ontario Reptile and Amphibian Atlas
OMA: Ontario Mammal Atlas
OBBA: Ontario Breeding Bird Atlas
eBird: eBird
iNat: iNaturalist
NHIC: Natural Heritage Information Centre

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 4 & 5*, respectively.

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
Residential (CVR)		
CVR_3	Single Family Residential	Occurs to the north of Markland Street. Consists primarily of single-family residential dwellings with some townhomes.
Marsh (MAM)		
MEMM3	Mixed Graminoid Mineral Meadow Marsh	This wetland community is located centrally within the study area, between the lowland deciduous forest and the Goldenrod Forb Meadow. The canopy and sub-canopy are sparse but include species such as American Elm (*Ulmus americana*), Black Willow (*Salix nigra*) and Manitoba Maple (*Acer negundo*). The understorey is quite dense, consisting primarily of European Reed (*Phragmites australis*) and Narrow-leaved Cattail (*Typha angustifolia*), with Red Osier Dogwood (*Cornus sericea*) and Highbush Cranberry (*Viburnum opulus*) throughout. The ground layer is comprised of forb species including Swamp Aster (*Symphyotrichum puniceum*), Spotted Joe Pye Weed (*Eutrochium maculatum*), Colt's-foot (*Tussilago farfara*) and Purple Loosestrife (*Lythrum salicaria*).
Meadow (ME)		
MEFM1-1	Goldenrod Forb Meadow	This meadow community is located immediately north Major Mackenzie Drive East being bound by the Highway 404 on-ramp to the west and the Graminoid Mineral Meadow Marsh to the north and east. The community does not have a canopy layer, however, Black Cherry (*Prunus serotina*), Black Willow, Black Walnut (*Juglans nigra*) and Hawthorn species (*Crataegus sp.)* were observed in low quantities within the sub-canopy. The understorey includes Red Osier Dogwood, Choke Cherry (*Prunus virginiana*) and Common Buckthorn (*Rhamnus cathartica*), while the ground layer is comprised primarily of Canada Goldenrod (*Solidago canadensis*) and Eastern Late Goldenrod (*Solidago altissima*), with a Bluegrass species (*Poa sp.*) and Canada Thistle (*Cirsium arvense*).
ME	Meadow	This community is located at the northern limit of the study area, west of Markland Drive. Based on observations from the property limit, it had been recently disturbed. Due to access being restricted a full inventory was not able to be completed. Street trees along the outer limit of this community consist of White Oak (*Quercus alba*), Swamp White Oak (*Quercus bicolor*) and Kentucky Coffeetree (*Gymnocladus dioicus*).

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
Open Agriculture (OAG)		
OAGM1	Annual Row Crop	This community is located immediately southwest of Markland Drive. During the 2023 field studies it consisted of Soy Bean (*Glycine max*).
Deciduous Forest (FOD)		
FODM11	Naturalized Deciduous Hedgerow	Two hedgerow communities are present within the Study Area. The first is near the northern limit and separates the existing Row Crop Agriculture from a recently disturbed meadow community, while the second bisects the study area, separating the Row Crop Agriculture from the existing wetland and wooded features. The canopy is comprised of Large-tooth Aspen (*Populus grandidentata*), American Basswood (*Tilia americana*), White Oak (*Quercus alba*) and Sugar Maple (*Acer saccharum*). The sub-canopy consists mainly of Common Buckthorn, with American Elm, Common Apple (*Malus pumila*) and Balsam Poplar (*Populus balsamifera*) as associate species. Similar to the sub-canopy the understorey is primarily Common Buckthorn, but also includes Riverbank Grape (*Vitis riparia*), Tartarian Honeysuckle *(Lonicera tatarica*) and Heart-leaved Willow (*Salix eriocephala*). The ground layer is also dominated by Common Buckthorn seedlings with Wild Carrot (*Daucus carota*), Common Dandelion (*Taraxacum officinale*) and White Clover (*Trifolium repens*).
FODM6	Fresh-Moist Sugar Maple Deciduous Forest	This community is located immediately east of the Graminoid Meadow Marsh along the eastern limits of the study area. Species within the canopy include American Elm and Sugar Maple, while the sub-canopy is more diverse with species such as Common Buckthorn, Sugar Maple, Eastern Hop-hornbeam (*Ostrya virginiana*) and Black Maple (*Acer nigrum*). The understorey is comprised of Common Buckthorn, Choke Cherry and Riverbank Grape, with the ground layer consisting of Common Buckthorn, Virginia Creeper (*Parthenocissus quinquefolia*), Wild Strawberry (*Fragaria virginiana*) and Upright Yellow Wood-sorrel (*Oxalis stricta*). An inclusion consisting of a Fresh- moist deciduous thicket is present along the southwestern limit of the community immediately adjacent the Graminoid Meadow Marsh. This area has few trees in the canopy and sub-canopy and is dominated by Common Buckthorn. Soil samples were taken within both the Forest and Thicket communities with TRCA staff to ensure they did not meet wetland standards. Neither mottles nor gley were detected within the first 20cm of the soil samples.

3.2.2 Botanical Inventory

As per Section 2.2.2, a total of 66 species of vascular plants were identified through the botanical inventory. All identified plant species are listed in *Appendix 4*. Of those identified, 40 species (61%) are native, and 26 species (39%) are exotic or cultivars.

3.2.2.1 Species at Risk, Regional and Local Significance

All of the vascular plant species observed within the study area are globally ranked very common (G5) or unranked (GNR). Provincially, the majority of the vascular species observed within the study area are ranked very common (S5) or unranked (SNA). One species Black Willow is ranked S4, with three species (Black Maple, Black Walnut, Virginia Creeper) being ranked as 'S4?', with the '?' indicating uncertainty in the ranking. Within the TRCA jurisdiction, the TRCA Flora Species – Scoring and Ranking (2023) provides ranking for local species and their levels of conservation concern. Most species observed are unranked (L+), very common (L5), or common but of concern in the urban context (L4). Five species are considered species of regional conservation concern, Ground Juniper (*Juniperus communis*), Black Willow, Heart-leaved Willow (*Salix eriocephala*), Highbush Cranberry (*Viburnum opulus ssp. Trilobum*) and White Oak. The identified Ground Juniper species is located within the Goldenrod Forb Meadow community, while Black Willow and Highbush Cranberry were identified in the Graminoid Mineral Marsh and Heart-leaved Willow and White Oak were observed in the Naturalized Deciduous Hedgerow community.

One species, Kentucky Coffeetree, is listed as Threatened under the ESA and SARA. The individuals observed were planted along the western edge of Markland Street.

None of the species observed in the study area have a coefficient of conservatism of 9 or 10.

3.2.3 Tree Inventory

The tree inventory collected information for 51 trees within 6m of the preferred alignment. The specific data for each individual tree is provided in *Appendix 11*, including overall condition, score and recommended actions based on condition and development. The locations and identification numbers of trees impacted are detailed in the Tree Protection Plan (*Appendix 11*). A total of 11 species were identified during the tree inventory, of those species Black Willow was the most abundant (33%), followed by Russian Olive (*Elaeagnus angustifolia*), White Elm and Black Cherry (each comprising 13%). With the remaining 28% comprised of seven species with one to three individuals. Per the Tree Inventory, a total of 15 trees are recommended for removal due to the proposed development. Note that the site conditions have changed since the

initiation of the study and additional work with respect to the Tree Inventory and Preservation Plan will need to be completed during detailed design.

3.3 Wetland Significance

3.3.1 Boundary Delineation

Following confirmation of the limits of the unevaluated wetland by Katharine McCarter, Senior Planning Ecologist, TRCA, the feature limit was surveyed by J.D. Barnes on August 24, 2023. The surveyed verified limit of the unevaluated wetland is shown on *Figures 2 & 3*.

3.3.2 Wetland Characteristics

Mapping from the TRCA and NHIC notes the presence of the unevaluated wetland within the study area. Per the Ecological Land Classification, the wetland feature is composed of a single community classified as a Mixed Graminoid Mineral Meadow Marsh. Based on the location and evidence of dumping, including an abandoned truck-trailer, the wetland community has been anthropogenically impacted. Evidence of dumping is shown on *Figure 3*.

3.3.3 Wetland History

York Region aerial photography (2002-2023) and the 'What Did York Region Look Like in 1970' online mapping product provide insight into the history of the wetland due to changes in land use and infrastructure development.

With Highway 404 not yet being constructed in 1970, the aerial photography notes that aside from the woodland feature, the existing wetland was surrounded by agricultural lands. The wetland feature extended northwest in a narrow corridor eventually connecting to a larger wetland feature that, per NHIC, has not yet been evaluated.

Based on York Region's aerial photography, the development of Highway 404 bisected the corridor resulting in the alteration of the shape of the wetland on the subject site. Prior to the construction of Highway 404, the wetland and adjacent corridor were confined by agricultural lands to an 'L' shape. With the construction of Highway 404, the existing flow pathway between the wetland on the subject site and the feature to the northwest is no longer present, likely resulting in higher volumes of water being retained on either side of the Highway. Between the 1970 and 2023 aerial photography is can be noted that the western portion of the mixed marsh community has widened, while the lowland forest community has expanded south towards Major Mackenzie Drive.

3.3.4 Wetland Significance

Per the Natural Heritage Information Centre, the wetland feature identified on-site is currently unevaluated. Based on investigations completed during site visits, the wetland does not meet criteria for significance under the Ontario Wetland Evaluation System-Southern Manual (2022), as the wetland is less than 2 hectares in size, is isolated, does not include any rare or sensitive species and is not hydrologically connected to any other wetlands or Provincially Significant Wetlands. As a result, it would not be considered significant under OWES.

3.5 Wildlife

3.5.1 Incidental Wildlife Observations

All incidental wildlife observations made outside of the above formal field surveys are presented in *Table 3*. All observations were of single individuals unless otherwise stated.

Table 3. Incidental Species Observations

Common Name	Scientific Name	Taxa	Date	Observation	Significance
Common Eastern Bumble Bee	*Bombus impatiens*	Insect	August 18, 2023	Observed in hedgerow community during ELC/Botanical inventory	None
Eastern Kingbird	*Tyrannus tyrannus*	Bird	August 18, 2023	Observed in Marsh community during ELC/Botanical inventory	None
Indigo Bunting	*Passerina cyanea*	Bird	August 18, 2023	Observed in Marsh community during ELC/Botanical inventory	None
American Robin	*Turdus migratorius*	Bird	August 18, 2023	Observed in Marsh community during ELC/Botanical inventory	None
Mourning Dove	*Zenaida macroura*	Bird	August 18, 2023	Observed in Marsh community during ELC/Botanical inventory	None
Gray Catbird	*Dumetella carolinensis*	Bird	August 18, 2023	Observed in Marsh community during ELC/Botanical inventory	None
Striped Skunk	*Mephitis mephitis*	Mammal	August 24, 2023	Observed in Marsh community during wetland delineation.	None

3.5.2 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the *Significant Wildlife Habitat EcoRegion Criterion Schedule 7E* (2015), candidate SWH in the form of Special Concern & Rare species was identified for Monarch, American Bumble Bee and Yellow-banded Bumble Bee within the Goldenrod Forb Meadow. As pollinator surveys were not completed, SWH has been assumed present within the Goldenrod Forb Meadow as it contains suitable feeding habitat for Monarch, American Bumble Bee and Yellow-banded Bumble Bee.

Prior to removal, the woodland community was considered SWH for Bat Maternity Colony and Special Concern and Rare Species habitat for Eastern Wood-pewee.

See Appendix 6 for a detailed assessment of Significant Wildlife Habitat. The limits of the assumed SWH within the study area are shown on *Figure 3*.

3.6 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 designations that may occur in the study area. Based on the background review and site investigations completed by AA and the results of the studies completed on the adjacent property, no suitable habitat for SAR listed as Endangered or Threatened was identified within the study area, where access was permitted.

See *Appendix 8* for a detailed assessment of SAR habitat.

4.0 Impact Analysis & Mitigation

4.1 Impact Assessment

The proposed development would result in impacts to the existing natural features and would be minimized through the implementation of appropriate mitigation measures. Potential impacts include encroachment within and removal of a portion of the Graminoid Mineral Meadow Marsh (~0.34 ha) and Goldenrod Forb Meadow (~0.43ha), site grading and erosion, sediment and deleterious runoff, and wildlife disturbance. A detailed assessment of potential impacts from the proposed development as well as proposed mitigation measures to minimize negative impacts is provided in *Appendix 10*.

4.2 Development Limit

The proposed alignment for the ramp extension bisects the Graminoid Mineral Meadow Marsh and Goldenrod Forb Meadow communities and will require removal of existing vegetation, approximately 0.34 ha and 0.43 ha, respectively, to accommodate the roadway. As noted in Section 3.2.3, the site conditions have changed since the initiation of the study and additional work with respect to the Tree Inventory and Preservation Plan will need to be completed during detailed design.

4.3 Wetland

Based on the limits of grading provided by Gannett Fleming (September 2024), removal of approximately 0.34 hectares (27%) of the Graminoid Mineral Meadow Marsh will be required to accommodate the proposed road extension. Due to the proposed bisection of the feature, buffers have not been provided; however, mitigation measures to minimize negative impacts have been recommended in Section 7.0 and *Appendix 10.*

4.3.1 Wetland Compensation

As removal of a portion of the existing wetland feature cannot be avoided, compensation will be required to help replace the proposed loss. Per communications between Gannett Fleming, the City of Markham and TRCA that took place on April 5, 2024, the City of Markham confirmed that they will be providing compensation for the removal of the wetland as a result of the proposed road from Major Mackenzie Drive to Markland Street through the EA process excluding areas impacted by proposed commercial development in accordance with TRCA's Guideline for Determining Ecosystem Compensation and City of Markham Official Plan policy requirements. The TRCA's Guideline provides direction addressing how ecosystem compensation for municipal infrastructure project impacts are to be determined, including options for the City to provide cash-in-lieu of net impacts after on-site mitigation is considered. Furthermore, it was noted that TRCA understands that the wetland compensation

details are not yet available and will need to be provided at the detailed design/permit stage.

4.4 Significant Wildlife Habitat

4.4.1 Special Concern & Rare Species

Per Section 3.5.2, SWH in the form of Special Concern & Rare Species was assumed within the Goldenrod Forb Meadow for Monarch, American Bumble Bee and Yellow-banded Bumble Bee due to the presence of suitable feeding habitat. The proposed road alignment (Gannett Fleming, September 2024) will require partial removal of the Goldenrod Forb Meadow community to accommodate the proposed alignment. Provided the mitigation measures detailed in Section 7.0 & *Appendix 10* are implemented, and vegetation removal occurs between September 1 and May 1 (COSEWIC, 2016). The proposed development will not result in negative impacts to the SWH and Goldenrod Forb Meadow community.

4.5 Species at Risk

Per Section 3.2.2.1, Kentucky Coffeetree was identified within the limits of the study area, with the locations of the individuals detailed on *Figure 2*. Based on the proposed alignment provided by Gannett Fleming (September 2024), removal of one of the identified individuals will be required to accommodate the roadway.

4.6 Stormwater Management

The Drainage and Stormwater Management Report completed by Gannett Fleming (September 2024) includes an analysis of the drainage pattern to the receiving environment, hydrologic and hydraulic analysis, evaluation of stormwater management options and preliminary drainage design. The conditions proposed within the Stormwater Management Plan provide recommendations for the outfall improvements, storm drainage system and the stormwater management infrastructure to meet the City and TRCA requirements.

Existing drainage features include ephemeral drainage ditches along the Highway 404 interchange ramp which drains in a southeastern direction through the site to the existing Highway 404 culvert and ultimately to the Major Mackenzie Drive culvert (Gannett Fleming, 2024). Per Section 4.2.3 of the report, it was determined that the implementation of a main culvert and relief culvert would manage flows along the Highway 404 ramp.

Stormwater management and low-impact infrastructure features have been considered to satisfy the increase in impervious levels for the proposed infrastructure. To provide

pre-treatment, infiltration trenches along the corridor or oil-grit separator units are recommended to provide filtration prior to discharging to Markland Street, meeting servicing requirements for water quantity, quality and balance. Based on the stormwater management strategies identified per Gannett Fleming (September 2024), it is the opinion of AA that the proposed alignment will not negatively impact the surrounding natural features. Further details pertaining to the hydraulic and hydrologic analysis, recommended infrastructure, evaluation of stormwater management options and preliminary drainage design are provided in the Drainage and Stormwater Management Report (Gannett Fleming, 2024) submitted under separate cover.

4.7 Clean Equipment Protocol for Industry

Due to the presence of natural communities immediately surrounding the proposed development, it is recommended that the protocols (i.e., proper inspection and cleaning of equipment) 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 the site works. Based on field investigations completed, the majority of the vascular plant species observed are native, 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 plantings consisting of native species in the form of trees, shrubs, herbaceous species and an appropriate seed mix, where suitable, will help in preserving the existing conditions of the natural features.

5.0 Legislation and Policy Compliance

5.1 Provincial Planning Statement, 2024

The Provincial Planning Statement (2024) provides policy direction on matters of provincial interest related to land use planning and development.

5.1.1 Significant Wildlife Habitat

Significant Wildlife Habitat in the form of Special Concern & Rare Species have been assumed present within the study area. The location of the assumed Significant Wildlife Habitat is identified on *Figure 3* and is further discussed below.

5.1.1.1 Special Concern & Rare Species

Per Section 3.5.2, the Goldenrod Forb Meadow has been assumed SWH in the form of Special Concern & Rare Species for Monarch, American Bumble Bee and Yellow-banded Bumble Bee. Based on the proposed alignment of the road (Gannett Fleming, September 2024), removal of a portion of the Goldenrod Forb Meadow will be required

to accommodate the development. As such, provided the mitigation measures detailed in Section 7.0 & *Appendix 10* are implemented, and vegetation removal is completed outside of the active season (late May to mid-August) (COSEWIC 2016). The proposed development will not result in negative impacts to the Goldenrod Forb Meadow community and is therefore in compliance with the PPS (2024).

5.2 Species at Risk Act

No federal lands are present in the study area and no migratory bird or aquatic Species at Risk, listed as Threatened or Endangered, have been identified within the study area. Therefore, the proposed development is in compliance with the Species at Risk act.

5.3 Endangered Species Act, 2007

The Endangered Species Act (2007) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (2024) and their habitat. Protected habitat is habitat identified as essential for life processes including breeding, rearing, feeding, hibernation, and migration.

Per Section 3.2.2.1, Kentucky Coffeetree, listed as Threatened under the ESA, was identified within the study area. As the trees identified were planted as street trees, and are not naturally occurring, they are not subject to the ESA.

5.4 Migratory Bird Convention Act & Migratory Bird Regulations

The Migratory Bird Convention Act (MBCA) (1994) and Migratory Bird Regulations (2022) provide protection and conservation of migratory birds, for both populations and individual birds, and their nests. As of July 2022, the Migratory Bird Regulations identifies that the active nests of Pileated Woodpeckers are now offered additional protection.

During site investigations, no evidence of Pileated Woodpecker nesting was identified within the limits of the study area. Therefore, no trees within the limits of the study area are afforded protection under the Migratory Bird Convention Act or Migratory Bird Regulations in regard to Pileated Woodpecker.

The Migratory Bird Regulations (2022) provides protection to migratory birds including their nests and eggs throughout Canada. As such, any tree removals must occur outside of the generalized breeding bird window (April 1- August 30) to comply with the Migratory Bird Regulations.

5.5 Conservation Authorities Act

A portion of the study area is regulated due to the presence of a Locally Significant Wetland and its area of interference. Per the proposed alignment (Gannett Fleming, September 2024), removal of a portion of the wetland will be required to accommodate the roadway. Per Section 28.1 Removal may be permitted where the authority issues a permit to engage in an activity that would otherwise be prohibited.

Based on the above policy, a permit under the Conservation Authorities Act, through TRCA will be required to proceed with the development of the proposed roadway. Correspondence between the City of Markham and TRCA will be required.

5.6 Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits

Due to the presence of the wetland feature within the study area and proposed partial removal to accommodate the proposed roadway, the development must comply with Ontario Regulation 41/24. Per Section 5, development of a proposed roadway is not included within the listed exemptions. As such, a permit under Ontario Regulation 41/24, through TRCA, will be required to proceed with the development of the proposed roadway. Correspondence between the City of Markham and TRCA will be required.

5.7 TRCA Living Cities Policies (2014)

Per the living cities policies, the proposed infrastructure development does not meet the requirements outlined in section 8.7.2, as the proposal includes interference within a ‘other’ wetland greater than 0.5ha in size. However, per section 8.7.4 public or essential infrastructure may be permitted within a wetland greater than 0.5ha in size where acceptable justification has been provided through an environmental assessment process or comprehensive environmental study. Interference may be permitted where it has been demonstrated that all feasible alternatives have been explored and that the appropriate studies to determine the best alternative have been conducted to the satisfaction of the TRCA.

An Environmental Study Report (ESR) was completed by McCormick Rankin Corporation as part of the original Municipal Class Environmental Assessment completed by the City of Markham in 2009, with an update currently being completed. The ESR identified four potential road alignments; all of which proposed the bisection of the existing unevaluated wetland feature. The preferred alignment, per *Figure 2*, was selected based on multiple factors including potential impact to the natural environment. As noted in Section 4.4.1, the City of Markham has acknowledged that removal of the wetland feature to accommodate the proposed alignment will require compensation as a form of mitigation. As compensation details are to be determined at the detailed design stage, specifics are unable to be discussed within this report; however, the TRCA’s

Guideline for Determining Ecosystem Compensation (2018) should be consulted to determine the total amount of compensation required to replace the wetland loss. The Guidelines for Determining Ecosystem Compensation (TRCA, 2018) will assist in understanding how compensation can be effectively implemented through a standard and consistent approach.

Per the above, the project is consistent with the requirements of the Living City Policies.

5.8 York Region Official Plan (2024 Consolidation)

Map 4 of the York Region Official Plan (2024 consolidation) indicates the presence of an unevaluated wetland and springs and seepage within the study area, which are identified as key hydrologic features. Development is generally prohibited in key hydrologic features and their adjacent lands unless authorized per the criteria outlined in Section 3.4.5.

As the proposed development is going through a Municipal Class Environmental Assessment process, it is permitted based on the policies of the York Region Official Plan. The existing natural features have been inventoried and assessed within the identified study area for potential and actual impacts based on the proposed alignment. Impacts are anticipated due to the removal of wetland necessary to accommodate the proposed development; however, the City of Markham has confirmed that compensation will be provided, and details will be determined at the detailed design stage. As such, the proposed development is in compliance with the York Region Official Plan.

5.9 City of Markham Official Plan (2018 Consolidation)

Maps 5 and 6 of the City of Markham Official Plan (2018 consolidation) indicate the presence of a permanent or intermittent stream within the study area. It was also noted by City of Markham staff through the submission of the TOR that although the wetland feature is not mapped within the Official Plan, its existence within the study area is known. As identified in Section 3.1.2.9 of the official plan, where infrastructure within the natural heritage network is demonstrated as unavoidable, impacts from the proposed infrastructure shall be mitigated and minimized. Where site alteration is proposed within 120m of a wetland, a scoped EIS must also be completed to determine their importance and functions within the landscape.

The proposed development is going through a Municipal Class Environmental Assessment process in the form of an Addendum to the 2009 ESR, and the City of Markham has confirmed that wetland compensation will be provided, with the specifics

being provided at the detailed design stage. This NEIA has also been prepared in regard to Section 3.1.2.20 of the Official Plan. Provided the mitigation measures detailed in Section 7.0 & *Appendix 10* are implemented, negative impacts to the importance and functions of the existing features will be minimized as best as possible. Based on the above, the proposed development is in compliance with the City of Markham Official Plan (2018 consolidation).

6.0 Summary and Conclusions

It is the opinion of AA that by implementing the mitigation measures detailed in Section 7.0 & *Appendix 10* as well as appropriate compensation agreed upon by the TRCA, that potential negative impacts to the existing features due to the proposed road alignment will be minimized. Below is a summary of the affected natural heritage features, constraints, and impacts.

6.1 Biological Constraints

1. Surveys were conducted for Ecological Land Classification, Vegetation and Botanical Inventory (ELC and Vascular Plant List), Significant Wildlife Habitat, Species at Risk Habitat, and Wetland Delineation.

2. The study area contains a non-evaluated wetland.

3. Significant Wildlife Habitat in the form of Special Concern & Rare Species was identified within the Goldenrod Forb Meadow due to the presence of suitable feeding habitat was identified within the study area, where access was permitted.

4. One Species at Risk, Kentucky Coffeetree, listed as Threatened under the ESA was identified within the study area. As the individuals identified were not naturally occurring, they are not subject to the ESA, and therefore, no mitigation measures are required.

6.2 Impact Assessment and Mitigation

1. Generalized impacts as a result of the proposed road alignment were assessed to determine their extent and mitigation guidelines have been provided.
2. Potential impacts primarily involve the removal of a portion of the wetland feature, hydrogeological impacts, site grading, wildlife disturbance and erosion and sedimentation.
3. With the proposed removal of a portion of the wetland feature, compensation will be required. Collaboration with TRCA will be necessary to confirm details of the compensation to be provided and how it will be implemented. Confirmation regarding whether the compensation will be provided through cash-in-lieu or the

undertaking of a wetland compensation project is will be required. If a wetland compensation project is to be implemented, a permit from the TRCA will be required and details pertaining to the timing, design and location of the compensation will be necessary.

4. To offset the proposed removal of SWH for pollinator species, it is recommended that the ephemeral drainage ditches alongside Highway 404 be planted with herbaceous and woody native, pollutant tolerant, pollinator species suitable to the soil and moisture conditions. The incorporation of a suitable seed mix is also recommended.

6.3 Legislation and Policy Compliance

1. The proposed development can occur in accordance with the Provincial Planning Statement (2024) as the assumed SWH will not be negatively impacted provided the mitigation measures detailed in Section 7.0 & *Appendix 10* are implemented and vegetation removal occurs outside of the active season (late May to mid-August) (COSEWIC 2016).

2. The proposed development can occur in accordance with the ESA as endangered or threatened species or their habitats were not identified within the study area, where access was permitted.

3. The proposed development complies with the MBCA & Migratory Bird Regulations as no Pileated Woodpecker cavities were identified within the study area, where access was permitted, and provided any necessary vegetation and/or tree removals occur outside of the generalized breeding bird timing window (April 1- August 31).

4. Due to the partial wetland removal required to accommodate the proposed development. A permit under the Conservation Authorities Act will be required for full compliance.

5. Due to the partial wetland removal required to accommodate the proposed development. A permit under Ontario Regulation 41/24 will be required for compliance. The proposed development complies with the Living Cities Policies (2014) as the implementation of compensation has been agreed to by the City of Markham. Collaboration with the TRCA will be required to determine suitable compensation.

6. The proposed development can occur in accordance with the York Region Official Plan (2024 consolidation) as the proposed development falls under a Municipal Environmental Class Assessment process.

7. The proposed development can occur in accordance with the City of Markham Official Plan (2018 consolidation) as the proposed development falls under a Municipal Environmental Class Assessment process.

7.0 Recommendations

The following recommendations are provided to ensure the protection of natural heritage features and function adjacent to the proposed development.

1) Implement Erosion and Sediment Control Plan (ESC) following guidelines provided in TRCA's Erosion and Sediment Control Guide for Urban Construction (2019) and the City of Markham ESC Standards, as part of detailed design, for protection of the surrounding natural features, and exclusion of wildlife from the area of works.

2) The area of construction disturbance shall be kept to a minimum. Equipment is to be limited to the construction allowance area.

3) Control access and movement of equipment and people through implementation of staging and storage areas.
   a) Implement appropriate protocols outlined in the Clean Equipment Protocol for Industry (Halloran et al., 2013)

4) All disturbed areas will be re-vegetated or restored with site appropriate native species, per the compensation details agreed upon by the City of Markham and TRCA during the detailed design stage.

5) Install native, pollutant tolerant and pollinator friendly herbaceous and woody species suitable to the soil and moisture conditions throughout the ephemeral drainage ditches alongside Highway 404. Seeding through an appropriate native seed mix is also recommended.

6) 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 vegetation removal is necessary during this period, a skilled biologist/ecologist is to conduct a nest search. Any active nests found are to be monitored weekly until they become inactive.
   b) No clearing of trees on site is to occur during the bat maternity window (April 1-September 30) in compliance with provincial direction.

7) Implement low impact development measures as detailed in the Drainage and Stormwater Management Report (Gannett Fleming, September 2024).

8) Limit any cleaning solutions or paint used on the proposed roadway and take appropriate precautions to avoid products entering the adjacent natural features.

8.0 Conclusion

The above NEIA was completed to document the existing natural heritage features within and adjacent to the proposed road alignment, assess potential impacts to these features in regard to the future road development, demonstrate compliance with the appropriate federal, provincial and municipal policies, and provide mitigation recommendations.

Based on the results of the NEIA, the proposed road alignment will result in negative impacts to the existing wetland feature and its ecological functions. Provided the mitigation measures detailed in the above report and associated appendices and wetland compensation is agreed upon between the City of Markham and the TRCA are implemented, the project can proceed under the policies identified in this report.

Please contact the undersigned should you required additional information.

ABOUD & ASSOCIATES INC.

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FIGURES



LEGEND

STUDY AREA

WETLAND

WATERCOURSE

Information Sources:

1. Orthophotography provided by Google Satellite Accessed November 2024.
2. Wetlands & Watercourses provided by Ontario Geohub, accessed October 2024

Title:

STUDY AREA AND LANDSCAPE CONTEXT

Project:

HIGHWAY 404 & MAJOR MACKENZIE DRIVE CITY OF MARKHAM

Date: NOVEMBER 2024

Project: AA22-322A

Scale: 1 : 5000

ABOUD & ASSOCIATES INC.

Figure No: 1



LEGEND

- PROPOSED ALIGNMENT
- VERIFIED WETLAND LIMIT
- PROPOSED LIMITS OF GRADING
- PROPOSED WETLAND REMOVAL
- PROPOSED GOLDENROD MEADOW REMOVAL

Information Sources:
1. Orthophotography provided by Google Satellite, accessed November 2024
2. Proposed alignment & verified wetland provided by Gannett Fleming, September 2024
3. Proposed limits of grading provided by Gannett Fleming, January 2025

Date: JANUARY 2025

Project: AA22-322A

Scale: 1:1500

ABOUD & ASSOCIATES INC.

Title: PROPOSED ALIGNMENT & LIMITS OF NATURAL FEATURES

Project: HIGHWAY 404 & MAJOR MACKENZIE DRIVE CITY OF MARKHAM

Figure No: 2



ELC CODE	ELC COMMUNITY
CVR_3	Single Family Residential
OAGM1	Annual Row Crops
MAMM1-16	Mixed Graminoid Mineral Meadow Marsh
FODM6	Fresh- Moist Sugar Maple Deciduous Forest
MEFM1-1	Goldenrod Forb Meadow
MEG	Graminoid Meadow
THDM5	Fresh-Moist Deciduous Thicket
FODM11	Naturalized Deciduous Hedgerow
ME	Meadow

LEGEND

- STUDY AREA
- ECOLOGICAL LAND CLASSIFICATION
- AREA OF DUMPING

SPECIES AT RISK

- KENTUCKY COFFEETREE

SIGNIFICANT WILDLIFE HABITAT

- MONARCH, AMERICAN BUMBLE BEE & YELLOW-BANDED BUMBLE BEE

Information Sources:
1. Orthophotography provided by Google Satellite, accessed January 2025
2. Ecological Land Classification provided by Aboud & Associates Inc., 2023

Date: JANUARY 2025

Project: AA22-322A

Scale: 1:3000

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Title: EXISTING CONDITIONS & SIGNIFICANT FEATURES

Project: HIGHWAY 404 & MAJOR MACKENZIE DRIVE CITY OF MARKHAM

Figure No: 3

APPENDIX 1

Applicable Policies and Conformity

Policy	Relevant Sections of the Policy	Policy Constraints Within the Study Area	Project Policy Conformity	Proposed Mitigation
Provincial Planning Statement (2024)	Chapter 4, Section 4.1 Natural Heritage	No natural features listed in Section 4.1.5 were identified within the study area, where access was permitted.	The project conforms with the PPS as there are no natural features listed in Section 4.1.5 were identified within the study area, where access was permitted.	N/A
Species at Risk Act (2002)	Section 32 Section 33	Habitat of migratory birds is present within the study area.	Tree removals are necessary to accommodate the proposed roadway.	Trees are not to be removed between April 1- September 30 due to the generalized breeding bird window. Additional recommended mitigation measures provided in Section 7.0 & *Appendix 10.*
Endangered Species Act (2007)	Subsection 9(1) Clause 10(1)(a) Clause 16(5) Clause 17(1)	No Species at Risk listed as Threatened or Endangered were observed within the study area.	The project conforms with the ESA as there are no anticipated impacts to Species at Risk.	N/A
Migratory Bird Convention Act (1994) & Migratory Bird Regulations (2022)	Section 12	Habitat of migratory birds is present within the study area.	Tree removals are necessary to accommodate the proposed roadway.	Trees are not to be removed between April 1- September 30 due to the generalized breeding bird window. Additional recommended mitigation measures

Policy	Relevant Sections of the Policy	Policy Constraints Within the Study Area	Project Policy Conformity	Proposed Mitigation
				provided in Section 7.0 & *Appendix 10*.
Conservation Authorities Act (2024)	Section 28	An unevaluated wetland is present within the study area.	The proposed alignment of the development bisects the existing unevaluated wetland. A permit will be required for full compliance.	Implement compensation agreed upon between TRCA and City of Markham. Additional recommended mitigation measures provided in Section 7.0 & *Appendix 10*.
Ontario Regulation 41/24 (2024)	Section 2 Section 5	An unevaluated wetland is present within the study area.	The proposed alignment of the development bisects the existing unevaluated wetland. A permit will be required for full compliance.	Implement compensation agreed upon between TRCA and City of Markham. Additional recommended mitigation measures provided in Section 7.0 & *Appendix 10*.
Living Cities Policies for Planning and Development in the Watersheds of the TRCA (2014)	Section 8.7.2 Section 8.7.4	An unevaluated wetland is present within the Study Area.	The proposed alignment of the development bisects the existing unevaluated wetland. A permit will be required for full compliance.	Implement compensation agreed upon between TRCA and City of Markham. Additional recommended mitigation measures provided in Section 7.0 & *Appendix 10*.

Policy	Relevant Sections of the Policy	Policy Constraints Within the Study Area	Project Policy Conformity	Proposed Mitigation
York Region Official Plan (2022)	Section 3.4.5	An unevaluated wetland is present within the Study Area.	The proposed development is going through a Municipal Class Environmental Assessment process.	Recommended mitigation measures provided in Section 7.0 & *Appendix 10*.
City of Markham Official Plan (2018 Consolidation)	Section 3.1.2.9	An unevaluated wetland and permanent/intermittent stream are present in the study area.	The proposed development is going through a Municipal Class Environmental Assessment process.	Recommended mitigation measures provided in Section 7.0 & *Appendix 10*.

APPENDIX 2

Terms of Reference and Approval

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ENVIRONMENTAL STUDIES
SUBWATERSHED STUDIES
ENVIRONMENTAL IMPACT STATEMENTS
ECOLOGICAL LAND CLASSIFICATION
WETLAND EVALUATION
VEGETATION ASSESSMENT
BOTANICAL INVENTORIES
WILDLIFE SURVEYS
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TRAIL SYSTEMS
GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

April 19, 2023

Our Project No.: AA22-322A
Sent by Email: Joshua.lacaria@trca.ca
PatrickWong@markham.ca

Joshua Lacaria
Planner
Toronto and Region Conservation Authority
101 Exchange Avenue
Vaughan, Ontario L4K 5R6

&

Patrick Wong
Senior Planner II, Natural Heritage
City of Markham
101 Town Centre Blvd
Markham, Ontario L3R 9W3

Re: Municipal Class Environmental Assessment Study of the Hwy 404 Ramp ext. at Major Mackenzie
City of Markham
Terms of Reference – Natural Environment Impact Assessment

Dear Mr. Lacaria & Mr. Wong:

This document outlines the Terms of Reference (ToR) of the natural environment impact assessment (NEIA) for a proposed application for an update addendum for the Municipal Class Environmental Assessment (MCEA) for the Highway 404 and Major Mackenzie Drive ramp extension. Please review the terms and circulate to relevant staff for discussion and approval.

BACKGROUND

An update addendum for the MCEA for the Highway 404 and Major Mackenzie Drive ramp extension is required. The scope of work required includes a natural environment impact assessment.

The subject site contains an unevaluated wetland and a woodland feature. Both features are isolated as they are bound by Highway 404, Major Mackenzie Drive, and Markland Street.

Toronto and Region Conservation Authority (TRCA) Regulation Mapping indicates the subject site is within the regulated area and area of interference surrounding the unevaluated wetland feature.

Map 4 of the York Region Official Plan (2022) indicates the presence of an unevaluated wetland feature as well as Seepage Areas and Springs (TRCA).

Map 5 of the City of Markham Official Plan (2018 Consolidation) indicates lands designated as Greenway System and Woodlands to be present within the subject site.

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

- Aerial photography of the subject site,
- York Region Official Plan (2022) and Schedules,
- City of Markham Official Plan (2018 Consolidation),
- York Region Mapping (York Region General Map, accessed April 12, 2023)
- TRCA mapping (accessed April 12, 2023) of natural heritage features (e.g., regulation limit, TRCA and OMNR wetlands),
- Natural Heritage Information Center, Make-a-map, accessed April 12, 2023.
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. 2019
- Ontario Breeding Bird Atlas. Bird Studies Canada, 2007.
- Atlas of the Mammals of Ontario. Dobbyn, 1994.
- iNaturalist. Accessed April 12, 2023
- eBird. Cornell Lab of Ornithology. Accessed April 12, 2023.
- Ontario Butterfly Atlas. Toronto Entomologists' Association. Accessed April 12, 2023.

STUDY AREA

The study area is the subject site and up to 120m beyond the subject site, where access is permitted (*Figure 1*).

As needed, the lands adjacent to the proposed infrastructure may require further access to assist with understanding the characteristics and functions of natural heritage features. Where access is restricted, 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., York Region Official Plan).

PLANNING CONTEXT

York Region Official Plan (2022)

The York Region Official Plan Map 4 indicates the presence of an unevaluated wetland feature and seepage areas within the subject site. Section 3.4.21 states:

"That applications for development and site alteration within 120 metres of wetlands not evaluated per the Ontario Wetland Evaluation System, or wetlands not shown on Map 4 of the Plan shall be accompanied by an environmental impact study that determines their importance, functions and means of protection and/or maintenance of function as appropriate, to the satisfaction of he approval authority."

City of Markham Official Plan (2018 Consolidation)

The City of Markham Official Plan Map 5 indicates the subject site to include lands designated as Greenway System and Woodlands. Section 3.1.2.16 states it is the policy of Council to:

"Protect and enhance woodlands and significant woodlands, as defined by the Province, the Region and the City by:

a) Prohibiting development, redevelopment and site alteration except:
   i. Where infrastructure is provided in accordance with Section 3.1.2.9; or
   ii. As provided for in Section 3.1.2.17;…"

Section 8.6.1.2 states it is the policy of Council to:

"Provide for the following uses on lands designated as 'Greenway':
… j) transportation, servicing or utility infrastructure in accordance with Section 3.1.2 and 7.1.1.7, which receives environmental approval under provincial or federal authority, subject to the requirements of the Oak ridges Moraine Conservation Plan and the Greenbelt Plan where applicable;"

Toronto and Region Conservation Authority

The subject site contains an unevaluated wetland feature and its area of interference. Per the Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (2014), Section 8.7.4 states:

"Notwithstanding Section 8.7.2, where it can be demonstrated to the satisfaction of TRCA, in accordance with all relevant policies in Section 8, that the interference is acceptable and the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected, development and interference associated with the following activities may be permitted within wetlands:

a) *Public or essential infrastructure where acceptable justification has been provided through an environmental assessment process or comprehensive environmental study;*

b) *Conservation or restoration projects or management activities;*
c) *Hazardous land remediation or mitigation works to protect existing development; and*
d) *Low intensity and non-intrusive minor recreational uses (eg., outdoor education).”*

BACKGROUND REVIEW

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

1. The Ontario Reptile and Amphibian Atlas shows within the 10 km squares containing the subject site, the recent and historical presence of 15 species (including complexes) of reptiles and amphibians (accessed April 12, 2023). Including three species of Conservation Concern (Blanding’s Turtle, Midland Painted Turtle and Snapping Turtle).

2. The Natural Heritage Information Center indicates the presence of Redside Dace, Eastern Meadowlark, Snapping Turtle, Eastern Wood-pewee, Butternut, Black Ash and Barn Swallow within the 1km square containing the subject site.

3. The Ontario Breeding Bird Atlas 2 and 3 show within the 10 km squares containing the subject lands, the recent presence of 94 species of bird. Including seven species of Conservation Concern (Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Bobolink and Eastern Meadowlark).

4. The Ontario Mammal Atlas indicates the presence of seven species within the 10km square containing the subject property, none of which are considered species of conservation concern.

5. eBird records from the nearby Richmond Hill- Headwaters Community Park (~2km from the subject site) indicates the recent and historical presence of 122 species, including seven species of Conservation Concern (Bank Swallow, Evening Grosbeak, Chimney Swift, Canada Warbler, Olive-sided Flycatcher, Barn Swallow and Eastern Meadowlark).

6. iNaturalist observations within 1km of the subject property indicate the recent presence of 15 vascular plants, six insects, two birds, two fungi and one

amphibian. None of the species observed are considered species of Conservation Concern.

7. The Ontario Butterfly Atlas shows within the 10 km squares containing the subject lands, the recent and historical presence of 30 species of butterflies, including one species of Conservation Concern (Monarch).

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

To fulfill the requirements of this study, we will:

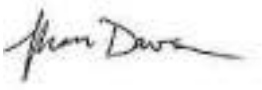
1. Review background information, (e.g., Previous studies completed under the MCEA, proposed activity, relevant sections of natural heritage system components of the Wellington County OP, investigation of wildlife atlases and NHIC).
2. Complete a MECP Information Request, to determine the potential presence of SAR or other significant natural features in the study area.
3. Conduct one site visit in spring to characterize vegetation communities using the ELC system (MNRF) of the Study Area, identify the limit of the wetland and woodland features within the study area where accessible, and complete a spring botanical inventory study.
4. Conduct one (1) site visit to coordinate with the TRCA to field-verify the staked boundary. Plan of Survey limits for the wetland feature will be picked up separately by a qualified surveyor retained by the Prime Consultant.
5. Investigate the study area for the presence of Significant Wildlife Habitat.
6. Investigate the study area for presence of Species at Risk and Species at Risk habitat.
7. Record observations of all incidental wildlife during site visits.
8. Analyze findings and prepare a map that shows:
    a. Identified natural heritage features, and functions and landscape level features (e.g., linkages, wetlands).

b. The proposed application for consent (severance) plan.
c. ELC vegetation communities.
d. Wetland & woodland limits.
e. Other noteworthy features as needed.
f. Locations of other natural heritage features from background literature searches (e.g., mammal atlas, herpetofaunal atlas, Wellington County OP, Township Zoning Bylaw).

9. Conduct an impact assessment by reviewing the proposed solution's direct, indirect, and induced (i.e., residual, ongoing) impact on the natural features. Show the configuration of the proposed solution on the subject site and assess for enhancement and restoration opportunities.
10. Provide policy rationale and demonstrate conformity with applicable regulations and policies for expected impacts to natural heritage features e.g., removal of trees, wetland impacts and grading to accommodate the preferred solution.
11. Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments may be needed to protect vegetation features (e.g., woodlands, wetlands) adjacent to the development activity.
12. Prepare a report of the NEIA that includes background information, methods, existing conditions, proposed development, impact assessment and mitigation measures, and appendices of field studies (e.g., ELC, flora list).

Kind Regards,

ABOUD & ASSOCIATES INC.



Shannon Davison B. Env., Eco. Rest. Cert.
Ecologist
MNRF Certified Ecological Land Classification
MNRF Certified Wetland Evaluation
CERPIT #0499

Cc: Cheryl-Anne Ross (Aboud & Associates)
Jason Ezer (York Region)
Catherine Voytenkov (Gannett Fleming)
Andrew Ostler (Gannett Fleming)

S:\A+A Projects\2022\Approved\22-322A Highway 404 and Maj MacKenzie\Approvals, Comments\ToR\AA22-322A MCEA Hwy 404 and Major Mackenzie EIS Terms of Reference.docx



LEGEND

- STUDY AREA
- ESTIMATED AREA OF WORKS
- WETLAND
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed December, 2022.
2. Woodlands, Wetlands and Watercourses provided by Land Information Ontario

Title:

STUDY AREA

Project:

HWY 404 AND MAJOR MACKENZIE DRIVE

Date: APRIL 2023

Project: AA22-322A

Scale: 1 : 2500

ABOUD & ASSOCIATES INC.

Consulting Arborists • Ecologists • Landscape Architects

Figure No:

1

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
AMPHIBIANS									
Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	S2	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 requirements to be reviewed on site during ELC and field studies.	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	MNRF Species Occurrence Mapping	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation to breed (COSEWIC 2016).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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	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 requirements to be reviewed on site during ELC and field studies.	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									
American Bumble Bee	*Bombus pensylvanicus*	SC	SC	S3S4	MNRF Species Occurrence Mapping	Occurs in a range of open habitats including farmlands, meadows, and grasslands. It has been recorded foraging on flowers for pollen and nectar from a variety of plant genera (COSEWIC 2018).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2018. COSEWIC assessment and status report on the American Bumble Bee (*Bombus pensylvanicus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 52 pp.
Monarch	*Danaus plexippus*	SC	SC	S2N, S4B	Ontario Butterfly Atlas	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)	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Suckley's Cuckoo Bumble Bee	*Bombus suckleyi*	END	THR	SH	MNRF Species Occurrence Mapping	Occurs in diverse habitats including open meadows and prairies, farms and croplands, urban areas, boreal forest, and montane meadows (COSEWIC 2019).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2019. COSEWIC assessment and status report on the Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 70 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 requirements to be reviewed on site during ELC and field studies.	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)	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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									
Acadian Flycatcher	*Empidonax Virenscens*	END	END	S2S3B	MNRF Species Occurrence Mapping	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher (*Empidonax virescens)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
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 requirements to be reviewed on site during ELC and field studies.	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.
Bank Swallow	*Riparia riparia*	THR	THR	S4B	EBird Ontario Breeding Bird Atlas	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 requirements to be reviewed on site during ELC and field studies.	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*	SC	THR	S5B	Ebird Ontario Breeding Bird Atlas	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 requirements to be reviewed on site during ELC and field studies.	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.
Black Tern	*Chlidonias niger*	SC	NAR	S3B	MNRF Species Occurrence Mapping	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No	Habitat requirements to be reviewed on site during ELC and field studies.	Peter S. Burke. 2012. Management Plan for the Black Tern (*Chlidonias niger*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	Natural Heritage Information Centre EBird Ontario Breeding Bird Atlas	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)	No	Habitat requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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	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 requirements to be reviewed on site during ELC and field studies.	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	Ebird Ontario Breeding Bird Atlas	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 requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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.
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4B	EBird Ontario Breeding Bird Atlas	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).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
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 requirements to be reviewed on site during ELC and field studies.	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 Ontario Breeding Bird Atlas	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	S4B	EBird	Breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2016. COSEWIC assessment and status report on the Evening Grosbeak (*Coccothraustes vespertinus)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp.
Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC	S4B	MNRF Species Occurrence Mapping	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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.
Lesser Yellowlegs	*Tringa flavipes*	THR	THR	S3S4B, S5M	MNRF Species Occurrence Mapping	Nests on dry ground near peatlands, marshes, ponds, and other wetlands in the boreal forest and taiga. In winter and during migration, the species frequents coastal salt marshes, estuaries and ponds, as well as lakes, other freshwater wetlands, and anthropogenic wetlands such as flooded rice fields and sewage lagoons (COSEWIC 2020).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2020. COSEWIC assessment and status report on the Lesser Yellowlegs (*Tringa flavipes*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 64 pp.
Loggerhead Shrike	*Lanius ludovicianus*	END	END	S2B	MNRF Species Occurrence Mapping	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No	Habitat requirements to be reviewed on site during ELC and field studies.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, *migrans* subspecies (*Lanius ludovicianus migrans*), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Olive-sided Flycatcher	*Contupus 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 requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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.

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Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	THR	S4B	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 requirements to be reviewed on site during ELC and field studies.	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.
Short-eared Owl	*Asio flammeus*	THR	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 requirements to be reviewed on site during ELC and field studies.	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.
Wood Thrush	*Hylocichla mustelina*	SC	THR	S4B	Ontario Breeding Bird Atlas	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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 Rail	*Coturnicops noveboracensis*	SC	SC	S4B	MNRF Species Occurrence Mapping	Nests in wet marshy areas of short, grass-like vegetation, usually sedge (especially Carex spp.), that have an overlying dry mat of dead vegetation that they use to roof their nests (COSEWIC 2009)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2009. COSEWIC assessment and status report on the Yellow Rail (*Coturnicops noveboracensis)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
Yellow-breasted Chat	*Icteria virens*	END	END	S1B	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).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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.
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 requirements to be reviewed on site during ELC and field studies.	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 Brook Lamprey	*Ichtyomyzon fossor*	SC	SC	S3	MNRF Species Occurrence Mapping	Found in clear streams and rivers with rocky or gravelly substrates and presence of fine sands and uni-directional current for egg adherence, larval stage requires soft substrates for burrowing (COSEWIC 2007d).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC 2007. COSEWIC assessment and update status report on the northern brook lamprey (*Ichthyomyzon fossor)* (Great Lakes – Upper St. Lawrence populations and Saskatchewan – Nelson population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 30 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 requirements to be reviewed on site during ELC and field studies.	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	DFO Aquatic Species at Risk	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 requirements to be reviewed on site during ELC and field studies.	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.

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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 in 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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Little Brown Myotis	*Myotis lucifugus*	END	END	S3	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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
REPTILES									
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	S3	Ontario Reptile and Amphibian Atlas	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 requirements to be reviewed on site during ELC and field studies.	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.
Midland Painted Turtle	*Chrysemys picta marginata*	NL	SC	S4	Ontario Reptile and Amphibian Atlas	Occupy slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate. Found in association with submergent aquatic plants, which are used for cover and feeding. Semi -tolerant of human-altered landscapes, occasionally found occupying urban ponds and lands subject to anthropogenic disturbance. Suitable nesting habitat includes open, often south-facing, and sloped areas with sandy-loamy and/or gravel substrate usually within 1200 m of aquatic active season habitats. Overwinter in shallow water with deep sediment (COSEWIC 2018).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2018. COSEWIC assessment and status report on the Midland Painted Turtle (*Chrysemys picta marginata*) and the Eastern Painted Turtle (*Chrysemys picta picta*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 107 pp.
Northern Map Turtle	*Graptemys geographica*	SC	SC	S3	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 requirements to be reviewed on site during ELC and field studies.	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.
Snapping Turtle	*Chelydra serpentina*	SC	SC	S4	Ontario Reptile and Amphibian Atlas	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.

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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 requirements to be reviewed on site during ELC and field studies.	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.
Butler's Gartersnake	*Thamnophis butleri*	END	END	S2	MNRF Species Occurrence Mapping	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake (*Thamnophis butler*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Massassauga Rattlesnake	*Sistrurus catenatus*	SC	THR	S3	MNRF Species Occurrence Mapping	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga (*Sistrurus catenatus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
VASCULAR PLANTS									
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 requirements to be reviewed on site during ELC and field studies.	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.
Dense Blazing Star	*Liatris spicata*	THR	THR	S2	MNRF Species Occurrence Mapping	Occurs in open tallgrass prairies. It can grow in a range of moisture regimes from dry to very moist (COSEWIC 2010)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Dense Blazing Star (*Liatris spicata)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 23 pp.
Eastern Prairie-fringed Orchid	*Platanthera leucophaea*	END	END	S2	MNRF Species Occurrence Mapping	Habitat includes fens, wet tallgrass prairie and moist old fields with open growing conditions. Species does not flower annually (Environment Canada 2012).	No	Habitat requirements to be reviewed on site during ELC and field studies.	Environment Canada. 2012. Recovery Strategy for the Eastern Prairie Fringed-orchid (*Platanthera leucophaea*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ii + 11 pp. + Appendices.
Kentucky Coffee-tree	*Gymnocladus dioicus*	THR	THR	S2	MNRF Species Occurrence Mapping	Grows best on fertile loam soil with ample moisture and tolerates alkaline soils and dry sandy soils. Typically found in rich floodplain woodlands and woodland edges of marshes where open canopy conditions exist (Environment Canada 2014)	No	Habitat requirements to be reviewed on site during ELC and field studies.	Environment Canada. 2014. Recovery Strategy for the Kentucky Coffee-tree (*Gymnocladus dioicus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vi + 36 pp.
Purple Twayblade	*Liparis liliifolia*	THR	THR	S2S3	MNRF Species Occurrence Mapping	Generally found in dry to mesic conditions, recently reported in wetlands. Typically found in open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and conifer plantation (COSEWIC 2010)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Purple Twayblade (*Liparis liliifolia)* in Canada. Committee on the Status of Endangered Wildlife. Ottawa. xii + 25 pp.

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
Seasonal Concentration Areas			
1	Waterfowl stopover and Staging Areas (terrestrial)	- Fields with Sheet water in spring (incl. agricultural)	None
2	Waterfowl Stopover and Staging (Aquatic)	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	None
3	Shorebird Migratory stopover	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy, and un-vegetated shoreline habitat	None
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	None
5	Bat Hibernacula	- Caves, mine shafts, underground foundations, karsts. - buildings are not SWH	None
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	Potential, to be determined during ELC surveys.
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	None
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences, and crumbling foundations	None
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	None
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	None
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river (natural or artificial)	None
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	None
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of Lake Ontario	None
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM, FOC, SWM, SWC, CUP2, CUP3, FOD3, CUT)	None identified through the Natural Heritage Information Centre
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	None identified through the Natural Heritage Information Centre
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	None
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires, and erosion.	None
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	None

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	None
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	None
21	Tallgrass Prairie	- Ground cover dominated by prairie grasses with <25% tree cover. - Remnant sites such as Railway Right of ways are not SWH	None
22	Other Rare Vegetation Communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	None
Specialized Habitats 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	None
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	None
25	Woodland Raptor Nesting Habitat	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	None
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.	None
27	Seeps and Springs	- Areas where ground water comes to the surface. - Any forested area within the headwaters of a stream or river system	Potential, to be determined during ELC surveys.
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.	Potential, to be determined during ELC surveys.
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.	Potential, to be determined during ELC surveys.
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	None

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CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

April 19, 2023

Our Project No.: AA22-322A
Sent by Email: Joshua.lacaria@trca.ca
PatrickWong@markham.ca

Joshua Lacaria
Planner
Toronto and Region Conservation Authority
101 Exchange Avenue
Vaughan, Ontario L4K 5R6

&

Patrick Wong
Senior Planner II, Natural Heritage
City of Markham
101 Town Centre Blvd
Markham, Ontario L3R 9W3

Re: Municipal Class Environmental Assessment Study of the Hwy 404 Ramp ext. at Major Mackenzie
City of Markham
Terms of Reference – Natural Environment Impact Assessment

Dear Mr. Lacaria & Mr. Wong:

This document outlines the Terms of Reference (ToR) of the natural environment impact assessment (NEIA) for a proposed application for an update addendum for the Municipal Class Environmental Assessment (MCEA) for the Highway 404 and Major Mackenzie Drive ramp extension. Please review the terms and circulate to relevant staff for discussion and approval.

BACKGROUND

An update addendum for the MCEA for the Highway 404 and Major Mackenzie Drive ramp extension is required. The scope of work required includes a natural environment impact assessment.

The subject site contains an unevaluated wetland and a woodland feature. Both features are isolated as they are bound by Highway 404, Major Mackenzie Drive, and Markland Street.

Toronto and Region Conservation Authority (TRCA) Regulation Mapping indicates the subject site is within the regulated area and area of interference surrounding the unevaluated wetland feature.

Map 4 of the York Region Official Plan (2022) indicates the presence of an unevaluated wetland feature as well as Seepage Areas and Springs (TRCA).

Map 5 of the City of Markham Official Plan (2018 Consolidation) indicates lands designated as Greenway System and Woodlands to be present within the subject site.

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

- Aerial photography of the subject site,
- York Region Official Plan (2022) and Schedules,
- City of Markham Official Plan (2018 Consolidation),
- York Region Mapping (York Region General Map, accessed April 12, 2023)
- TRCA mapping (accessed April 12, 2023) of natural heritage features (e.g., regulation limit, TRCA and OMNR wetlands),
- Natural Heritage Information Center, Make-a-map, accessed April 12, 2023.
- Ontario Nature. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. 2019
- Ontario Breeding Bird Atlas. Bird Studies Canada, 2007.
- Atlas of the Mammals of Ontario. Dobbyn, 1994.
- iNaturalist. Accessed April 12, 2023
- eBird. Cornell Lab of Ornithology. Accessed April 12, 2023.
- Ontario Butterfly Atlas. Toronto Entomologists' Association. Accessed April 12, 2023.

STUDY AREA

The study area is the subject site and up to 120m beyond the subject site, where access is permitted (*Figure 1*).

As needed, the lands adjacent to the proposed infrastructure may require further access to assist with understanding the characteristics and functions of natural heritage features. Where access is restricted, 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., York Region Official Plan).

PLANNING CONTEXT

York Region Official Plan (2022)

The York Region Official Plan Map 4 indicates the presence of an unevaluated wetland feature and seepage areas within the subject site. Section 3.4.21 states:

"That applications for development and site alteration within 120 metres of wetlands not evaluated per the Ontario Wetland Evaluation System, or wetlands not shown on Map 4 of the Plan shall be accompanied by an environmental impact study that determines their importance, functions and means of protection and/or maintenance of function as appropriate, to the satisfaction of he approval authority."

City of Markham Official Plan (2018 Consolidation)

The City of Markham Official Plan Map 5 indicates the subject site to include lands designated as Greenway System and Woodlands. Section 3.1.2.16 states it is the policy of Council to:

"Protect and enhance woodlands and significant woodlands, as defined by the Province, the Region and the City by:

a) Prohibiting development, redevelopment and site alteration except:
   i. Where infrastructure is provided in accordance with Section 3.1.2.9; or
   ii. As provided for in Section 3.1.2.17;…"

Section 8.6.1.2 states it is the policy of Council to:

"Provide for the following uses on lands designated as 'Greenway':
… j) transportation, servicing or utility infrastructure in accordance with Section 3.1.2 and 7.1.1.7, which receives environmental approval under provincial or federal authority, subject to the requirements of the Oak ridges Moraine Conservation Plan and the Greenbelt Plan where applicable;"

Toronto and Region Conservation Authority

The subject site contains an unevaluated wetland feature and its area of interference. Per the Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (2014), Section 8.7.4 states:

"Notwithstanding Section 8.7.2, where it can be demonstrated to the satisfaction of TRCA, in accordance with all relevant policies in Section 8, that the interference is acceptable and the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected, development and interference associated with the following activities may be permitted within wetlands:

a) *Public or essential infrastructure where acceptable justification has been provided through an environmental assessment process or comprehensive environmental study;*

b) *Conservation or restoration projects or management activities;*
c) *Hazardous land remediation or mitigation works to protect existing development; and*
d) *Low intensity and non-intrusive minor recreational uses (eg., outdoor education).”*

BACKGROUND REVIEW

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

1. The Ontario Reptile and Amphibian Atlas shows within the 10 km squares containing the subject site, the recent and historical presence of 15 species (including complexes) of reptiles and amphibians (accessed April 12, 2023). Including three species of Conservation Concern (Blanding’s Turtle, Midland Painted Turtle and Snapping Turtle).

2. The Natural Heritage Information Center indicates the presence of Redside Dace, Eastern Meadowlark, Snapping Turtle, Eastern Wood-pewee, Butternut, Black Ash and Barn Swallow within the 1km square containing the subject site.

3. The Ontario Breeding Bird Atlas 2 and 3 show within the 10 km squares containing the subject lands, the recent presence of 94 species of bird. Including seven species of Conservation Concern (Chimney Swift, Eastern Wood-pewee, Bank Swallow, Barn Swallow, Wood Thrush, Bobolink and Eastern Meadowlark).

4. The Ontario Mammal Atlas indicates the presence of seven species within the 10km square containing the subject property, none of which are considered species of conservation concern.

5. eBird records from the nearby Richmond Hill- Headwaters Community Park (~2km from the subject site) indicates the recent and historical presence of 122 species, including seven species of Conservation Concern (Bank Swallow, Evening Grosbeak, Chimney Swift, Canada Warbler, Olive-sided Flycatcher, Barn Swallow and Eastern Meadowlark).

6. iNaturalist observations within 1km of the subject property indicate the recent presence of 15 vascular plants, six insects, two birds, two fungi and one

amphibian. None of the species observed are considered species of Conservation Concern.

7. The Ontario Butterfly Atlas shows within the 10 km squares containing the subject lands, the recent and historical presence of 30 species of butterflies, including one species of Conservation Concern (Monarch).

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

To fulfill the requirements of this study, we will:

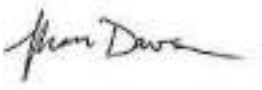
1. Review background information, (e.g., Previous studies completed under the MCEA, proposed activity, relevant sections of natural heritage system components of the Wellington County OP, investigation of wildlife atlases and NHIC).
2. Complete a MECP Information Request, to determine the potential presence of SAR or other significant natural features in the study area.
3. Conduct one site visit in spring to characterize vegetation communities using the ELC system (MNRF) of the Study Area, identify the limit of the wetland and woodland features within the study area where accessible, and complete a spring botanical inventory study.
4. Conduct one (1) site visit to coordinate with the TRCA to field-verify the staked boundary. Plan of Survey limits for the wetland feature will be picked up separately by a qualified surveyor retained by the Prime Consultant.
5. Investigate the study area for the presence of Significant Wildlife Habitat.
6. Investigate the study area for presence of Species at Risk and Species at Risk habitat.
7. Record observations of all incidental wildlife during site visits.
8. Analyze findings and prepare a map that shows:
    a. Identified natural heritage features, and functions and landscape level features (e.g., linkages, wetlands).

b. The proposed application for consent (severance) plan.
c. ELC vegetation communities.
d. Wetland & woodland limits.
e. Other noteworthy features as needed.
f. Locations of other natural heritage features from background literature searches (e.g., mammal atlas, herpetofaunal atlas, Wellington County OP, Township Zoning Bylaw).

9. Conduct an impact assessment by reviewing the proposed solution's direct, indirect, and induced (i.e., residual, ongoing) impact on the natural features. Show the configuration of the proposed solution on the subject site and assess for enhancement and restoration opportunities.
10. Provide policy rationale and demonstrate conformity with applicable regulations and policies for expected impacts to natural heritage features e.g., removal of trees, wetland impacts and grading to accommodate the preferred solution.
11. Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments may be needed to protect vegetation features (e.g., woodlands, wetlands) adjacent to the development activity.
12. Prepare a report of the NEIA that includes background information, methods, existing conditions, proposed development, impact assessment and mitigation measures, and appendices of field studies (e.g., ELC, flora list).

Kind Regards,

ABOUD & ASSOCIATES INC.



Shannon Davison B. Env., Eco. Rest. Cert.
Ecologist
MNRF Certified Ecological Land Classification
MNRF Certified Wetland Evaluation
CERPIT #0499

Cc: Cheryl-Anne Ross (Aboud & Associates)
Jason Ezer (York Region)
Catherine Voytenkov (Gannett Fleming)
Andrew Ostler (Gannett Fleming)

S:\A+A Projects\2022\Approved\22-322A Highway 404 and Maj MacKenzie\Approvals, Comments\ToR\AA22-322A MCEA Hwy 404 and Major Mackenzie EIS Terms of Reference.docx



LEGEND

- STUDY AREA
- ESTIMATED AREA OF WORKS
- WETLAND
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed December, 2022.
2. Woodlands, Wetlands and Watercourses provided by Land Information Ontario

Title:

STUDY AREA

Project:

HWY 404 AND MAJOR MACKENZIE DRIVE

Date: APRIL 2023

Project: AA22-322A

Scale: 1 : 2500

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Consulting Arborists • Ecologists • Landscape Architects

Figure No:

1

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
AMPHIBIANS									
Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	S2	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 requirements to be reviewed on site during ELC and field studies.	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	MNRF Species Occurrence Mapping	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation to breed (COSEWIC 2016).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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	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 requirements to be reviewed on site during ELC and field studies.	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									
American Bumble Bee	*Bombus pensylvanicus*	SC	SC	S3S4	MNRF Species Occurrence Mapping	Occurs in a range of open habitats including farmlands, meadows, and grasslands. It has been recorded foraging on flowers for pollen and nectar from a variety of plant genera (COSEWIC 2018).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2018. COSEWIC assessment and status report on the American Bumble Bee (*Bombus pensylvanicus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 52 pp.
Monarch	*Danaus plexippus*	SC	SC	S2N, S4B	Ontario Butterfly Atlas	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)	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Suckley's Cuckoo Bumble Bee	*Bombus suckleyi*	END	THR	SH	MNRF Species Occurrence Mapping	Occurs in diverse habitats including open meadows and prairies, farms and croplands, urban areas, boreal forest, and montane meadows (COSEWIC 2019).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2019. COSEWIC assessment and status report on the Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 70 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 requirements to be reviewed on site during ELC and field studies.	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)	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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									
Acadian Flycatcher	*Empidonax Virenscens*	END	END	S2S3B	MNRF Species Occurrence Mapping	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher (*Empidonax virescens)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
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 requirements to be reviewed on site during ELC and field studies.	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.
Bank Swallow	*Riparia riparia*	THR	THR	S4B	EBird Ontario Breeding Bird Atlas	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 requirements to be reviewed on site during ELC and field studies.	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*	SC	THR	S5B	Ebird Ontario Breeding Bird Atlas	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 requirements to be reviewed on site during ELC and field studies.	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.
Black Tern	*Chlidonias niger*	SC	NAR	S3B	MNRF Species Occurrence Mapping	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No	Habitat requirements to be reviewed on site during ELC and field studies.	Peter S. Burke. 2012. Management Plan for the Black Tern (*Chlidonias niger*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	Natural Heritage Information Centre EBird Ontario Breeding Bird Atlas	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)	No	Habitat requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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	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 requirements to be reviewed on site during ELC and field studies.	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	Ebird Ontario Breeding Bird Atlas	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 requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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.
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4B	EBird Ontario Breeding Bird Atlas	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).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
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 requirements to be reviewed on site during ELC and field studies.	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 Ontario Breeding Bird Atlas	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	S4B	EBird	Breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2016. COSEWIC assessment and status report on the Evening Grosbeak (*Coccothraustes vespertinus)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp.
Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC	S4B	MNRF Species Occurrence Mapping	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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.
Lesser Yellowlegs	*Tringa flavipes*	THR	THR	S3S4B, S5M	MNRF Species Occurrence Mapping	Nests on dry ground near peatlands, marshes, ponds, and other wetlands in the boreal forest and taiga. In winter and during migration, the species frequents coastal salt marshes, estuaries and ponds, as well as lakes, other freshwater wetlands, and anthropogenic wetlands such as flooded rice fields and sewage lagoons (COSEWIC 2020).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2020. COSEWIC assessment and status report on the Lesser Yellowlegs (*Tringa flavipes*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 64 pp.
Loggerhead Shrike	*Lanius ludovicianus*	END	END	S2B	MNRF Species Occurrence Mapping	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No	Habitat requirements to be reviewed on site during ELC and field studies.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, *migrans* subspecies (*Lanius ludovicianus migrans*), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Olive-sided Flycatcher	*Contupus 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 requirements to be reviewed on site during ELC and field studies.	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 requirements to be reviewed on site during ELC and field studies.	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.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	THR	S4B	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 requirements to be reviewed on site during ELC and field studies.	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.
Short-eared Owl	*Asio flammeus*	THR	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 requirements to be reviewed on site during ELC and field studies.	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.
Wood Thrush	*Hylocichla mustelina*	SC	THR	S4B	Ontario Breeding Bird Atlas	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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 Rail	*Coturnicops noveboracensis*	SC	SC	S4B	MNRF Species Occurrence Mapping	Nests in wet marshy areas of short, grass-like vegetation, usually sedge (especially Carex spp.), that have an overlying dry mat of dead vegetation that they use to roof their nests (COSEWIC 2009)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2009. COSEWIC assessment and status report on the Yellow Rail (*Coturnicops noveboracensis)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
Yellow-breasted Chat	*Icteria virens*	END	END	S1B	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).	No	Habitat requirements to be reviewed on site during ELC and field studies.	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.
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 requirements to be reviewed on site during ELC and field studies.	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 Brook Lamprey	*Ichtyomyzon fossor*	SC	SC	S3	MNRF Species Occurrence Mapping	Found in clear streams and rivers with rocky or gravelly substrates and presence of fine sands and uni-directional current for egg adherence, larval stage requires soft substrates for burrowing (COSEWIC 2007d).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC 2007. COSEWIC assessment and update status report on the northern brook lamprey (*Ichthyomyzon fossor)* (Great Lakes – Upper St. Lawrence populations and Saskatchewan – Nelson population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 30 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 requirements to be reviewed on site during ELC and field studies.	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	DFO Aquatic Species at Risk	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 requirements to be reviewed on site during ELC and field studies.	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.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
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 in 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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Little Brown Myotis	*Myotis lucifugus*	END	END	S3	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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
REPTILES									
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	S3	Ontario Reptile and Amphibian Atlas	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 requirements to be reviewed on site during ELC and field studies.	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.
Midland Painted Turtle	*Chrysemys picta marginata*	NL	SC	S4	Ontario Reptile and Amphibian Atlas	Occupy slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate. Found in association with submergent aquatic plants, which are used for cover and feeding. Semi -tolerant of human-altered landscapes, occasionally found occupying urban ponds and lands subject to anthropogenic disturbance. Suitable nesting habitat includes open, often south-facing, and sloped areas with sandy-loamy and/or gravel substrate usually within 1200 m of aquatic active season habitats. Overwinter in shallow water with deep sediment (COSEWIC 2018).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2018. COSEWIC assessment and status report on the Midland Painted Turtle (*Chrysemys picta marginata*) and the Eastern Painted Turtle (*Chrysemys picta picta*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 107 pp.
Northern Map Turtle	*Graptemys geographica*	SC	SC	S3	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 requirements to be reviewed on site during ELC and field studies.	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.
Snapping Turtle	*Chelydra serpentina*	SC	SC	S4	Ontario Reptile and Amphibian Atlas	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	CANDIDATE HABITAT IN STUDY AREA	FIELD STUDIES RECOMMENDED	HABITAT REFERENCE
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 requirements to be reviewed on site during ELC and field studies.	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.
Butler's Gartersnake	*Thamnophis butleri*	END	END	S2	MNRF Species Occurrence Mapping	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake (*Thamnophis butler*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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	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).	Yes	Habitat requirements to be reviewed on site during ELC and field studies.	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.
Massassauga Rattlesnake	*Sistrurus catenatus*	SC	THR	S3	MNRF Species Occurrence Mapping	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga (*Sistrurus catenatus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
VASCULAR PLANTS									
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 requirements to be reviewed on site during ELC and field studies.	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.
Dense Blazing Star	*Liatris spicata*	THR	THR	S2	MNRF Species Occurrence Mapping	Occurs in open tallgrass prairies. It can grow in a range of moisture regimes from dry to very moist (COSEWIC 2010)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Dense Blazing Star (*Liatris spicata)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 23 pp.
Eastern Prairie-fringed Orchid	*Platanthera leucophaea*	END	END	S2	MNRF Species Occurrence Mapping	Habitat includes fens, wet tallgrass prairie and moist old fields with open growing conditions. Species does not flower annually (Environment Canada 2012).	No	Habitat requirements to be reviewed on site during ELC and field studies.	Environment Canada. 2012. Recovery Strategy for the Eastern Prairie Fringed-orchid (*Platanthera leucophaea*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ii + 11 pp. + Appendices.
Kentucky Coffee-tree	*Gymnocladus dioicus*	THR	THR	S2	MNRF Species Occurrence Mapping	Grows best on fertile loam soil with ample moisture and tolerates alkaline soils and dry sandy soils. Typically found in rich floodplain woodlands and woodland edges of marshes where open canopy conditions exist (Environment Canada 2014)	No	Habitat requirements to be reviewed on site during ELC and field studies.	Environment Canada. 2014. Recovery Strategy for the Kentucky Coffee-tree (*Gymnocladus dioicus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vi + 36 pp.
Purple Twayblade	*Liparis liliifolia*	THR	THR	S2S3	MNRF Species Occurrence Mapping	Generally found in dry to mesic conditions, recently reported in wetlands. Typically found in open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and conifer plantation (COSEWIC 2010)	No	Habitat requirements to be reviewed on site during ELC and field studies.	COSEWIC. 2010. COSEWIC assessment and status report on the Purple Twayblade (*Liparis liliifolia)* in Canada. Committee on the Status of Endangered Wildlife. Ottawa. xii + 25 pp.

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
Seasonal Concentration Areas			
1	Waterfowl stopover and Staging Areas (terrestrial)	- Fields with Sheet water in spring (incl. agricultural)	None
2	Waterfowl Stopover and Staging (Aquatic)	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	None
3	Shorebird Migratory stopover	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy, and un-vegetated shoreline habitat	None
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	None
5	Bat Hibernacula	- Caves, mine shafts, underground foundations, karsts. - buildings are not SWH	None
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	Potential, to be determined during ELC surveys.
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	None
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences, and crumbling foundations	None
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	None
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	None
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river (natural or artificial)	None
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	None
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of Lake Ontario	None
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM, FOC, SWM, SWC, CUP2, CUP3, FOD3, CUT)	None identified through the Natural Heritage Information Centre
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	None identified through the Natural Heritage Information Centre
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	None
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires, and erosion.	None
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	None

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	None
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	None
21	Tallgrass Prairie	- Ground cover dominated by prairie grasses with <25% tree cover. - Remnant sites such as Railway Right of ways are not SWH	None
22	Other Rare Vegetation Communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	None
Specialized Habitats 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	None
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	None
25	Woodland Raptor Nesting Habitat	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	None
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.	None
27	Seeps and Springs	- Areas where ground water comes to the surface. - Any forested area within the headwaters of a stream or river system	Potential, to be determined during ELC surveys.
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.	Potential, to be determined during ELC surveys.
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.	Potential, to be determined during ELC surveys.
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	None

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
Habitats of Species of Conservation Concern			
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.	None
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	None
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	None
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	Potential, to be determined during ELC surveys.

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
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 - American Bumble Bee - Monarch - West Virginia white - Yellow-banded Bumble Bee - Bald Eagle - Barn Swallow - Black Tern - Canada Warbler - Common Nighthawk - Eastern Wood-pewee - Evening Grosbeak - Grasshopper Sparrow - Olive-sided Flycatcher - Peregrine Falcon - Wood Thrush - Yellow Rail - Northern Brook Lamprey - Northern Sunfish - Northern Map Turtle - Snapping Turtle - Eastern Ribbonsnake - Milksnake - Massassauga Rattlesnake	Potential, to be determined during ELC surveys.
Wildlife 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	None
37	Deer Movement Corridor	- May occur in all forested ecosites. - Determined when deer wintering habitat is confirmed as SWH	None identified through the Natural Heritage Information Centre

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
Habitats of Species of Conservation Concern			
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.	None
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	None
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	None
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	Potential, to be determined during ELC surveys.

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CANDIDATE SWH WITHIN STUDY AREA
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 - American Bumble Bee - Monarch - West Virginia white - Yellow-banded Bumble Bee - Bald Eagle - Barn Swallow - Black Tern - Canada Warbler - Common Nighthawk - Eastern Wood-pewee - Evening Grosbeak - Grasshopper Sparrow - Olive-sided Flycatcher - Peregrine Falcon - Wood Thrush - Yellow Rail - Northern Brook Lamprey - Northern Sunfish - Northern Map Turtle - Snapping Turtle - Eastern Ribbonsnake - Milksnake - Massassauga Rattlesnake	Potential, to be determined during ELC surveys.
Wildlife 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	None
37	Deer Movement Corridor	- May occur in all forested ecosites. - Determined when deer wintering habitat is confirmed as SWH	None identified through the Natural Heritage Information Centre

Shannon Davison

From: Harsha Gammanpila <Harsha.Gammanpila@trca.ca>
Sent: October 24, 2023 6:29 PM
To: Shannon Davison; Katharine McCarter
Cc: Voytenkov, Catherine
Subject: RE: AA22-322A Highway 404 & Major Mackenzie Drive Ramp Extension

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Caution. Outside Sender

Hi Shannon,

Response for EIS Terms of Reference was TRCA is satisfied with the TOR as there is a wetland feature identification and analysis outlined in the TOR. All other natural features outlined in the TOR is the responsibility of the municipality to provide comments, or their respective natural heritage consultants.

Thank you,

Harsha Gammanpila M.Sc., PMP
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: 437 880 2423
E: harsha.gammanpila@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

From: Shannon Davison <sdavison@aboudtng.com>
Sent: Tuesday, October 17, 2023 10:50 AM
To: Harsha Gammanpila <Harsha.Gammanpila@trca.ca>; Katharine McCarter <Katharine.McCarter@trca.ca>
Cc: Voytenkov, Catherine <cvoytenkov@GFNET.com>
Subject: AA22-322A Highway 404 & Major Mackenzie Drive Ramp Extension

Good morning Harsha and Katharine,

We are compiling our data for the Environmental Impact Study for the Highway 404 Ramp Extension at Major Mackenzie Drive and I wanted to follow up with you regarding our Terms of Reference. I had originally submitted it to TRCA and the City on April 19th but cannot seem to locate comments from TRCA regarding any necessary revisions. If you're able to provide those so that we can ensure the TOR is up-to-date that would be appreciated.

Regards,

Shannon Davison . **B.Env, Eco. Rest. Cert. CERPIT**
Ecologist
MNRF Certified Ecological Land Classification
MNRF Certified Ontario Wetland Evaluation System
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
C: 226.581.0707 www.aboudtng.com . sdavison@aboudtng.com

APPENDIX 3

Site Investigation Details

Survey	Time	Date	Staff	Temp. (°C)	Wind (Beaufort)	Cloud Cover %	Precipitation	Past Precipitation
Ecological Land Classification, Summer Botanical, SAR Habitat & SWH Assessments	10:04-12:30	08-18-2023	SD, BV	16	3	85	None	Rain
Wetland Limit Verification	10:00-12:00	08-24-2023	SD	21	1	30	None	None

APPENDIX 4

Ecological Land Classification Forms

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: Highway 404 & Major Mackenzie	POLYGON: C
	SURVEYOR(S): SD, BV	DATE: August 18 2023
	START: 10:04	END: 12:45	COORDS:

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
		■ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		☒ DECIDUOUS	☐ BOG
SITE		☐ TALUS	COVER	☐ CONIFEROUS	☐ BARREN
☐ OPEN WATER	☐ BASIC BEDRK.	☐ CREVICE/CAVE	☐ OPEN	☐ MIXED	☐ MEADOW
☐ SHALLOW WATER		☐ ALVAR	☐ SHRUB		☐ PRAIRIE
☒ SURFICIAL DEP.		☐ ROCKLAND	■ TREED		☐ THICKET
☐ BEDROCK	☐ CARB BEDRK.	☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☒ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	POPULUS GRANDIDENTATA > TILIA AMERICANA > QUERCUS ALBA = ACER SACCHARUM
2	SUBCANOPY	3	3	RHAMNUS CATHARTICA >> ULMUS AMERICANA > MALUS PUMILA > POPULUS BALSAMIFERA
3	UNDERSTOREY	4	3	RHAMNUS CATHARTICA >> VITIS RIPARIA > LONICERA TATARICA > SALIX ERIOCEPHALA
4	GRD. LAYER	6	3	RHAMNUS CATHARTICA >> DAUCUS CAROTA > TARAXACUM OFFICINALE > TRIFOLIUM REPENS

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	R	25-50	R	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	R	<10	N	10-24	N	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: NATURALIZED DECIDUOUS HEDGEROW		CODE: FODM11
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
POPULUS GRANDIDENTATA	A-O			
MALUS PUMILA		R		
TILIA AMERICANA	O-R			
QUERCUS ALBA	R			
SORBUS AUCUPARIA		R		
ULMUS AMERICANA		R		
ACER SACCHARUM	R			
POPULUS BALSAMIFERA		R		
SALIX ERIOCEPHALA			R	
RHAMNUS CATHARTICA		D	D-A	A
VITIS RIPARIA			O-R	
LONICERA TATARICA			R	
ELAEAGNUS ANGUSTIFOLIA			R	

SPECIES	LAYER C	SC	U	GL
LOTUS CORNICULATUS				O-R
SECURIGERA VARIA				R
DAUCUS CAROTA				O-R
SOLIDAGO CANADENSIS				R
MELILOTUS ALBUS				R
TRIFOLIUM PRATENSE				R
TRIFOLIUM REPENS				O-R
TARAXACUM OFFICINALE				O-R
PHRAGMITES AUSTRALIS			R	
VICIA CRACCA				R
ERIGERON ANNUUS				R
LEUCANTHEMUM VULGARE				R
CIRSIUM ARVENSE				R
DIPSACUS FULLONUM				R
BRASSICA RAPA				R
TRAGOPOGON DUBIUS				R
CICHORIUM INTYBUS				O-R
INULA HELENIUM				R
SYMPHYOTRICHUM LANCEOLA				O

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:



ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: Highway 404 & Major Mackenzie		POLYGON: D
	SURVEYOR(S): SD, BV	DATE: August 18 2023	
	START: 10:04	END: 12:45	COORDS:

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
	☐ ACIDIC BEDRK.	☐ TERRACE		☒ GRAMINOID	☐ STREAM
SITE	☐ BASIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	☒ MARSH
☐ OPEN WATER	☐ CARB BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
☐ SHALLOW WATER		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
☒ SURFICIAL DEP.		☐ CLIFF		☐ DECIDUOUS	☐ BOG
☐ BEDROCK		☐ TALUS	**COVER**	☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE	■ OPEN	☐ MIXED	☐ MEADOW
		☐ ALVAR	☐ SHRUB		☐ PRAIRIE
		☐ ROCKLAND	☐ TREED		☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	1	ULMUS AMERICANA > SALIX NIGRA
2	SUBCANOPY	3	1	ACER NEGUNDO
3	UNDERSTOREY	4	4	PHRAGMITES AUSTRALIS > TYPHA ANGUSTIFOLIA > CORNUS SERICEA > VIBURNUM OPULUS
4	GRD. LAYER	6	3	SYMPHYOTRICHUM PUNICEUM > EUTTROCHIUM MACULATUM > TUSSILAGO FARFARA > LYTHRUM SALICARIA

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	R	25-50	N	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	R	<10	R	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: MARSH	CODE: MA
COMMUNITY SERIES: MEADOW MARSH	CODE: MAM
ECOSITE: GRAMINIOID MINERAL MEADOW MARSH	CODE: MAMM1
VEGETATION TYPE: MIXED GRAMINOID MINERAL MEADOW MARSH	CODE: MAMM1-16
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	C	SC	U	GL
ACER NEGUNDO		O		
SALIX NIGRA	R			
ULMUS AMERICANA	O			
CORNUS SERICEA			O	
RHAMNUS CATHARTICA			R	
VITIS RIPARIA			R	
VIBURNUM OPULUS SSP. TRIL(			R	

SPECIES	C	SC	U	GL
PHRAGMITES AUSTRALIS			A	
TUSSILAGO FARFARA				O
SYMPHYOTRICHUM PUNICEUM				A-O
SCHOENOPLECUS ACUTUS				R
LYTHRUM SALICARIA				R
TYPHA ANGUSTIFOLIA			A-O	
EUTROCHIUM MACULATUM				O
EUPATORIUM PERFOLIATUM				R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:



ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: Highway 404 & Major Mackenzie	POLYGON: E
	SURVEYOR(S): SD, BV	DATE: August 18 2023
	START: 10:04	END: 12:45	COORDS:

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
		☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		☒ DECIDUOUS	☐ BOG
SITE		☐ TALUS	COVER	☐ CONIFEROUS	☐ BARREN
☐ OPEN WATER	☐ BASIC BEDRK.	☐ CREVICE/CAVE	☐ OPEN	☐ MIXED	☐ MEADOW
☐ SHALLOW WATER		☐ ALVAR	☐ SHRUB		☐ PRAIRIE
☒ SURFICIAL DEP.		☐ ROCKLAND	■ TREED		☐ THICKET
☐ BEDROCK	☐ CARB BEDRK.	☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☒ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	ACER SACCHARUM > ULMUS AMERICANA
2	SUBCANOPY	3	4	RHAMNUS CATHARTICA > ACER SACCHARUM > OSTRYA VIRGINIANA > ACER NIGRUM
3	UNDERSTOREY	4	4	RHAMNUS CATHARTICA > PRUNUS VIRGINIANA > VITIS RIPARIA
4	GRD. LAYER	6	4	RHAMNUS CATHARTICA > PARTHENOCISSUS QUINQUEFOLIA >> FRAGARIA VIRGINIANA > OXALIS STRICTA

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	A	25-50	O	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	O	<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 SUGAR MAPLE DECIDUOUS FOREST		CODE: FODM6
VEGETATION TYPE:		CODE:
INCLUSION	FRESH-MOIST DECIDUOUS THICKET	CODE: THDM5
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		R		
ULMUS AMERICANA	O			
ACER SACCHARUM	A-O	O		
ACER NIGRUM		R		
CARYA CORDIFORMIS		R		
OSTRYA VIRGINIANA		O-R		
GLEDITSIA TRIACANTHOS		R		
RHAMNUS CATHARTICA		D	D	A
PARTHENOCISSUS QUINQUEF				A
PRUNUS VIRGINIANA			O	O
VITIS RIPARIA			O-R	O-R

SPECIES	LAYER			
	C	SC	U	GL
TOXICODENDRON RADICANS				R
EQUISETUM ARVENSE				O-R
OXALIS STRICTA				O
FRAGARIA VIRGINIANA				O
CIRCAEA CANADENSIS				O-R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:



ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJ. NO./NAME: Highway 404 & Major Mackenzie	POLYGON: F
	SURVEYOR(S): SD, BV	DATE: August 18 2023
	START: 10:04	END: 12:45	COORDS:

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
SITE		■ TABLELAND	COVER	☐ LICHEN	☐ SWAMP
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ROLL. UPLAND	■ OPEN	☐ BRYOPHYTE	☐ FEN
☐ SHALLOW WATER		☐ CLIFF	☐ SHRUB	☐ DECIDUOUS	☐ BOG
☒ SURFICIAL DEP.	☐ CARB BEDRK.	☐ TALUS	☐ TREED	☐ CONIFEROUS	☐ BARREN
☐ BEDROCK		☐ CREVICE/CAVE		☐ MIXED	☒ MEADOW
		☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUBCANOPY	3	1	PRUNUS SEROTINA >SALIX NIGRA = JUGLANS NIGRA = CRATAEGUS SP.
3	UNDERSTOREY	4	2	CORNUS SERICEA = PRUNUS VIRGINIANA > RHAMNUS CATHARTICA
4	GRD. LAYER	6	4	SOLIDAGO CANADENSIS > POA SP. > SOLIDAGO ALTISSIMA > CIRSIUM ARVENSE

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	R	25-50	N	>50
STANDING SNAGS:	N	<10	N	10-24	N	25-50	N	>50
DEADFALL/LOGS:	R	<10	N	10-24	N	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: MEADOW	CODE: ME
COMMUNITY SERIES: FORB MEADOW	CODE: MEF
ECOSITE: DRY- FRESH FORB MEADOW	CODE: MEFM1
VEGETATION TYPE: GOLDENROD FORB MEADOW	CODE: MEFM1-1
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
JUNIPERUS COMMUNIS		R		
SALIX NIGRA		R		
CRATAEGUS SP.		R		
JUGLANS NIGRA		R		
PRUNUS SEROTINA		O-R		
VITIS RIPARIA				O-R
PARTHENOCISSUS QUINQUEF				O-R
PRUNUS VIRGINIANA			O	
RUBUS IDAEUS				R
RHAMNUS CATHARTICA			R	
CORNUS SERICEA			O	

SPECIES	LAYER			
	C	SC	U	GL
SOLIDAGO CANADENSIS				A
CIRSIUM ARVENSE				O
SYMPHYOTRICHUM NOVAE-AN				R
POA SP.				O
VICIA CRACCA				R
DAUCUS CAROTA				O
HYPERICUM PERFORATUM				O-R
SOLIDAGO ALTISSIMA				O
FRAGARIA VIRGINIANA				O
EUTHAMIA GRAMINIFOLIA				O-R

NOTES:

ABOUD & ASSOCIATES INC.

Representative Photographs of Vegetation Community:



APPENDIX 5

Vascular Plant List

Plant Type [1]	Scientific Name	Common Name	CC [2]	CW [3]	SARO Status [4]	SARA Status [5]	Global Rank [6]	Prov. Rank [7]	TRCA (2023)[8]	York Region[9]
TR	Acer negundo	Manitoba Maple	0	0	NL	NL	G5	S5	L+?	X
TR	Acer nigrum	Black Maple	7	3	NL	NL	G5	S4?	L4	R[4]
TR	Acer saccharum	Sugar Maple	4	3	NL	NL	G5	S5	L5	X
FO	Brassica rapa	Field Mustard	*	5	NL	NL	GNR	SNA	L+	X
TR	Carya cordiformis	Bitternut Hickory	6	0	NL	NL	G5	S5	L4	X
FO	Cichorium intybus	Chicory	*	5	NL	NL	GNR	SNA	L+	X
FO	Circaea candensis	Broad-leaved Enchanter's Nightshade	2	3	NL	NL	GNR	S5	L5	X
FO	Cirsium arvense	Canada Thistle	*	3	NL	NL	G5	SNA	L+	X
SH	Cornus sericea	Red Osier Dogwood	2	-3	NL	NL	G5	S5	L5	X
TR	Crataegus sp.	Hawthorn species								
FO	Daucus carota	Wild Carrot	*	5	NL	NL	GNR	SNA	L+	X
FO	Dipsacus fullonum	Common Teasel		3	NL	NL	GNR	SNA	L+	X
SH	Elaeagnus angustifolia	Russian Olive	*	3	NL	NL	GNR	SNA	L+	X
FE	Equisetum arvense	Field Horsetail	0	0	NL	NL	G5	S5	L5	X
FO	Erigeron annuus	Annual Fleabane	0	3	NL	NL	G5	S5	L5	X
FO	Eupatorium perfoliatum	Common Boneset	2	-3	NL	NL	G5	S5	L5	X
FO	Euthamia graminifolia	Grass-leaved Goldenrod	2	0	NL	NL	G5	S5	L5	X
FO	Eutrochium maculatum	Spotted Joe Pye Weed	3	-5	NL	NL	G5T5	S5	L5	X
FO	Fragaria virginiana	Wild Strawberry	2	3	NL	NL	G5	S5	L5	X
FO	Glycine max	Soy Bean	*	5	NL	NL	GNR	SNA		
TR	Gymnocladus dioicus	Kentucky Coffeetree	6	3	THR	THR	G5	S2	L+	
FO	Hypericum perfoliatum	Common St. John's-wort	*	5	NL	NL	GNR	SNA	L+	X
FO	Inula helenium	Elecampane	*	3	NL	NL	GNR	SNA	L+	X
TR	Juglans nigra	Black Walnut	5	3	NL	NL	G5	S4?	L5	R
SH	Juniperus communis	Ground Juniper	4	3	NL	NL	G5	S5	L3	
FO	Leucanthemum vulgare	Oxeye Daisy		5	NL	NL	GNR	SNA	L+	X
SH	Lonicera tatarica	Tartarian Honeysuckle	*	3	NL	NL	GNR	SNA	L+	X
FO	Lotus corniculatus	Garden Bird's-foot Trefoil	*	3	NL	NL	GNR	SNA	L+	X
FO	Lythrum salicaria	Purple Loosestrife	*	-5	NL	NL	G5	SNA	L+	X

TR	Malus pumila	Common Apple	*	5	NL	NL	G5	SNA	L+	X
FO	Melilotus albus	White Sweet-clover	*	3	NL	NL	G5	SNA	L+	X
TR	Ostrya virginiana	Eastern Hop-hornbeam	4	3	NL	NL	G5	S5	L5	X
FO	Oxalis stricta	Upright Yellow Wood-sorrel	0	3	NL	NL	G5	S5	L5	X
VI	Parthenocissus quinquefolia	Virginia Creeper	6	3	NL	NL	G5	S4?	L5	R
GR	Phragmites australis ssp. Australis	European Reed		-3	NL	NL	G5T5	SNA	L+	
TR	Pinus strobus	Eastern White Pine	4	3	NL	NL	G5	S5	L4	X
TR	Populus balsamifera	Balsam Poplar	4	-3	NL	NL	G5	S5	L5	X
TR	Populus grandidentata	Large-tooth Aspen	5	5	NL	NL	G5	S5	L4	X
SH	Prunus virginiana	Choke Cherry	2	3	NL	NL	G5	S5	L5	X
TR	Prunus serotina	Black Cherry	3	3	NL	NL	G5	S5	L5	X
TR	Quercus alba	White Oak	6	3	NL	NL	G5	S5	L2	R[6]
TR	Quercus bicolor	Swamp White Oak	8	-3	NL	NL	G5	S4		
SH	Rhamnus cathartica	Common Buckthorn	*	0	NL	NL	GNR	SNA	L+	X
TR	Robinia pseudoacacia	Black Locust	*	*	NL	NL	G5	SNA	L+	X
SH	Rubus idaeus ssp. Strigosus	Wild Red Raspberry	2	3	NL	NL	G5T5	S5	L5	X
SH	Salix eriocephala	Heart-leaved Willow	4	-3	NL	NL	G5	S5	L5	X
TR	Salix nigra	Black Willow	6	-5	NL	NL	G5	S4	L3	R[2]
SE	Schoenoplecus acutus var. acutus	Hard-stemmed Bulrush	5	-5	NL	NL	G5T5	S5	L3	R[5]
FO	Securigera varia	Common Crown-vetch		5	NL	NL	GNR	SNA	L+	X
FO	Solidago altissima	Eastern Late Goldenrod	1	3	NL	NL	G-T5	S5	L5	X
FO	Solidago canadensis	Canada Goldenrod	1	3	NL	NL	G5T5	S5	L5	X
TR	Sorbus aucuparia	European Mountain-ash	*	5	NL	NL	G5	SNA	L+	X
FO	Symphyotrichum lanceolatum	Panicled Aster	3	-3	NL	NL	G5T5	S5	L5	X
FO	Symphyotrichum novae-angliae	New England Aster	2	-3	NL	NL	G5	S5	L5	X
FO	Symphyotrichum puniceum	Swamp Aster	6	-5	NL	NL	G5	S5	L5	
FO	Taraxacum officinale	Common Dandelion	*	3	NL	NL	G5	SNA	L+	X
TR	Tilia americana	Common Basswood	4	3	NL	NL	G5	S5	L5	X
VI	Toxicodendron radicans	Eastern Poison Ivy	5	-1	NL	NL	G5	S5	L5	R[5]
FO	Tragopogon dubius	Yellow Goat's-beard	*	5	NL	NL	GNR	SNA	L+	X
FO	Trifolium pratense	Red Clover	*	3	NL	NL	GNR	SNA	L+	X
FO	Trifolium repens	White Clover	*	3	NL	NL	GNR	SNA	L+	X
FO	Tussilago farfara	Colt's-foot	*	3	NL	NL	GNR	SNA	L+	X
FO	Typha angustifolia	Narrow-leaved Cattail		-5	NL	NL	G5	SNA	L+	X

TR	Ulmus americana	American Elm	3	-3	NL	NL	G5	S5	L5	X
SH	Viburnum opulus ssp. Trilobum	Highbush Cranberry	5	-3	NL	NL	GNR	S5	L2	X
FO	Vicia cracca	Tufted Vetch	*	5	NL	NL	GNR	SNA	L+	X
VI	Vitis riparia	Riverbank Grape	0	0	NL	NL	G5	S5	L5	X

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.	Toronto Region Conservation Authority: L1-L3 = Of regional conservation concern and flagged as being of risk within the entire TRCA jurisdiction long term. L4 = Common or secure species considered of concern in the urban context. L5 = Generally secure; may be conservation concern in specific situations. L+ = Non-native species.
9.	Distribution and Status of the Vascular Plants of the Greater Toronto Area (OMNR, 2004): X- Common native species or an introduced species that is present; R- Rare native species; #- Number of stations for a rare native species.

APPENDIX 6
Background Wildlife List

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
	INSECTS												
iNat (2022)	Common Red Soldier Beetle	*Rhagonycha fulva*					SNA		NNA				
iNat (2020)	Eastern Black Carpenter Ant	*Camponotus pennsylvanicus*					S5		N5				
iNat (2022)	Goldenrod Leaf Beetle	*Trirhabda canadensis*					S4S5		N5				
iNat (2022)	Japanese Beetle	*Popillia japonica*					SNA		NNA				
iNat (2020)	Western Conifer Seed Bug	*Leptoglossus occidentalis*											
iNat (2020)	Locust Borer	*Megacyllene robinae*					S4S5	G5	N5				
iNat (2019)	White-spotted Sawyer Beetle	*Monochamnus scutellatus*					S5	G5	N5				
iNat (2022)	Green Stink Bug	*Chinavia hilaris*											
iNat (2021)	Four-lined Silverfish	*Ctenolepisma lineatum*											
iNat (2020)	Masked Hunter	*Reduvius personatus*											
iNat (2022)	Brickwork Woodlouse	*Porcellio spinicornis*											
	ARACHNIDS												
iNat (2022)	Cellar Spider	*Pholcus manueli*					SNA	GNR	NNR				
	BUTTERFLIES & MOTHS												
OBA (2022)	Least Skipper	*Ancyloxypha numitor*					S5	G5	N5				
OBA (2022)	Arctic Skipper	*Carterocephalus palaemon*					S5	G5	N5				
OBA (2018)	Wild Indigo Duskywing	*Erynnis baptisiae*					S4	G5	N4				
OBA (2018)	Peck's Skipper	*Polites peckius*					S5	G5	N5				
OBA (2020)	European Skipper	*Thymelicus lineola*					SNA	G5	NNA				
OBA (2021)	Eastern Tailed Blue	*Cupido (Everes) comyntas*					S5	G5	N5				
OBA (2021)	Silvery Blue	*Glaucopsyche lygdamus*					S5	G5	N5				
OBA (2010)	American Copper	*Lycaena phlaeas*					S5	G5	N5				
OBA (2022)	European Common Blue	*Polyommatus icarus*					SNA	G5	NNA				
OBA (2014)	Common Wood-Nymph	*Cercyonis pegala*					S5	G5	N5				
OBA (2022)	Common Ringlet	*Coenonympha tullia*					S5	G5	N5				
OBA (2021)	Monarch	*Danaus plexippus*	SC	SC	END	SC	S2N,S4B	G5	N3B,NNRM				

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
OBA (2021)	Baltimore Checkerspot	*Euphydryas phaeton*					S4	G4	N5				
OBA (2014)	Northern Pearly-Eye	*Enodia anthedon*					S5	G5	N5				
OBA (2021)	Viceroy	*Limenitis archippus*					S5	G5	N5				
OBA (2018)	White Admiral	*Limenitis arthemis arthemis*					S5	G5T5	N5				
OBA (1976)	Little Wood-Satyr	*Megisto cymela*					S5	G5	N5				
OBA (2021)	Mourning Cloak	*Nymphalis antiopa*					S5	G5	N5				
OBA (2018)	Northern Crescent	*Phyciodes cocyta*					S5	G5	N5				
OBA (2010)	Pearl Crescent	*Phyciodes tharos*					S4	G5	N5				
OBA (2010)	Red Admiral	*Vanessa atalanta*					S5B	G5	N5B,N5M				
OBA (2019)	Painted Lady	*Vanessa cardui*					S5B	G5	N5B,N5M				
OBA (2010)	Eastern Tiger Swallowtail	*Papilio glaucus*					S5	G5	N4				
OBA (2022) iNat (2018)	Black Swallowtail	*Papilio polyxenes*					S5	G5	N5				
OBA (2011)	Orange Sulphur	*Colias eurytheme*					S5	G5	N5B,N5M				
OBA (2010)	Mustard White	*Pieris oleracea*					S4	G4G5	N5				
OBA (2021)	Cabbage White	*Pieris rapae*					SNA	G5	NNA				
	AMPHIBANS												
ORAA (2018)	American Toad	*Anaxyrus americanus*					S5	G5	N5				L4
ORAA (2004)	Gray Treefrog	*Hyla versicolor*					S5	G5	N5				L2
ORAA (2004)	Spring Peeper	*Pseudacris crucifer*					S5	G5	N5				L2
ORAA (2008)	American Bullfrog	*Lithobates catesbeianus*					S4	G5	N5	✓			L2
ORAA (2014) iNat (2020)	Green Frog	*Lithobates clamitans*					S5	G5	N5				L4
ORAA (2013)	Northern Leopard Frog	*Lithobates pipiens*		NAR	NAR		S5	G5	N5				L3
ORAA (2009)	Wood Frog	*Lithobates sylvaticus*					S5	G5	N5				L2
ORAA (2016)	Eastern Red-backed Salamander	*Plethodon cinereus*					S5	G5	N5				L3
	SNAKES AND LIZARDS												

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
ORAA (2013)	Smooth Greensnake	*Opheodrys vernalis*					S4	G5	N5				L2
ORAA (1978)	Red-bellied Snake	*Storeria occipitomaculata occipitomaculata*					S5	G5	N5				L3
ORAA (1993)	Eastern Gartersnake	*Thamnophis sirtalis sirtalis*					S5	G5T5	N5				L4
	TURTLES												
ORAA (2019)	Snapping Turtle	*Chelydra serpentina*	NL	SC	SC	SC	S4	G5T5	N4				L3
ORAA (2018)	Midland Painted Turtle	*Chrysemys picta marginata*	NAR	NAR	SC	SC	S4	G5T5	N4				L3
ORAA (2002)	Blanding's Turtle	*Emydoidea blandingii*	THR	THR	END	END	S3	G4	N3				L1
ORAA (2018)	Pond Slider	*Trachemys scripta*					SNA	GNR	NNA				L+
	BIRDS												
e-Bird (2020)	Cackling Goose	*Branta hutchinsii*					SUB,S4M	G5	N5B,N5N,N5M				
e-Bird (2023) OBBA iNat (2020)	Canada Goose	*Branta canadensis*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2020)	Trumpeter Swan	*Cygnus buccinator*		NAR	NAR		S4	G4	N5B,N3N,N5M				L+
e-Bird (2021) OBBA	Wood Duck	*Aix sponsa*					S5B, S3N	G5	N5B,N4N5N,N5M				L4
OBBA	Blue-winged Teal	*Anas discors*					S3B,S4M	G5	N5B,N5M				L3
e-Bird (2019)	Gadwall	*Anas strepera*					S4B,S4N,S5M	G5	N5B,N5N,N5M				L4
e-Bird (2023) OBBA	Mallard	*Anas platyrhynchos*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2021)	American Black Duck	*Anas rubripes*					S4	G5	N5B,N5N,N5M				L3
e-Bird (2020) OBBA	Green-winged Teal	*Anas crecca*					S4B,S4N,S5M	G5	N5B,N5N,N5M				L2
e-Bird (2022)	Hooded Merganser	*Lophodytes cucullatus*					S5	G5	N5B,N5N,N5M				L3
e-Bird (2020)	Common Merganser	*Mergus merganser*					S5	G5	N5B,N5N,N5	✓			L3
e-Bird (2020)	Red-breasted Merganser	*Mergus serrator*					S5	G5	N5B,N5N,N5	✓			
OBBA	Ruffed Grouse	*Bonasa umbellus*					S5	G5	N5				L2

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
OBBA	Ring-necked Pheasant	*Phasianus colchicus*					SNA	G5	NNA				L+
e-Bird (2022) OBBA	Rock Pigeon	*Columba livia*					SNA	G5	NNA				L+
e-Bird (2023) OBBA	Mourning Dove	*Zenaida macroura*					S5	G5	N5B,N5N,N5M				L5
OBBA	Black-billed Cuckoo	*Coccyzus erythropthalmus*					S4S5B	G5	N5B,N5M			✓	L3
e-Bird (2020)	Yellow-billed Cuckoo	*Coccyzus americanus*					S4B	G5	N4B,NUM				L3
e-Bird (2020) OBBA	Chimney Swift	*Chaetura pelagica*	THR	THR	THR	THR	S3B	G4G5	N4BN3M			✓	L4
e-Bird (2022)	Ruby-throated Hummingbird	*Archilochus colubris*					S5B	G5	N5B,N5M				L4
OBBA	Virginia Rail	*Rallus limicola*					S4S5B	G5	N5B,NUM,N5M				L3
OBBA	Sora	*Porzana carolina*					S5B	G5	N5B,N5M				L3
e-Bird (2020)	Black-bellied Plover	*Pluvialis squatarola*					S4M	G5	N3B,N5N,N5M				
e-Bird (2021) OBBA iNat (2020)	Killdeer	*Charadrius vociferus*					S4B	G5	N5B,N4N5N,N5M				L4
e-Bird (2020)	Semipalmated Plover	*Charadrius semipalmatus*					S4B,S5M	G5	N5B,N5M				
OBBA	American Woodcock	*Scolopax minor*					S4B	G5	N5B,N5M				L3
e-Bird (2021) OBBA	Spotted Sandpiper	*Actitis macularius*					S5B	G5	N5B,N3N,N5M				L4
e-Bird (2023)	Ring-billed Gull	*Larus delawarensis*					S5	G5	N5B,N5N,N5M				L4
e-Bird (2020)	Herring Gull	*Larus argentatus*					S4B,S5N	G5	N5B,N5N,N5M				L3
e-Bird (2022)	Caspian Tern	*Hydroprogne caspia*		NAR	NAR		S3B,S5M	G5	N4B,N4M				L3
e-Bird (2020)	Common Tern	*Sterna hirundo*		NAR	NAR		S4B	G5	N5B,NUN,N5M				L3
e-Bird (2021)	Double-crested Cormorant	*Phalacrocorax auritus*		NAR	NAR		S5B,S4N	G5	N5M,N3N4N,N5M				L3
OBBA	American Bittern	*Botaurus lentiginosus*					S5B	G5	N5B,N3N,N5	✓			L3
e-Bird (2022)	Great Blue Heron	*Ardea herodias*					S4	G5	N5B,N3N,N5M				L3
e-Bird (2020)	Great Egret	*Ardea alba*					S2B,S3M	G5	N3B,N3M				L3

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2020) OBBA	Green Heron	*Butorides virescens*					S4B	G5	N4N5B,N3N4N,N4N5M				L4
e-Bird (2020)	Black-crowned Night-heron	*Nycticorax nycticorax*					S3B,S2N,S4M	G5	N4B,N1N,N4N5M				L3
e-Bird (2022) OBBA	Turkey Vulture	*Cathartes aura*					S5B, S3N	G5	N5B,N5M				L5
e-Bird (2021)	Osprey	*Pandion haliaetus*					S5B	G5	N5B,N5N,N5M				L3
OBBA	Northern Harrier	*Circus cyaneus*		NAR	NAR		S5B,S4N	G5	N5B,N4N	✓	>30ha	✓	L2
e-Bird (2021) OBBA	Sharp-shinned Hawk	*Accipiter striatus*		NAR			S5	G5	N5B,N5N,N5	✓	>30ha		L3
e-Bird (2022) OBBA	Cooper's Hawk	*Accipiter cooperii*		NAR	NAR		S4	G5	N5B,N5N,N4	✓	>10ha		L4
e-Bird (2021)	Broad-winged Hawk	*Buteo platypterus*					S5B	G5	N5B,N5M	✓	>100ha		L2
e-Bird (2022) OBBA	Red-tailed Hawk	*Buteo jamaicensis*		NAR	NAR		S5	G5	N5B,N5N,N5M				L5
e-Bird (2020) OBBA	Eastern Screech-Owl	*Megascops asio*		NAR	NAR		S4	G5	N4N5				L3
OBBA	Great Horned Owl	*Bubo virginianus*					S4	G5	N5				L4
e-Bird (2021) OBBA	Belted Kingfisher	*Megaceryle alcyon*					S5B,S4N	G5	N5B,N4N5N,N5M			✓	L4
e-Bird (2020)	Yellow-bellied Sapsucker	*Sphyrapicus varius*					S5B,S3N	G5	N5B,N5M	✓	2-5ha		L3
e-Bird (2022) OBBA	Downy Woodpecker	*Picoides pubescens*					S5	G5	N5				L5
e-Bird (2022) OBBA	Hairy Woodpecker	*Picoides villosus*					S5	G5	N5B,N5N,NU	✓	4-8ha		L4
e-Bird (2020) OBBA	Northern Flicker	*Colaptes auratus*					S5	G5	N5B,N5N,N5M			✓	L4
OBBA	Pileated Woodpecker	*Dryocopus pileatus*					S5	G5	N5	✓	>40ha		L3
e-Bird (2020) OBBA	American Kestrel	*Falco sparverius*					S4	G5	N5B,N1N,N5M			✓	L4

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2021)	Merlin	*Falco columbarius*		NAR	NAR		S5	G5	N5B,N5N,N5M				L3
e-Bird (2020) OBBA	Great Crested Flycatcher	*Myiarchus crinitus*					S5B	G5	N5B,N5M				L4
e-Bird (2021) OBBA iNat (2016)	Eastern Kingbird	*Tyrannus tyrannus*					S4B	G5	N5B,N5M			✓	L4
e-Bird (2020)	Olive-sided Flycatcher	*Contopus cooperi*	SC	SC	SC	THR	S4B	G4	N4B,N3M				LV
NHIC (n.d.) e-Bird (2022) OBBA	Eastern Wood-Pewee	*Contopus virens*	SC	SC	SC	SC	S4B	G5	N5B,N5M			✓	L4
e-Bird (2020)	Alder Flycatcher	*Empidonax alnorum*					S5B	G5	N5B,N5M				L4
e-Bird (2020) OBBA	Willow Flycatcher	*Empidonax traillii*					S4B	G5	N5B,N5M			✓	L4
e-Bird (2022) OBBA	Least Flycatcher	*Empidonax minimus*					S5B	G5	N5B,N5M	✓	>100ha		L4
e-Bird (2021) OBBA	Eastern Phoebe	*Sayornis phoebe*					S5B	G5	N5B,N5M				L5
e-Bird (2022)	Blue-headed Vireo	*Vireo solitarius*					S5B	G5	N5B,N5M	✓	>100ha		L3
e-Bird (2022) OBBA	Warbling Vireo	*Vireo gilvus*					S5B	G5	N5B,N5M				L5
e-Bird (2022) OBBA	Red-eyed Vireo	*Vireo olivaceus*					S5B	G5	N5B,N5N,N5M				L4
e-Bird (2022) OBBA iNat (2019)	Blue Jay	*Cyanocitta cristata*					S5	G5	N5B,N5N,NNRM				L5
e-Bird (2023) OBBA	American Crow	*Corvus brachyrhynchos*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2021)	Common Raven	*Corvus corax*					S5	G5	N5				L4

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2023)													
OBBA	Black-capped Chickadee	*Poecile atricapillus*					S5	G5	N5				L5
OBBA	Horned Lark	*Eremophila alpestris*					S4	G5	N5B,N5N,N5M				L3
OBBA													
e-Bird (2020)	Bank Swallow	*Riparia riparia*	THR	THR	THR	THR	S4B	G5	N5B,N5M			✓	L3
e-Bird (2022)													
OBBA	Tree Swallow	*Tachycineta bicolor*					S4S5B	G5	N5B,N5M				L4
e-Bird (2021)	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					S4B	G5	N5B,N5M				L4
e-Bird (2020)													
OBBA	Barn Swallow	*Hirundo rustica*	SC	SC	THR	THR	S4B	G5	N3N4B,N3N4M				L4
e-Bird (2020)													
OBBA	Cliff Swallow	*Petrochelidon pyrrhonota*					S4S5B	G5	N5B,N5M				L5
e-Bird (2023)													
OBBA	Golden-crowned Kinglet	*Regulus satrapa*					S5	G5	N5B,N5N,N5M				L3
e-Bird (2022)	Ruby-crowned Kinglet	*Corthylio calendula*					S5B,S3N	G5	N5B,N5N,N5M				LV
e-Bird (2022)													
OBBA	Cedar Waxwing	*Bombycilla cedrorum*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2022)													
OBBA	Red-breasted Nuthatch	*Sitta canadensis*					S5	G5	N5B,N5N,N5	✓	>10ha		L5
e-Bird (2022)													
OBBA	White-breasted Nuthatch	*Sitta carolinensis*					S5	G5	N5	✓	>10ha		L4
e-Bird (2020)	Brown Creeper	*Certhia americana*					S5	G5	N5B,N5N,N5	✓	>30ha		L3
e-Bird (2020)													
OBBA	House Wren	*Troglodytes aedon*					S5B	G5	N5B,N5M				L5
OBBA	Winter Wren	*Troglodytes troglodytes*					S5B,S4N	G5	N5B,N5M	✓	>30ha		L3
e-Bird (2022)													
OBBA	Gray Catbird	*Dumetella carolinensis*					S5B,S3N	G5	N5B,N5M				L4
OBBA	Brown Thrasher	*Toxostoma rufum*					S4B	G5	N5B,NUN,N5M			✓	L3

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2020) OBBA	Northern Mockingbird	*Mimus polyglottos*					S4	G5	N5B,N4N5N,N5M				L4
e-Bird (2023) OBBA	European Starling	*Sturnus vulgaris*					SNA	G5	NNA				L+
e-Bird (2020) OBBA	Eastern Bluebird	*Sialia sialis*		NAR	NAR		S5B,S4N	G5	N5B,N5M				L4
OBBA	Veery	*Catharus fuscescens*					S5B	G5	N5B,N5M	✓	>10ha		L2
e-Bird (2002)	Swainson's Thrush	*Catharus ustulatus*					S5B	G5	N5B,N5M				
e-Bird (2022) OBBA	Hermit Thrush	*Catharus guttatus*					S5B,S4N	G5	N5B,NUN,N	✓	>100ha		L3
OBBA	Wood Thrush	*Hylocichla mustelina*	SC	SC	THR	THR	S4B	G4	N4B,NUM			✓	L3
e-Bird (2023) OBBA	American Robin	*Turdus migratorius*					S5	G5	N5B,N4N5N,N5M				L5
e-Bird (2023) OBBA	House Sparrow	*Passer domesticus*					SNA	G5	NNA				L+
e-Bird (2020)	Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	SC	SC	S4	G5	N4B,N4N,NUM				
e-Bird (2023) OBBA	House Finch	*Carpodacus mexicanus*					SNA	G5	N5				L+
e-Bird (2020)	Purple Finch	*Carpodacus purpureus*					S5	G5	N5B,N5N,N5M				L4
e-Bird (2020)	Pine Siskin	*Carduelis pinus*					S5	G5	N5B,N5N,N5M				L3
e-Bird (2023) OBBA	American Goldfinch	*Carduelis tristis*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2022) OBBA	Chipping Sparrow	*Spizella passerina*					S5B,S3N	G5	N5B,N5M				L5
OBBA	Field Sparrow	*Spizella pusilla*					S4B,S3N	G5	N4B,NUM			✓	L4
e-Bird (2023)	Fox Sparrow	*Passerella iliaca*					S5B,S3N	G5	N5B,N4N5N,N5M				
e-Bird (2022)	American Tree Sparrow	*Spizella arborea*					S5	G5	N5B,N5N,N5M				
e-Bird (2022)	Dark-eyed Junco	*Junco hyemalis*					S5	G5	N5B,N5N,N5M				
e-Bird (2022)	White-crowned Sparrow	*Zonotrichia leucophrys*					S5B,S3N	G5	N5B,N5N,N5M				

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2022) OBBA	White-throated Sparrow	*Zonotrichia albicollis*					S5	G5	N5B,N5N,N5M				L3
OBBA	Vesper Sparrow	*Pooecetes gramineus*					S4B	G5	N5B,N5M			✓	L3
e-Bird (2020) OBBA	Savannah Sparrow	*Passerculus sandwichensis*					S5B,S3N	G5	N5B,N4N,N5	✓	>50ha	✓	L4
e-Bird (2023) OBBA	Song Sparrow	*Melospiza melodia*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2020)	Lincoln's Sparrow	*Melospiza lincolnii*					S5B	G5	N5B,N5N,N5M				
e-Bird (2020) OBBA	Swamp Sparrow	*Melospiza georgiana*					S5B,S4N	G5	N5B,NUN,N5M				L4
OBBA	Eastern Towhee	*Pipilo erythrophthalmus*					S4B,S3N	G5	N4N5B,N4M			✓	L3
OBBA	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	THR	S4B	G5	N5B,N4N5M	✓	>10ha	✓	L3
NHIC (n.d.) e-Bird (2020) OBBA	Eastern Meadowlark	*Sturnella magna*	THR	THR	THR	THR	S4B,S3N	G5	N4B,NUM	✓	>10ha	✓	L3
e-Bird (2021) OBBA	Baltimore Oriole	*Icterus galbula*					S4B	G5	N5B,N5M			✓	L5
e-Bird (2023) OBBA	Red-winged Blackbird	*Agelaius phoeniceus*					S5	G5	N5B,N5N,N5M				L5
e-Bird (2022) OBBA	Brown-headed Cowbird	*Molothrus ater*					S5	G5	N5B,NUN,N5M				L5
e-Bird (2023) OBBA iNat (2020)	Common Grackle	*Quiscalus quiscula*					S5	G5	N5B,NUN,N5M				L5
OBBA	Ovenbird	*Seiurus aurocapilla*					S5B	G5	N5B,N5M	✓	>70ha		L2
e-Bird (2020) OBBA	Northern Waterthrush	*Seiurus noveboracensis*					S5B	G5	N5B,N5M				L3
e-Bird (2022) OBBA	Black-and-white Warbler	*Mniotilta varia*					S5B	G5	N5B,N5M	✓	>100ha		L2

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2020)	Tennessee Warbler	*Vermivora peregrina*					S5B	G5	N5B,N5M				
e-Bird (2020)	Nashville Warbler	*Vermivora ruficapilla*					S5B	G5	N5B.N5M				L3
OBBA	Mourning Warbler	*Oporornis philadelphia*					S5B	G5	N5B,N5M				L3
e-Bird (2022) OBBA	Common Yellowthroat	*Geothlypis trichas*					S5B,S3N	G5	N5B,N5M				L4
e-Bird (2022) OBBA	American Redstart	*Setophaga ruticilla*					S5B	G5	N5B,N5M	✓	>100ha		L4
e-Bird (2020)	Cape May Warbler	*Dendroica tigrina*					S5B	G5	N5B,N5M				
e-Bird (2022)	Magnolia Warbler	*Dendroica magnolia*					S5B	G5	N5B,N5M	✓	>30ha		L3
e-Bird (2022)	Bay-breasted Warbler	*Dendroica castanea*					S5B	G5	N5B,N5M				
e-Bird (2022)	Blackburnian Warbler	*Dendroica fusca*					S5B	G5	N5B,N5M	✓	>50ha		L3
e-Bird (2022) OBBA	Yellow Warbler	*Dendroica petechia*					S5B	G5	N5B,N5M				L5
e-Bird (2022) OBBA	Chestnut-sided Warbler	*Dendroica pensylvanica*					S5B	G5	N5B,N5M				L3
e-Bird (2022)	Blackpoll Warbler	*Dendroica striata*					S5B	G5	N5B,N5M				
e-Bird (2020)	Black-throated Blue Warbler	*Dendroica caerulescens*					S5B	G5	N5B,N5M	✓	>100ha		L3
e-Bird (2022)	Western Palm Warbler	*Dendroica palmarum palmarum*					S5B	G5T5	N5B				
e-Bird (2022) OBBA	Yellow-rumped Warbler	*Dendroica coronata*					S5B,S4N	G5	N5B,N4N,N5M				L3
e-Bird (2022)	Black-throated Green Warbler	*Dendroica virens*					S5B	G5	N5B,N5M	✓	>30ha		L3
e-Bird (2022)	Canada Warbler	*Wilsonia canadensis*	SC	SC	SC	THR	S4B	G5	N4B,N3M	✓	>30ha		L2
e-Bird (2020)	Wilson's Warbler	*Wilsonia pusilla*					S5B	G5	N5B,N5M				
e-Bird (2022)	Scarlet Tanager	*Piranga olivacea*					S5B	G5	N5B,N4N5M	✓	>20ha		L3
e-Bird (2023) OBBA	Northern Cardinal	*Cardinalis cardinalis*					S5	G5	N5				L5
e-Bird (2020) OBBA	Rose-breasted Grosbeak	*Pheucticus ludovicianus*					S5B	G5	N5B,N5M			✓	L4

SOURCE	COMMON NAME	SCIENTIFIC NAME	COSSARO[1]	SARO[2]	COSEWIC[3]	SARA[4]	S-RANK[5]	G-RANK[6]	N-RANK[7]	AREA SENSITIVE[8]	AREA REQUIRED[8]	PIF SPECIES[9]	TRCA(2023)
e-Bird (2020) OBBA	Indigo Bunting	*Passerina cyanea*					S5B	G5	N5B,N5M				L4
e-Bird (2020)	Northern Shrike	*Lanius borealis*					S4B,S5N	G5	N5B,N5N				
	MAMMALS												
OMA	White-tailed Deer	*Odocoileus virginianus*					S5	G5	N5				L4
OMA	Red Fox	*Vulpes vulpes*					S5	G5	N5				L4
OMA	Striped Skunk	*Mephitis mephitis*					S5	G5	N5				L5
OMA	Northern Raccoon	*Procyon lotor*					S5	G5	N5				L5
OMA	Beaver	*Castor canadensis*					S5	G5	N5				L4
OMA	Muskrat	*Ondatra zibethicus*					S5	G5	N5				L4
OMA	Eastern Gray Squirrel	*Sciurus carolinensis*					S5	G5	N5				L5
	FISH												
NHIC DFO	Redside Dace	*Clinostomus elongatus*	END	END	END	END	S1	G3G4	N1				
	FUNGI												
iNat (2020)	Violet-toothed Polypore	*Trichaptum biforme*											
iNat (2020)	Crown Rust	*Puccinia coronata*											

Legend:

COSSARO: 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

N- and S-Rank:

S1: Critically Imperiled—Critically imperiled in the jurisdiction (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the jurisdiction, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the jurisdiction, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the jurisdiction
SX: Presumed Extirpated
SH: Possibly Extirpated (Historical)
SNR: Unranked
SU: Unrankable—Currently unrankable due to lack of information
SNA: Not Applicable—The species is not a suitable target for conservation activities
S#S#: Range Rank—Indicates a 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

Toronto Region Conservation Authority:

L1: Extremely rare locally
L2: Very rare locally
L3: Rare to uncommon locally
L4: Urban concern
L5: Not of concern

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
ORAA: Ontario Reptile and Amphibian Atlas
OMA: Ontario Mammal Atlas
OBBA: Ontario Breeding Bird Atlas
eBird: eBird
ARA: Aquatic Resource Area Survey Points
DFO: Department of Fisheries and Oceans Species at Risk Mapping
iNat: iNaturalist
NHIC: Natural Heritage Information Centre

References:

1.COSSARO Status Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. January 25, 2023.

2.Species at Risk in Ontario List. Endangered Species Act, 2007 (Ontario Regulation 230/08). January 25, 2023.

3.COSEWIC Status COSEWIC. 2014. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada. January 25, 2023.

4.Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. January 25, 2023.

5.Provincial Rarity Rank. NatureServe. 2023.

6.Global Rarity Rank. NatureServe. 2023.

7.National Rank. NatureServe. 2023.

8.Significant Wildlife Habitat Technical Guide. Ontario Ministry of Natural Resources. 2000. Appendix C: A list of area sensitive species and key references.

9.Ontario Partners in Flight (PIF). 2008. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada (Ontario Region) and Ontario Ministry of Natural Resources. Final Draft, November, 2008.

10.TRCA. 2023. Fauna Ranks and Scores

APPENDIX 7

Significant Wildlife Habitat Assessment

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
1	Waterfowl Stopover and Staging Areas (terrestrial)	Seasonal concentration areas of animals	- 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)	Seasonal concentration areas of animals	- 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 (i.e., >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	Seasonal concentration areas of animals	- 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	No	None required.	No
4	Raptor Wintering Area	Seasonal concentration areas of animals	- 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	No habitat matching criteria identified in Study Area	No	None required.	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
5	Bat Hibernacula	Seasonal concentration areas of animals	- 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	Seasonal concentration areas of animals	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>10cm 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.	No. Woodland feature has been removed.	None required.	No
7	Turtle Wintering Area	Seasonal concentration areas of animals	- 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

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
8	Reptile Hibernaculum	Seasonal concentration areas of animals	- 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 in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (Cliff/bank)	Seasonal concentration areas of animals	- 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 are the SWH	No Habitat matching Criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	Seasonal concentration areas of animals	- 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

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
11	Colonially-nesting Bird Habitat (Ground)	Seasonal concentration areas of animals	- 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	Seasonal concentration areas of animals	- 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
13	Land bird Migratory Stopover Area	Seasonal concentration areas of animals	- 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 Winter Congregation Areas	Seasonal concentration areas of animals	- 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	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
15	Cliffs & Talus Slopes	Rare vegetation communities	- 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
16	Sand Barren	Rare vegetation communities	- 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
17	Alvar	Rare vegetation communities	- 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
18	Old Growth Forest	Rare vegetation communities	- >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

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
19	Savannah	Rare vegetation communities	- 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
20	Tallgrass Prairie	Rare vegetation communities	- 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
21	Other Rare Vegetation Communities	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

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
22	Waterfowl Nesting Areas	Specialized habitat for wildlife	- 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	Treed communities adjacent all wetlands/ponds, may provide nesting habitat	No	None required	No
23	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	Specialized habitat for wildlife	- 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

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
24	Woodland Raptor Nesting Habitat	Specialized habitat for wildlife	- 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: - RSHA NOGA 400m - BAOW 200m. - BWHA, COHA 100m - SSHA 50	No habitat matching criteria identified in Study Area	No	None required.	No
25	Turtle Nesting Areas	Specialized habitat for wildlife	- 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

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
26	Seeps and Springs	Specialized habitat for wildlife	- 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	None identified.
27	Amphibian Breeding Habitat (Woodland)	Specialized habitat for wildlife	- 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.	Wetland less than 500m^2?	Yes, wetland feature adjacent woodland feature.	Amphibian surveys completed by GeoProcess (2023).	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
28	Amphibian Breeding Habitat (Wetland)	Specialized habitat for wildlife	- 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 wetlands >120m from woodland habitat	No	Amphibian surveys completed by GeoProcess (2023).	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
29	Woodland Area-sensitive Breeding Bird Habitat	Specialized habitat for wildlife	- 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 type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
30	Marsh Bird Breeding Habitat	Habitats of species of conservation concern considered SWH	- 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	Graminoid Meadow Marsh may provide suitable habitat.	Yes	Breeding bird surveys completed by GeoProcess (2023).	No.

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
31	Open Country Bird Breeding Habitat	Habitats of species of conservation concern considered SWH	- 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	No habitat matching criteria identified in Study Area	No	None required.	No
32	Shrub/Early Successional Bird Breeding Habitat	Habitats of species of conservation concern considered SWH	- 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 type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
33	Terrestrial Crayfish	Habitats of species of conservation concern considered SWH	- 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	Graminoid meadow marsh and Deciduous Forest communities present.	Yes	Incidental observation during ELC conducted	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
34	Special Concern & Rare Wildlife Species	Habitats of species of conservation concern considered SWH	- 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	Background Atlas review identified 6 Special concern species within 10km of the Study Area - Monarch (OBA) - Snapping Turtle (ORAA) - Eastern Wood-pewee (OBBA) - Barn Swallow (OBBA) - Wood Thrush (OBBA)	Yes, Forb Meadow within the study area may be suitable habitat for Monarch, American Bumble Bee & Yellow-banded Bumble Bee.	One season botanical inventory, incidental wildlife. Breeding bird surveys and amphibian surveys completed by GeoProcess (2023).	Yes, assumed for Monarch, American Bumble Bee and Yellow-banded Bumble Bee

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
35	Amphibian Movement Corridor	Animal movement corridors	- 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	Amphibian surveys completed by GeoProcess (2023).	No

#	Significant wildlife habitat (SWH)	Candidate SWH type	Candidate SWH criteria	Criteria for SWH confirmation	SWH protected area	Site assessment details	Candidate SWH	Field studies required/ completed	Confirmed SWH
36	Bat Migratory Stopover Area (7E-2 only)	Animal movement corridors	- No Specific ELC types - Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas.	- The confirmation criteria and habitat areas for this SWH are still being determined. - Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration ccxv	The confirmation criteria and habitat areas for this SWH are still being determined.	Study area is outside of Ecoregion 7E-2.	N/A	N/A	N/A

APPENDIX 8

Species at Risk Habitat Assessment

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Jefferson Salamander	*Ambystoma jeffersonianum*	Amphibians	END	END	S2	MNDMNRF 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*	Amphibians	END	END	S2	MNDMNRF Species Occurrence Mapping	Unisexual ambystoma share the same habitat requirements as Jefferson salamander, as they rely on Jefferson salamander for sperm donation 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*	Amphibians	NAR	THR	S4	MNDMNRF 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.
American Bumble Bee	*Bombus pensylvanicus*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S3S4	MNDMNRF Species Occurrence Mapping	Occurs in a range of open habitats including farmlands, meadows, and grasslands. It has been recorded foraging on flowers for pollen and nectar from a variety of plant genera (COSEWIC 2018). Per Bumble Bee Watch and iNaturalist, American Bumble Bee has not been identified within more than 5km of the study area.	The Forb Meadow community within 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. 2018. COSEWIC assessment and status report on the American Bumble Bee (*Bombus pensylvanicus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 52 pp.
Monarch	*Danaus plexippus*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S2N, S4B	OBA	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 Forb Meadow community within study area may provide suitable habitat for feeding. No Milkweed identified.	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 Monarch (*Danaus plexippus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Suckley's Cuckoo Bumble Bee	*Bombus suckleyi*	Butterflies, bees, damselflies, dragonflies & insects	END	THR	SH	MNDMNRF Species Occurrence Mapping	Occurs in diverse habitats including open meadows and prairies, farms and croplands, urban areas, boreal forest, and montane meadows (COSEWIC 2019).	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. 2019. COSEWIC assessment and status report on the Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 70 pp.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
West Virginia White	*Pieris virginenisis*	Butterflies, bees, damselflies, dragonflies & insects	SC	NAR	S3	MNDMNRF 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*	Butterflies, bees, damselflies, dragonflies & insects	SC	SC	S3S5	MNDMNRF 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). Per Bumble Bee Watch & iNaturalist, the latest observation was identified in 2021 approximately 2.8km south of the study area.	The Forb Meadow and Deciduous 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.	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
Acadian Flycatcher	*Empidonax Virenscens*	Birds	END	END	S2S3B	MNDMNRF Species Occurrence Mapping	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher (*Empidonax virescens)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bank Swallow	*Riparia riparia*	Birds	THR	THR	S4B	OBBA	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. Breeding bird surveys completed by GeoProcess (2023).	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*	Birds	SC	THR	S5B	OBBA	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 surveys completed by GeoProcess (2023).	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.
Bobolink	*Dolichonyx oryzivorus*	Birds	THR	THR	S4B	OBBA	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)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	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

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Canada Warbler	*Wilsonia canadensis*	Birds	SC	THR	S4B	eBird (2022) MNDMNRF 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 surveys completed by GeoProcess (2023).	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*	Birds	THR	END	S3B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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*	Birds	THR	THR	S4B, S4N	OBBA	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 surveys completed by GeoProcess (2023).	None observed.	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*	Birds	SC	THR	S4B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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.
Eastern Meadowlark	*Sturnella magna*	Birds	THR	THR	S4B	NHIC OBBA	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).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	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*	Birds	THR	THR	S4B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Eastern Wood-Pewee	*Contopus virens*	Birds	SC	SC	S4B	NHIC OBBA	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).	No habitat matching criteria identified in study area due to removal of woodland feature.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	One individual observed during Breeding bird surveys by GeoProcess (2023).	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.
Evening Grosbeak	*Coccothraustes vespertinus*	Birds	SC	SC	S4B	eBird (2020) MNDMNRF Species Occurrence Mapping	Breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	None observed.	COSEWIC. 2016. COSEWIC assessment and status report on the Evening Grosbeak (*Coccothraustes vespertinus)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp.
Grasshopper Sparrow	*Ammodramus savannarum*	Birds	SC	SC	S4B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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*	Birds	END	END	SHB	MNDMNRF 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 surveys completed by GeoProcess (2023).	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*	Birds	THR	THR	S4B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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.
Lesser Yellowlegs	*Tringa flavipes*	Birds	THR	THR	S3S4B, S5M	MNDMNRF Species Occurrence Mapping	Nests on dry ground near peatlands, marshes, ponds, and other wetlands in the boreal forest and taiga. In winter and during migration, the species frequents coastal salt marshes, estuaries and ponds, as well as lakes, other freshwater wetlands, and anthropogenic wetlands such as flooded rice fields and sewage lagoons (COSEWIC 2020).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	None observed.	COSEWIC. 2020. COSEWIC assessment and status report on the Lesser Yellowlegs (*Tringa flavipes*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 64 pp.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Loggerhead Shrike	*Lanius ludovicianus*	Birds	END	END	S2B	MNDMNRF Species Occurrence Mapping	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	None observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, *migrans* subspecies (*Lanius ludovicianus migrans*), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Olive-sided Flycatcher	*Contupus cooperi*	Birds	SC	THR	S4B	eBird (2020) MNDMNRF 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 surveys completed by GeoProcess (2023).	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*	Birds	SC	SC	S3B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Birds	END	THR	S4B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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.
Short-eared Owl	*Asio flammeus*	Birds	THR	SC	S2N, S4B	MNDMNRF 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 surveys completed by GeoProcess (2023).	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.
Wood Thrush	*Hylocichla mustelina*	Birds	SC	THR	S4B	OBBA	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 due to the removal of the woodland feature.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	None observed.	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.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Yellow Rail	*Coturnicops noveboracensis*	Birds	SC	SC	S4B	MNDMNRF Species Occurrence Mapping	Nests in wet marshy areas of short, grass-like vegetation, usually sedge (especially Carex spp.), that have an overlying dry mat of dead vegetation that they use to roof their nests (COSEWIC 2009)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Yellow Rail (*Coturnicops noveboracensis)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
Yellow-breasted Chat	*Icteria virens*	Birds	END	END	S1B	MNDMNRF 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).	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Breeding bird surveys completed by GeoProcess (2023).	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.
American Eel	*Anguilla rostrata*	Fish	THR	END	S1S2	MNDMNRF 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.	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 American Eel (*Anguilla rostrata*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 109 pp.
Northern Brook Lamprey	*Ichtyomyzon fossor*	Fish	SC	SC	S3	MNDMNRF Species Occurrence Mapping	Found in clear streams and rivers with rocky or gravelly substrates and presence of fine sands and uni-directional current for egg adherence, larval stage requires soft substrates for burrowing (COSEWIC 2007d).	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 update status report on the northern brook lamprey (*Ichthyomyzon fossor)* (Great Lakes – Upper St. Lawrence populations and Saskatchewan – Nelson population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 30 pp.
Northern Sunfish (Great Lakes-Upper St. Lawrence Population)	*Lepomis peltastes*	Fish	SC	SC	S3	MNDMNRF 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.	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 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*	Fish	END	END	S1	NHIC DFO	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	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required	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.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Eastern Small-footed Myotis	*Myotis leibii*	Mammals	END	NA	S2S3	MNDMNRF Species Occurrence Mapping	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in 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).	No habitat matching criteria identified in Study Area due to removal of the woodland feature.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Snag and Acoustic surveys completed by GeoProcess (2023).	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.
Little Brown Myotis	*Myotis lucifugus*	Mammals	END	END	S3	MNDMNRF 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).	No habitat matching criteria identified in Study Area due to removal of the woodland feature.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Snag and Acoustic surveys completed by GeoProcess (2023).	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.
Northern Myotis	*Myotis septentrionalis*	Mammals	END	END	S3	MNDMNRF 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).	No habitat matching criteria identified in Study Area due to removal of the woodland feature.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Snag and Acoustic surveys completed by GeoProcess (2023).	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.
Tri-colored Bat	*Perimyotis subflavus*	Mammals	END	END	S3?	MNDMNRF 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).	No habitat matching criteria identified in Study Area due to removal of the woodland feature.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. Snag and Acoustic surveys completed by GeoProcess (2023).	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
Blanding's Turtle	*Emydoidea blandingii*	Reptiles	THR	THR	S3	ORAA	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.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Midland Painted Turtle	*Chrysemys picta marginata*	Reptiles	NL	SC	S4	ORAA	Occupy slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate. Found in association with submergent aquatic plants, which are used for cover and feeding. Semi -tolerant of human-altered landscapes, occasionally found occupying urban ponds and lands subject to anthropogenic disturbance. Suitable nesting habitat includes open, often south-facing, and sloped areas with sandy-loamy and/or gravel substrate usually within 1200 m of aquatic active season habitats. Overwinter in shallow water with deep sediment (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 Midland Painted Turtle (*Chrysemys picta marginata*) and the Eastern Painted Turtle (*Chrysemys picta picta*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 107 pp.
Northern Map Turtle	*Graptemys geographica*	Reptiles	SC	SC	S3	MNDMNRF 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.
Snapping Turtle	*Chelydra serpentina*	Reptiles	SC	SC	S4	NHIC ORAA	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.	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.
Eastern Ribbonsnake	*Thamnophis sauritus*	Reptiles	SC	SC	S4	MNDMNRF 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*	Reptiles	SC	SC	S4	MNDMNRF 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).	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. 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.
Massassauga Rattlesnake	*Sistrurus catenatus*	Reptiles	SC	THR	S3	MNDMNRF Species Occurrence Mapping	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	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 Massasauga (*Sistrurus catenatus*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.

Common name	Scientific name	Group	SARO	COSEWIC	S-rank	Background sources	Habitat requirements	Suitable habitat in study area	Field studies completed/ required	Observed by AA	Reference
Butternut	*Juglans cinerea*	Vascular plants	END	END	S2?	MNDMNRF 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.
Dense Blazing Star	*Liatris spicata*	Vascular plants	THR	THR	S2	MNDMNRF Species Occurrence Mapping	Occurs in open tallgrass prairies. It can grow in a range of moisture regimes from dry to very moist (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 Dense Blazing Star (*Liatris spicata)* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 23 pp.
Kentucky Coffee-tree	*Gymnocladus dioicus*	Vascular plants	THR	THR	S2	MNDMNRF Species Occurrence Mapping	Grows best on fertile loam soil with ample moisture and tolerates alkaline soils and dry sandy soils. Typically found in rich floodplain woodlands and woodland edges of marshes where open canopy conditions exist (Environment Canada 2014)	No habitat matching criteria identified in Study Area.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required	Three planted individuals identified along the western edge of Markland Street.	Environment Canada. 2014. Recovery Strategy for the Kentucky Coffee-tree (*Gymnocladus dioicus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vi + 36 pp.

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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)

iNaturalist. 2023. Available online here: https://www.inaturalist.org/observations

NHIC, 2023. MNRF Make a map: Natural Heritage Areas. (Available online: http://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map)

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 online here: http://www.ontarionature.org/atlas)

APPENDIX 9

MECP Correspondence

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

3-5 Edinburgh Road South
Guelph . Ontario
N1H 5N8

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

URBAN FORESTRY
ARBORIST REPORTS
MANAGEMENT PLANS
TREE PRESERVATION PLANS
TREE RISK ASSESSMENT
GIS TREE INVENTORIES
TREE APPRAISALS
MONITORING

ECOLOGICAL RESTORATION
NATURAL SYSTEMS DESIGN
HABITAT RESTORATION
EDGE MANAGEMENT PLANS
RAVINE STEWARDSHIP PLANS
NATURALIZATION PLANS
INTERPRETIVE DESIGN
MONITORING
CONTRACT ADMINISTRATION

ENVIRONMENTAL STUDIES
SUBWATERSHED STUDIES
ENVIRONMENTAL IMPACT STATEMENTS
ECOLOGICAL LAND CLASSIFICATION
WETLAND EVALUATION
VEGETATION ASSESSMENT
BOTANICAL INVENTORIES
WILDLIFE SURVEYS
MONITORING

LANDSCAPE ARCHITECTURE
MASTER PLANNING
RESIDENTIAL COMMUNITIES
COMMERCIAL/INDUSTRIAL
HEALTHCARE AND EDUCATION
STREETSCAPES
PARKS AND OPEN SPACES
TRAIL SYSTEMS
GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OMB TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

October 18, 2023

Our Project #: AA22-322A
Sent by email: SAROntario@ontario.ca

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

Re: MCEA Study of the Hwy 404 Ramp ext. at Major Mackenzie
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 a Natural Environment Impact Assessment for a Municipal Class Environmental Assessment study of the Highway 404 ramp extension at Major Mackenzie Drive in the City of Markham (Figure 1). The information provided will be used to inform the Terms of Reference and field program, which will be prepared in consultation with the Toronto and Region Conservation Authority, City of Markham and York Region.

Project Proponent and Location

Proponent: Gannett Fleming/City of Markham

Township/Municipality: City of Markham

UTM Coordinates: 630249E 4860393N

Proposed Activity

The City of Markham requires the preparation of a Natural Environment Impact Assessment for a Municipal Class Environmental Assessment study of the Highway 404 ramp extension at Major Mackenzie Drive.

Existing Site Conditions

The study area contains an unevaluated wetland and a woodland feature. Both features are isolated as they are bound by Highway 404, Major Mackenzie Drive, and Markland Street. TRCA Regulation Mapping indicates the subject site is within the regulated area and area of interference surrounding the unevaluated wetland feature. York Region indicates the presence of Seepage Areas and Springs within the study area. The City of Markham indicates lands designated as Greenway System and Woodlands to be present within the study area.

Background Information

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

1. The Ontario Reptile and Amphibian Atlas indicates that 15 species have been identified within the 10 x 10 km square containing the study area, including three species of conservation concern listed under SARO and SARA, respectively Blanding's Turtle (*Emydoidea blandingii*) (THR, THR), Midland Painted Turtle (*Chrysemys picta marginata*) (NAR, SC), Snapping Turtle (*Chelydra serpentina*) (SC, SC)).

2. The Natural heritage Information Center (NHIC) indicates the presence of seven species of conservation concern listed under SAR) and SARA, respectively within the 1km of the study area (Redside Dace (*Clinostomus elongatus*) (END, END), Eastern Meadowlark (*Sturnella magna*) (THR, THR), Snapping Turtle, Eastern Wood-pewee (*Contopus virens*) (SC, SC), Butternut (*Juglans cinerea*) (END, END), Black Ash (*Fraxinus nigra*) (END, NAR) and Barn Swallow (*Hirundo rustica*) (SC, THR)).

3. The Ontario Mammal Atlas (1994) identified seven species within the 10 x 10 km square containing the subject property, none of which are considered species of conservation concern.

4. The Ontario Breeding Bird Atlas 2 and 3 show within a 10 x 10 km square containing the subject lands, the recent and historical presence of 94 species of birds, including seven species of conservation concern listed under SARO and SARA, respectively (Chimney Swift, Eastern Wood-pewee, Bank Swallow (*Riparia riparia*) (THR, THR), Barn Swallow, Wood Thrush (*Hylocichla mustelina*)

(SC, THR), Bobolink (*Dolichonyx oryzivorus*) (THR, THR) and Eastern Meadowlark).

5. The Ontario Butterfly Atlas indicates the recent and historical presence of 30 species within the 10 x 10 km square containing the subject property, including one species of conservation concern; (Monarch (*Danaus plexippus*) (SC, SC))

6. iNaturalist indicates the presence of 26 species within a radius of 1 km around the study area, none of which are considered species of conservation concern.

7. eBird reports 122 species from Richmond Hill- Headwaters Community Park (~2km from the subject site), the closest reporting location to the study area, which includes seven species of conservation concern (Bank Swallow, Evening Grosbeak (*Coccothraustes vespertinus* (SC, SC), Chimney Swift, Canada Warbler (*Wilsonia canadensis*) (SC, THR), Olive-sided Flycatcher (*Contopus cooperi*) (SC, THR), Barn Swallow and Eastern Meadowlark).

8. A review of the TRCA web mapping identifies an unevaluated wetland feature, its area of interference and the surrounding regulation limit are present within the study area.

9. A review of the Land Information Ontario mapping (2007) indicates the presence of an unevaluated wetland within the study area.

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

Sincerely,

ABOUD & ASSOCIATES INC.

Shannon Davison B. Env, Eco. Rest. Cert. CERPIT
Ecologist
T:226-581-0707
sdavison@aboudtng.com

Attachment: Figure 1

S:\A+A Projects\2022\Approved\22-322A Highway 404 and Maj MacKenzie\Approvals, Comments\MECP\22-322A Highway 404 & Maj. Mackenzie Request for Information.docx



LEGEND

- STUDY AREA
- ESTIMATED AREA OF WORKS
- WETLAND
- WOODLAND

Information Sources:

1. Orthophotography provided by First Base Solutions Accessed December, 2022.
2. Woodlands, Wetlands and Watercourses provided by Land Information Ontario

Title:

STUDY AREA

Project:

HWY 404 AND MAJOR MACKENZIE DRIVE

Date: APRIL 2023

Project: AA22-322A

Scale: 1 : 2500

ABOUD & ASSOCIATES INC.

Consulting Arborists • Ecologists • Landscape Architects

Figure No:

1

Shannon Davison

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: October 18, 2023 10:56 AM
To: Shannon Davison; Species at Risk (MECP)
Subject: RE: Request for Information- Highway 404 & Major Mackenzie Drive, Markham
Attachments: DRAFT-Clients Guide to SAR Screening-May 2019.pdf

Caution. Outside Sender

Hello Shannon,

Thank you for your submission to the Ministry of the Environment, Conservation and Parks (MECP) about species at risk (SAR).

MECP is responsible for the administration of the *Endangered Species Act, 2007* (ESA) (Endangered Species Act, 2007, S.O. 2007, c. 6 (ontario.ca)). The ESA provides for the protection and recovery of species on the Species at Risk in Ontario (SARO) List (O. Reg. 230/08: SPECIES AT RISK IN ONTARIO LIST). The ESA includes prohibitions against killing, harming, harassing, capturing or taking a living member of a species listed as extirpated, endangered, or threatened on the SARO List (section 9) and against damaging or destroying the habitat of a species listed as endangered or threatened on the SARO List (section 10), without an exemption or authorization.

Seeking an ESA authorization or exemption is a proponent-led process. **This means that the person carrying out an activity is responsible for determining whether SAR and their habitat are present on or around the site of the activity, and ultimately ensuring their actions do not contravene the ESA**.

For information about assessing which SAR may be present on or in the area of your site, please refer to the MECP's draft "Client's Guide to Screening for Species at Risk" (attached).

You may proceed with the screening on your own or you may wish to consider hiring a qualified professional to perform a screening on your behalf. MECP recommends that the services of a professional environmental consultant be retained to assist in the completion of a screening, field assessments and surveys. An environmental consultant will be able to provide advice and direction on the type of surveys that should be performed and will be able to interpret the results of any surveys carried out.

If after carrying out a thorough SAR screening, including any field assessments and surveys that might be necessary, there is **no evidence of SAR or SAR habitat located on or adjacent to the site of your activity** and your activity will therefore not cause any prohibited impacts, an exemption or authorization under the ESA would not be necessary to proceed. The ministry strongly recommends that you document your SAR screening and assessment and rationale for avoiding prohibited impacts for future reference if needed. Proponents are responsible for ensuring their actions do not contravene the ESA.

If there IS evidence of species a risk and/or habitat on or around the location of your activity, the ministry recommends that you carry out the work necessary to prepare an Information Gathering Form (IGF). This includes consideration of all the elements in your SAR

screening data collection and further levels of assessment of impacts and potential to minimize adverse effects.

After considering all the data and information in the IGF, if you have determined that the activity can be carried out in such a way that you WILL NOT have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization under the ESA would not be necessary to proceed if the activity is carried out in that way. Again, proponents are responsible for ensuring their actions do not contravene the ESA.

If after considering all the data and information in the IGF you have determined that the proposed activities COULD POTENTIALLY have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization may likely be required before you proceed. If there is no applicable exemption in regulations under the ESA, submit the IGF to the ministry at SAROntario@ontario.ca to seek a permit or agreement. Please visit How to get an Endangered Species Act permit or authorization | ontario.ca to obtain information on how to get an ESA permit or authorization.

Please consider in your project planning that it takes an average of 12-15 months from the submission of a complete IGF to a decision about a permit, if one is needed. This considers the time required to conduct the technical review of the application as well as to carry out public and Indigenous consultation, along with factors such as project complexity, seasonal nature of field survey and data collection required, volume of applications and quality of submissions. It is recommended that proponents submit a complete IGF well in advance of the activity's proposed start date. Failure to submit a complete and accurate IGF with supporting rationale and not allowing adequate time for review and the issuance of any required authorizations could result in delays to the activity's anticipated start date.

Thank you,

Species at Risk Branch

From: Shannon Davison <sdavison@aboudtng.com>
Sent: October 18, 2023 10:29 AM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: Request for Information- Highway 404 & Major Mackenzie Drive, Markham

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

Good morning,

Please find attached a request for information as it pertains to a Natural Environment Impact Assessment for a Municipal Class Environmental Assessment study of the Highway 404 ramp extension at Major Mackenzie Drive in the City of Markham. Any additional information you can provide would be greatly appreciated.

Regards,

Shannon Davison . **B.Env, Eco. Rest. Cert. CERPIT**
Ecologist
MNRF Certified Ecological Land Classification
MNRF Certified Ontario Wetland Evaluation System
ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
C: 226.581.0707 www.aboudtng.com . sdavison@aboudtng.com

APPENDIX 10

Project Impacts and Proposed Mitigation

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Vegetation Removal – Clearing & Grubbing *Upland Area*	Site Preparation and Servicing	Loss of vegetation and wildlife habitat	Moderate	▪ Avoid significant wildlife habitat ▪ Design to avoid or minimize loss of vegetation and edge habitat. ▪ Implement restoration/compensation plan where possible, using native tree, shrub, and vegetative species.	Minor	Site Preparation & Servicing, Construction.	
Vegetation Removal – Clearing & Grubbing *Upland Area*	Site Preparation and Servicing	Disturbance of wildlife species	Minor	▪ Avoid removal or destruction of animal movement corridors. ▪ Time activities to avoid wildlife disturbance during important life stages (generalized breeding bird window (Apr 1- Aug 30) & bat maternity window (Apr 1- Sept 30).	None	Site Preparation & Servicing, Construction.	Monitor active nests (as needed, e.g., weekly) until inactive.
Vegetation Removal – Clearing & Grubbing *Upland Area*	Site Preparation and Servicing	Impacts to nesting birds protected under the Migratory Bird Convention Act	Moderate	▪ Complete all vegetation removal outside the Environment Canada breeding bird nesting window (April 1- August 31) ▪ Where vegetation removal must occur during the nesting window, conduct a bird nest survey to determine locations of active nests prior to construction works including installation of Erosion Sediment Control (ESC) fence and any site clearing. ▪ Create nest protection zones where active bird nests are found and monitor (as needed, e.g., weekly) until inactive.	None	Site Preparation & Servicing, Construction	Monitor active nests (as needed, e.g., weekly) until inactive.
Vegetation Removal – Clearing & Grubbing *Wetland Areas*	Site Preparation and Servicing	Increased erosion, sedimentation into wetland	Moderate	▪ Develop & implement ESC plan per GGH Guide for Urban Construction (TRCA, 2019)	Minor-None	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Vegetation Removal – Clearing & Grubbing *Wetland Areas*	Site Preparation and Servicing	Reduced habitat for sensitive species	Minor	▪ Create physical buffers (i.e. berm) ▪ Implement restoration/compensation plan where possible, using native tree, shrub and vegetative species.	Minor	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration.	Monitor compensation areas until established.
Grading	Site Preparation and Servicing	Increased erosion, sedimentation, and turbidity	Moderate	▪ Maintain or restore vegetative buffers. ▪ Develop & implement ESC Plan per GGH Erosion and Sediment guidelines (TRCA, 2019).	Minor	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration.	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Grading	Site Preparation and Servicing	Increase nutrient inputs and contaminants to waterbodies and wetlands	Minor	▪ Develop & implement ESC Plan per GGH Erosion and Sediment guidelines (TRCA, 2019) ▪ Designate areas for equipment storage.	None	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration.	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Grading	Site Preparation and Servicing	Increased soil compaction	Minor	▪ Control access and movement of equipment and people	Minor	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration.	
Grading	Site Preparation and Servicing	Changes to drainage	Minor	▪ Schedule grading to avoid high runoff volumes. ▪ Minimize changes to land contours and natural drainage	Minor-None	Site Preparation & Servicing, Construction	
Grading	Site Preparation and Servicing	Changes to surface runoff	Minor	▪ Maintain streams and timing, quantity of flows. ▪ Implement site designed infiltration trenches & OGS per Drainage & SWM Report (Gannett Fleming, 2024)	Minor-None	Site Preparation & Servicing, Construction.	
Grading	Site Preparation and Servicing	Changes in soil moisture, tree cover and vegetation	Moderate	▪ Minimize the area and duration of soil exposure	Minor	Site Preparation & Servicing, Construction	

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Grading	Site Preparation and Servicing	Disturbance to wildlife	Minor	▪ Time activities and conduct work outside timing windows of sensitive species and avoid sensitive periods (Breeding birds, Bats)	None	Site Preparation & Servicing, Construction	
Grading	Site Preparation and Servicing	Alteration or destruction of wildlife habitat	Minor	▪ Identify sensitive species prior to work and design grading to avoid disturbing sensitive species.	None	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration.	
Grading	Site Preparation and Servicing	Wildlife entering construction areas	Minor	▪ Develop & implement ESC plan to exclude wildlife	None	Site Preparation & Servicing, Construction, Post-Construction/Site Restoration.	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Roads – Paving	Construction	Increased impervious surfaces	Minor	▪ Minimize areas of paved surfaces ▪ Use LID materials and methods for infiltration	Minor	Site Preparation, Construction	
Roads – Paving	Construction	Increased runoff	Minor	▪ Implement infiltration trenches and OGS per Drainage & SWM Report (Gannett Fleming, 2024)	None	Site Preparation, Construction	Monitor compensation areas until established.
Roads – Paving	Construction	Reduced infiltration, increased nutrient and contaminant inputs	Minor	▪ Design roads without curbs, gutters, and sidewalks to promote infiltration galleries and other infiltration devices ▪ Implement restoration/compensation plan where possible, using native tree, shrub and vegetative species.	Minor	Site Preparation, Construction	
Roads – Paving	Construction	Increased erosion, sedimentation, and turbidity	Minor	▪ Maintain or provide vegetative buffers ▪ Develop & implement ESC Plan per GGH Erosion and Sediment guidelines (TRCA, 2019)	Minor-None	Site Preparation, Construction	Monitor ESC fence weekly, and after a major storm event for any breaks, and repair.
Roads – Paving	Construction	Loss of wildlife habitat	Minor	▪ Minimize areas of paved surfaces ▪ Implement restoration/compensation plan where possible, using native tree, shrub and vegetative species.	Minor	Site Preparation, Construction	Monitor compensation areas until established.

ACTIVITY	PROJECT PHASE	POTENTIAL IMPACTS	INITIAL IMPACT RATING[1,3]	MITIGATION RECOMMENDATIONS/COMMENTS	FINAL IMPACT RATING[2,3]	PROPOSED IMPLEMENTATION PHASE	MONITORING/ FOLLOW-UP RECOMENDATIONS
Roads – Paving	Construction	Wildlife mortality on roads	Minor	▪ Design to reduce / prevent mortality	Minor	Site Preparation, Construction	
Roads – Paving	Construction	Barriers to wildlife movement	Minor	▪ Avoid intersecting most likely wildlife migration routes wherever possible. ▪ Funnel wildlife through culverts ▪ Provide overpasses for large wildlife species. ▪ Provide low barrier fencing or vertical walls to reduce amphibian mortality. ▪ Provide dry wildlife passage culverts under the roadway. ▪ Use traffic slowing/calming measures in areas with high wildlife use	Minor	Site Preparation, Construction	

LEGEND:

[1] *Initial Impact* is a relative rating of the expected impact to occur in the absence of any mitigation measures. It evaluates the impact based on the duration, reversibility, extend of influence, frequency, existing ecological site context, likelihood of occurring and cumulative effects.

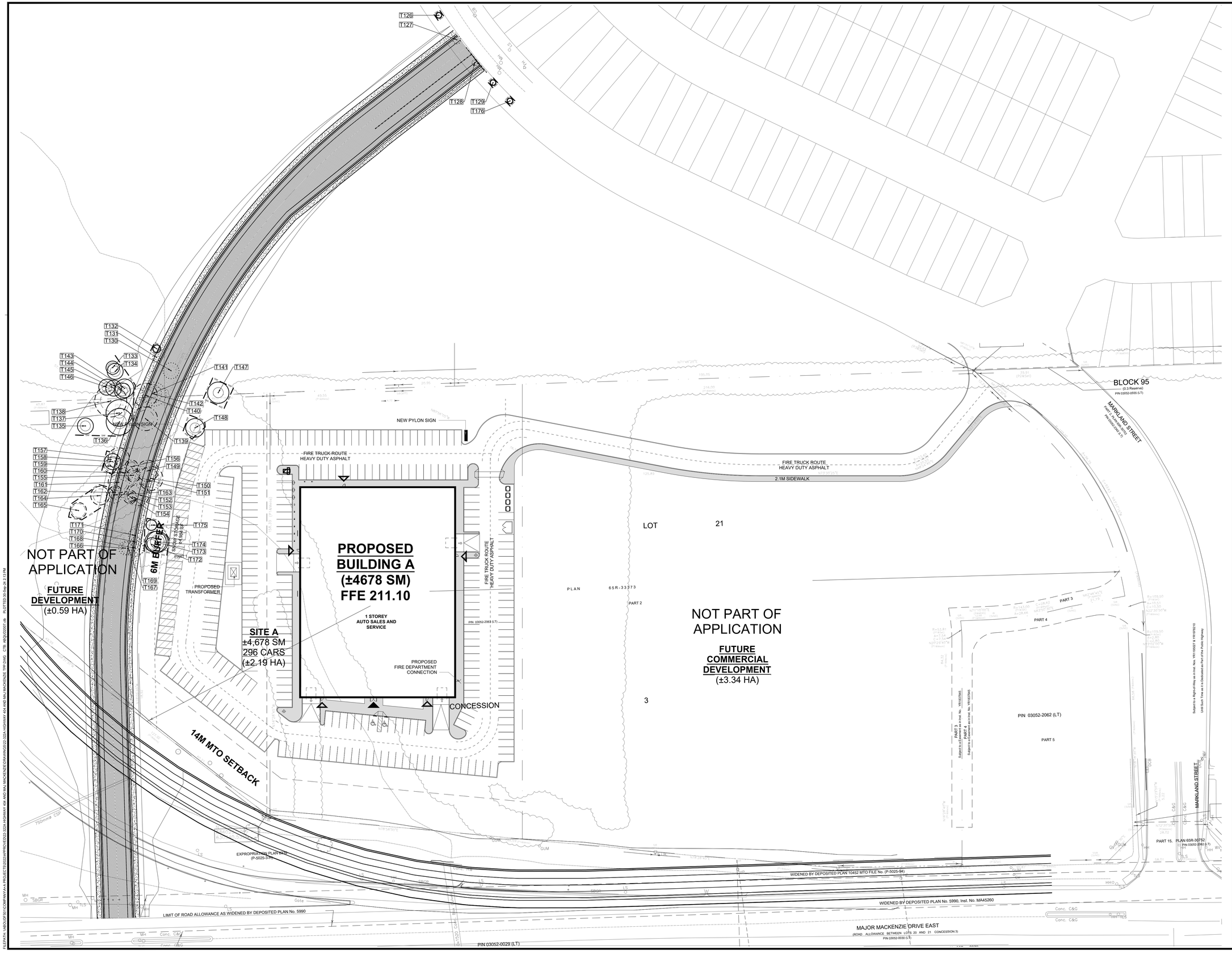
[2] *Actual Impact* is the expected impact in consideration of implementation of mitigation measures or where potential impact may cause little to no actual impact.

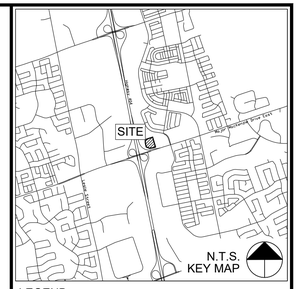
[3] *Impact Rating*

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.

APPENDIX 11

Tree Preservation Plan





LEGEND:

- EXISTING TREE — ID NUMBER / OUTER CIRCLE DENOTES APPROX. CROWN RESERVE (CR). INNER CIRCLE DENOTES MINIMUM TREE PROTECTION ZONE (MTPZ).
- PRESERVE TREE — TREE HAS MODERATE TO HIGH BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND CAN BE INCORPORATED INTO THE PROPOSED DEVELOPMENT
- DISCRETIONARY PRESERVATION — TREE HAS LOW BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION, BUT IS NOT IN CONFLICT WITH DEVELOPMENT. PRESERVATION OR REMOVAL OF TREE IS AT THE OWNER'S DISCRETION
- REMOVE TREE — TREE IS IN CONFLICT WITH PROPOSED DEVELOPMENT
- REMOVE TREE — TREE HAS LOW BIOLOGICAL HEALTH AND/OR STRUCTURAL CONDITION AND IS IN CONFLICT WITH PROPOSED DEVELOPMENT
- TPF — TREE PROTECTION FENCE
- ROOT SENSITIVE EXCAVATION AND GRADING WITHIN TREE PROTECTION ZONES

INFORMATION SOURCES

1. Site Plans received from Gannett Fleming September 10, 2024.
2. Tree inventory and analysis conducted by an Aboud & Associates Inc. ISA Certified Arborist August 8, 2023.

No.	Description	By	Date
0	ISSUED FOR REVIEW	JD	30 SEP-24

REVISIONS: All previous issues of this drawing are superceded

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
3-5 Edinburgh Rd S , Guelph , Ontario , N1H 5N8 , 519.822.6839 , www.aboudtng.com

Title:

TREE PRESERVATION PLAN

Project:

HIGHWAY 404 & MAJOR MACKENZIE DRIVE
CITY OF MARKHAM

Date:	SEPTEMBER 2024
Project:	AA22-322A
Scale:	1:600
Designer:	VG
Drawn:	JGL
Checked:	JD

Drawing No:

TPP1

FILEPATH: I:\ABOUD\FSK\COMPANY\A-A PROJECTS\2022\APROJECTS\2022-322A HIGHWAY 404 AND MA MACKENZIE\DRAWINGS\2-322A HIGHWAY 404 AND MA MACKENZIE TPP.DWG CTB: ABOUD2000.ctb PLOTTED:30-Sep-24 2:13 PM

Tree No.	Tree Species	DBH (cm) 1, 2	Minimum Tree Protection Zone (TPZ) (from outer trunk of tree), 3	Crown Reserve (CR) (m)	Biological Health (H, M, L)	Structural Condition (H, M, L)	Overall Condition (E, G, F, P, D)	Ownership- Private, Offsite, Municipal, Shared	Rec. Action - Remove, Preserve, Remove	Reason for Development: Preserve, Remove	Final Recommendation: Preserve, Remove	Compensation - Yes, No	Observations/ Tree Preservation Notes
126	Quercus alba White Oak	8	1.2	2	M	M	Fair	M	P	P	P	N	
127	Quercus bicolor Swamp White Oak	8	1.2	3	M	M	Fair	M	P	R	RD	Y	Base wounds
128	Gymnocladus dioicus Kentucky Coffeetree	5	1.2	2	M	M	Fair	M	P	R	RD	Y	
129	Gymnocladus dioicus Kentucky Coffeetree	5	1.2	2	M	M	Fair	M	P	P	P	N	
130	Elaeagnus angustifolia Russian Olive	11[7.5,5.4,3]	1.8	6	M	M	Fair	M	P	R	RD	Y	Codominant stems from base
131	Ulmus americana White Elm	9[7,5]	1.2	3	M(H)	M	Good	M	P	R	RD	Y	Codominant stems
132	Ulmus americana White Elm	8[7,4]	1.2	3	M(H)	M	Good	M	P	P	P	N	Codominant stems from base. Root sensitive excavation within the MTPZ
133	Elaeagnus angustifolia Russian Olive	11	1.8	5	M(H)	M	Good	M	P	P	P	N	
134	Elaeagnus angustifolia Russian Olive	19[14,10,8]	1.8	6	M(H)	M	Good	M	P	P	P	N	Codominant stems
135	Ulmus americana White Elm	17	1.8	6	M(H)	M(H)	Good	M	P	P	P	N	
136	Malus pumila Apple	36[23,21,14,12]	2.4	10	M	M	Fair	M	P	P	P	N	Codominant stems from base. Sensitive excavation within Crown only
137	Malus pumila Apple	28[20,20]	1.8	10	M	M(H)	Good	M	P	P	P	N	Sensitive excavation within Crown only
138	Ulmus americana White Elm	57	3.6	12	L	L	Dead	M	P	P	DP	N	
139	Ulmus americana White Elm	41[33,25]	3	9	L	L	Dead	M	R	R	RCD	N	
140	Crataegus sp. Hawthorn	38[35,14]	2.4	9	M(L)	M	Poor	M	R	R	RCD	N	Codominant stems from base, dead wood/decay moderate.
141	Crataegus sp. Hawthorn	18	1.8	7	M	M	Fair	M	P	R	RD	Y	
142	Crataegus sp. Hawthorn	27[25,9]	1.8	9	M	M	Fair	M	P	R	RD	Y	
143	Elaeagnus angustifolia Russian Olive	17	1.8	7	M	M	Fair	M	P	P	P	N	
144	Elaeagnus angustifolia Russian Olive	13[11,6]	1.8	6	M	M	Fair	M	P	P	P	N	
145	Elaeagnus angustifolia Russian Olive	13[9,9]	1.8	6	M	M	Fair	M	P	P	P	N	Codominant stems
146	Elaeagnus angustifolia Russian Olive	14	1.8	6	M	M	Fair	M	P	P	P	N	Severe lean
147	Acer negundo Manitoba Maple	21	1.8	8	M(H)	M(H)	Good	M	P	P	P	N	Codominant stems
148	Juglans nigra Black Walnut	13	1.8	7	M(H)	M(H)	Good	M	P	P	P	N	
149	Salix nigra Black Willow	48	3	8	M(L)	M	Poor	M	R	R	RCD	N	Severe wound/decay on main trunk
150	Salix nigra Black Willow	43	3	9	M(L)	M	Poor	M	R	R	RCD	N	Severe wound/decay on Main trunk
151	Salix nigra Black Willow	32	2.4	9	M	M	Fair	M	P	R	RD	Y	Dead wood moderate, significant wound at base.
152	Salix nigra Black Willow	61[57,23]	4.2	8	M(L)	M(L)	Very Poor	M	R	R	RCD	N	Collapsed stems, minor stems alive.
153	Salix nigra Black Willow	22	1.8	3	L	L	Very Poor	M	R	R	RCD	N	Almost dead.
154	Salix nigra Black Willow	24	1.8	5	L	L	Very Poor	M	R	R	RCD	N	Almost dead.
155	Salix nigra Black Willow	24	1.8	5	M(L)	M	Poor	M	R	R	RCD	N	Main leader dead.
156	Salix nigra Black Willow	24	1.8	5	L	L	Very Poor	M	R	R	RCD	N	Severe trunk wound/decay
157	Salix nigra Black Willow	42	3	8	M(L)	M(L)	Poor	M	R	R	RCD	N	Severe trunk wound/decay
158	Salix nigra Black Willow	21	1.8	6	M(H)	M(H)	Good	M	P	P	P	N	Root sensitive excavation within MTPZ
159	Salix nigra Black Willow	22	1.8	5	L	M(L)	Very Poor	M	R	R	RCD	N	Severe dieback. Root sensitive excavation within MTPZ
160	Salix nigra Black Willow	27	1.8	6	M(H)	M(H)	Good	M	P	R	RD	Y	
161	Salix nigra Black Willow	45[29,26,19,13]	3	8	L	L	Very Poor	M	R	R	RCD	N	Severe dead wood/decay
162	Salix nigra Black Willow	28	1.8	5	M(L)	M	Poor	M	R	R	RCD	N	Severe trunk wound/decay
163	Salix nigra Black Willow	26	1.8	6	M	M	Fair	M	P	R	RD	Y	
164	Salix nigra Black Willow	30	2.4	7	M(L)	M(L)	Poor	M	R	R	RCD	N	Root sensitive excavation within MTPZ
165	Salix nigra Black Willow	36	2.4	6	L	M(L)	Poor	M	P	P	DP	N	Dead wood severe, dieback severe.
166	Prunus serotina Black Cherry	13	1.8	5	M(H)	M(H)	Good	M	P	R	RD	Y	
167	Prunus serotina Black Cherry	17	1.8	5	M(H)	M(H)	Good	M	P	R	RD	Y	
168	Prunus serotina Black Cherry	20	1.8	6	M(H)	M(H)	Good	M	P	R	RD	Y	
169	Prunus serotina Black Cherry	11	1.8	4	M(H)	M(H)	Good	M	P	R	RD	Y	Unbalanced crown
170	Prunus serotina Black Cherry	12	1.8	4	M(H)	M(H)	Good	M	P	R	RD	Y	
171	Prunus serotina Black Cherry	13	1.8	5	M(H)	M(H)	Good	M	P	R	RD	Y	Vine on crown 50%
172	Prunus serotina Black Cherry	12	1.8	5	M(H)	M(H)	Good	M	P	P	P	N	
173	Ulmus americana White Elm	26	1.8	8	M(H)	M(H)	Good	M	P	P	P	N	
174	Ulmus americana White Elm	38	2.4	8	M(H)	M(H)	Good	M	P	P	P	N	
175	Ulmus americana White Elm	13	1.8	4	M(H)	M(H)	Good	M	P	P	P	N	
176	Gymnocladus dioicus Kentucky Coffeetree	5	1.2	2	M(H)	M(H)	Good	M	P	P	P	N	

Ownership				
Private (On Site) Trees	0			
Private (Off Site) Trees	0			
Municipal Trees	51			
Shared Trees	0			
Subtotal	**51**			
Recommendation Based on Condition				
Preserve Tree Based on Health & Structure		37		
Remove Tree Based on Health & Structure		14		
Subtotal		**51**		
Recommendation Based on Development				
Preserve/Transplant Tree Based on Development Impacts			22	
Remove Tree Based on Development Impacts			29	
Subtotal			**51**	
Final Recommendation				
Final Recommendation: Preserve (P)				20
Final Recommendation: Discretionary Preservation (DP)				2
Final Recommendation: Remove due to Condition (RC)				0
Final Recommendation: Remove due to Development (RD)				15
Final Recommendation: Remove due to Condition and Development (RCD)				14
Total				**51**
Compensation:				**To be determined in consultation with the City of Markham**

1. DBH (Diameter at breast height): Measurement of tree stem diameter at 1.4 meters above ground.
2. [ ] Denotes DBH's of Each Stem of Tree with Multiple Stems
3. Tree Protection Zones, Taken from Specifications for Trees (SS12A) City of Burlington. February, 2013.

Removal of trees owned by others (e.g. private off-site, municipal or shared/boundary trees) require approval from the owner.

GENERAL TREE NOTES

1. All arboricultural work performed on trees such as pruning of branches and roots shall be conducted by an ISA Certified Arborist.
2. Prune and mitigate limbs and roots damaged by construction work in accordance with ANSI A300 (Part 1) - 2008 Pruning and the Best Management Practices companion publication (revised 2008).
3. Tree Protection Fence to be erected prior to the commencement of any construction or grading, and maintained throughout the duration of the work.
4. Tree Protection Zone is delimited by Tree Protection Fence shown on the drawings.
5. No construction or activities including the following to occur within Tree Protection Zone: equipment parking or access, storage of supplies, topsoil or fill, and refueling.
6. Tree removals (if required) will be undertaken in compliance with the Migratory Birds Convention Act. Efforts will be made to remove vegetation outside the General Nesting Period (April 1 - Aug 31) for regions C1 and C2 of Ontario. In the event vegetation must be removed within the General Nesting Period, a qualified avian biologist is to review the site prior to removal to ensure compliance with the Migratory Birds Convention Act.
7. Any soils and vegetation within tree protection zone damaged by the Contractor shall be restored to the satisfaction of the Municipality by the Contractor at no additional cost to the Owner.

CONSTRUCTION WITHIN MINIMUM TREE PROTECTION ZONE

1. An ISA Certified Arborist must be present on site during construction activities within MTPZ to confirm and/or modify mitigation measures for trees to be preserved.
2. Use trenchless methods (e.g. horizontal directional drilling) to install underground services (e.g. sanitary sewers and water lines) within Minimum Tree Protection Zones.

EXISTING UNDERGROUND SERVICES WITHIN TREE PROTECTION ZONES

1. Existing sanitary/storm sewers and watermains to be discontinued within tree protection zones will be filled (as needed) and abandoned.
2. Excavation and access for construction/removal of abandoned underground services will be conducted outside of tree protection zones.

FINISH GRADING WITHIN TREE PROTECTION ZONES

Where finish grading of cuts and fills, and including swales occurs within tree protection zones, the following steps are required.

Grade Cut:

1. Excavate by hand or Air-spade technology to a maximum depth of 100mm.
2. Roots encountered are to be assessed by the Project Arborist to determine the extent of roots to be pruned. Based on findings, other treatments may be required (e.g. crown reduction, tree removal), and which may require approval from the City.
3. Based on root findings, local, minor adjustments to grading within the tree protection zone may be required based on field consultation between the Project Arborist and Project Engineer.
4. No access by heavy equipment into tree protection zone is permitted. Fine grading to be carried out using light equipment and/or by hand.

Grade Fill:

5. Add topsoil to meet grade requirements to a maximum of 150mm.
6. No topsoil to be added onto trunk base or above-ground section of trunk base flare.
7. Maintain positive drainage away from trunk base.
8. Based on local conditions (e.g. surface drainage), local, minor adjustments to grading within the tree protection zone may be required based on field consultation between the Project Arborist and Project Engineer.

TREES OWNED BY OTHERS

1. Trees owned by others require permission (i.e. written consent) from the land owner(s) prior to activities that may damage or destroy trees. Trees owned by others are Offsite Trees and Shared Trees:
   a. Offsite Trees - Trees on property adjacent to the subject property;
   b. Shared (Boundary) Trees - Trees whose trunk including the basal trunk flare growing on the boundary between the subject property and adjoining property (from *Ontario Forestry Act*).

The Provincial Forestry Act, R.S.O. 1990 (Section 10):

10. (2) Every tree whose trunk is growing on the boundary between adjoining lands is the common property of the owners of the adjoining lands. 1990, c. 18 Sched. I, s. 21.
(3) Every person who injures or destroys a tree growing on the boundary between adjoining lands without the consent of the land owners is guilty of an offence under this Act. 1998, c. 18, Sched. I, s. 21.

ROOT SENSITIVE EXCAVATION

A preliminary excavation at the limit of work is recommended to determine the potential magnitude of the impacts posed by the planned work. For excavation in turf or permeable surfaces, the final excavation limit should be marked in the field and arborist supervised excavation shall be performed using air-spade, dry-vac truck, hydro-vac truck or hand tools. For excavation of existing impermeable surfaces, the impermeable top layer may be broken up by machine to allow access to the permeable base layers. The permeable base layers may need to be excavated further to expose existing roots, in which case this excavation shall be performed using air-spade, dry-vac truck, hydro-vac truck or hand tools. All root sensitive excavation must be performed under the supervision of a qualified arborist. All roots exposed must be documented by the supervising arborist. Every effort should be made to preserve as many exposed roots as possible. Roots approved for pruning should be cleanly cut with a sharp, non-vibrating tool such as a handsaw, secateurs, chainsaw at face of trench such that no further disturbance of the roots are to be expected once mechanical excavation begins. All root pruning is to be performed by the arborist only, as per guidelines below.

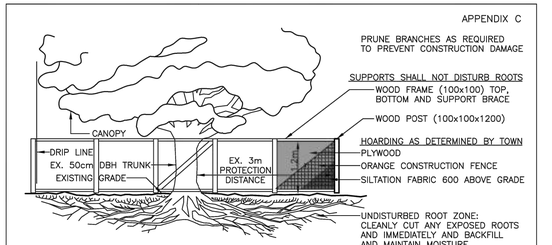
1. When root sensitive excavation is performed in regards to the installation of a deep site feature such as a foundation, roots of less than 5cm diameter can be cut sharply, if necessary, unless an abundance of smaller roots are involved. If roots of 5cm diameter or greater or an abundance of smaller roots are exposed in the excavation areas inside or just outside the Tree Protection Zone (TPZ) of bylaw trees they should be preserved.

2. When root sensitive excavation is performed in regards to the installation of site features such as post holes, all roots exposed of under 5cm diameter may be cleanly cut at face of hole such that no further disturbance of the roots are to be expected once mechanical excavation begins for the lower portion of the holes (below hand dug area). If roots of 5cm diameter or greater are uncovered they should be preserved, the post holes filled in with viable soil and the hole moved at least 0.5 metre away to avoid significant roots.

3. When root sensitive excavation is performed in regards to the installation of site features such as driveways, walkways, curbs, etc. roots of less than 5cm diameter can be cut sharply, if necessary, unless an abundance of smaller roots are involved. If roots of 5cm diameter or greater or an abundance of smaller roots are exposed in the excavation areas inside or just outside the TPZ of bylaw trees they should be preserved

4. When root sensitive excavation is performed in regards to the installation of utilities such as water lines or sewers, every effort should be made to preserve as many exposed roots as possible by installing the utilities underneath the roots without root pruning. If roots of 5cm diameter or greater are uncovered they should be preserved.

APPENDIX C



MINIMUM TREE PROTECTION DISTANCE FROM TRUNK:

< 10cm DBH	1.2m
10–29cm DBH	1.8m
30–40cm DBH	2.4m
41–50cm DBH	3.0m
51–60cm DBH	3.6m
61–70cm DBH	4.2m
71–80cm DBH	4.8m
81–90cm DBH	5.4m
91–100cm DBH	6.0m
> 100cm DBH	6cm/1cmØ

(DIAMETER AT BREAST HEIGHT) DBH = TRUNK DIAMETER AT 1.4m HEIGHT

40cmx60cm SIGN MOUNTED ON ALL SIDES OF BARRIER

MARKHAM

TREE PROTECTION ZONE

NO WORK IS PERMITTED WITHIN THE TREE PROTECTION ZONE INCLUDING GRADING, CONSTRUCTION ACCESS AND MATERIAL STORAGE.

BREACH OF TREE PROTECTION ZONE IS SUBJECT TO A FINE OF $_____

CONTACT TOWN OF MARKHAM FOR MORE INFORMATION: 905-477-5530

TREE PROTECTION NOTES:

1. ALL TREE PROTECTION BARRIERS SHALL BE IN PLACE AND APPROVED BY THE TOWN PRIOR TO CONSTRUCTION ACCESS.

2. ALL SUPPORTS AND STAKES SHALL BE OUTSIDE THE TREE PROTECTION ZONE AND SHALL MINIMIZE ROOT DAMAGE.

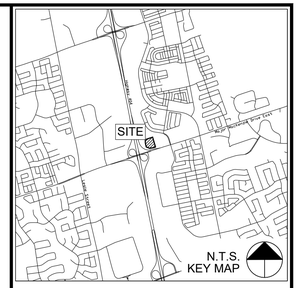
3. TREE PROTECTION BARRIERS SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL ALL CONSTRUCTION IS COMPLETE AND APPROVED BY THE TOWN.

4. ALL ARBORICULTURE WORK SUCH AS PRUNING OF BRANCHES AND ROOTS, SHALL BE DONE BY A QUALIFIED TREE WORKER CERTIFIED WITH THE INTERNATIONAL SOCIETY OF ARBORICULTRE APPROVED BY THE TOWN.

TREE PRESERVATION DETAILS

MARKHAM
THE CORPORATION OF THE TOWN OF MARKHAM

SCALE:	DATE:	DRAWING No.
N.T.S.	JUNE 2009	T-1



No.	Description	By	Date
0	ISSUED FOR REVIEW	JD	30 SEP-24

REVISIONS: All previous issues of this drawing are superceded

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
3-5 Edinburgh Rd S, Guelph, Ontario, N1H 5N8, 519.822.6839, www.aboudtng.com

Title:

TREE PRESERVATION DATA

Project:

HIGHWAY 404 & MAJOR MACKENZIE DRIVE
CITY OF MARKHAM

Date: SEPTEMBER 2024
Project: AA22-322A
Scale: N/A
Designer: VG
Drawn: JGL
Checked: JD

Drawing No:

TPP2

FILEPATH: \ABOUD\01\COMPANY\A-A PROJECTS\2022\APPROVED\22-322A HIGHWAY 404 AND MA MACKENZIE DRAWINGS\22-322A HIGHWAY 404 AND MA MACKENZIE TPP.DWG CTB: ABOUD2007.ctb PLOTTED:30-Sep-24 3:13 PM