NATURAL HERITAGE REPORT – IMPACT ASSESSMENT

IMPROVEMENTS TO THE INTERSECTION OF DERRY ROAD AND ARGENTIA ROAD FROM 300 M OF ALL QUADRANTS OF THE INTERSECTION
CITY OF MISSISSAUGA, REGION OF PEEL
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY

prepared for:

Region of Peel
Working for you

HDR

prepared by:

LGL LIMITED
environmental research associates

January 2015

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

The Region of Peel is undertaking a Schedule 'B' Municipal Class EA Study for improvements to the intersection of Derry Road and Argentia Road from 300 m of all quadrants of the intersection. The study area is presented in **Figure 1**. The Class EA study is being conducted by HDR on behalf of the Region of Peel. LGL Limited, as a sub-consultant to HDR, is providing the natural heritage services. This Natural Heritage Report – Impact Assessment documents the results of data collection and analysis in the fall of 2013 and identifies potential impacts and environmental protection measures.

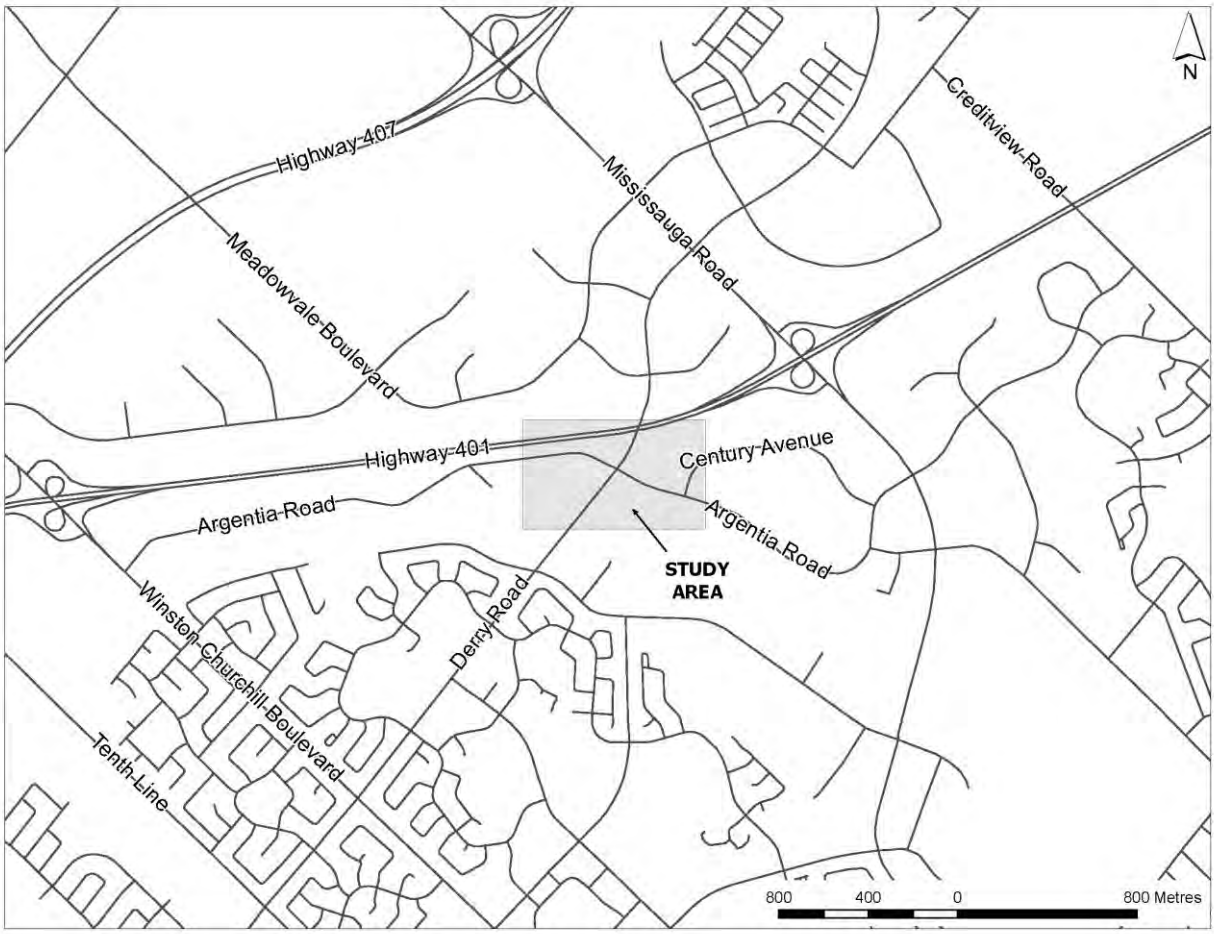

FIGURE 1. KEY PLAN

2.0 EXISTING CONDITIONS

The following discussion outlines the existing environmental conditions within the study area and identifies natural heritage areas and/or features of environmental sensitivity and/or significance.

2.1 Physiography and Soils

The study area is located within the South Slope physiographic region. This physiographic region occupies approximately 2,400 km^2 and extends from the Niagara Escarpment in the west to the Trent River in the east (Chapman and Putnam 1984). The South Slope predominately consists of shallow shale and till plains which slope gently in a southeasterly direction towards Lake Ontario. The topography is mostly subdued and includes low-relief drumlins and moraines.

Hoffman and Richards (1953) categorize the soils of the study area into three soil series, including Oneida clay loam, Jeddo clay loam, and Chingacousey clay loam. These soils are described below.

2.1.1 Oneida clay loam

Oneida clay loams are found in southern areas of the Region of Peel and have developed from fine textured shale and limestone till on smooth moderately sloping topography. Oneida clay loam soils are slowly permeable, but are well-drained due to rapid run-off. These soils are susceptible to erosion. Oneida clay loam soils are located throughout the study limits (Hoffman and Richards 1953).

2.1.2 Jeddo clay loam

Jeddo clay loam is the poorly drained member of the Oneida catena, occurring is small areas in the southern portion of Peel Region. Jeddo soils occur in areas with a smooth and gently sloping topography. A band of Jeddo clay loam soils is located along the south side of Derry Road (Hoffman and Richards 1953).

2.1.3 Chingacousey clay loam

Chingacousey soils are the imperfectly drained member of the Oneida catena. Areas with this soil series are typically smooth and gently sloping. Chingacousey clay loam soils are located throughout the study limits (Hoffman and Richards 1953).

2.2 Aquatic Habitats and Communities

The study area occurs within the Mullet Creek subwatershed of the Credit River watershed. Mullet Creek and its associated regulated areas are managed under the jurisdiction of Credit Valley Conservation (CVC) and the Ontario Ministry of Natural Resources (MNR) Aurora District.

Background Data

LGL conducted a secondary source review to identify the fish community within the watershed. The secondary source review included species at risk screening through Department of Fisheries and Oceans (DFO), MNR, and CVC aquatic species at risk mapping, the Natural Heritage Information Centre (NHIC) Biodiversity Explorer database (MNR 2013), and a review of the Credit River Fisheries Management Plan (MNR and CVC 2002). The CVC was contacted for further background information, including fish community station data. Background information was received from CVC on October 9, 2013 and included fisheries station data.

The Credit River Fisheries Management Plan indicates that Mullet Creek is a warmwater fish system, although fish community data was not available from the report (MNR and CVC 2002). Fisheries station capture records from CVC (September 2000), confirms the classification of a warmwater fish community in the Main tributary of Mullet Creek.

In addition to data for the main tributary, fisheries station data received from CVC included fish capture records from 1965, immediately at Derry Road, assuming before this section of channel was piped underground and upstream of the pond and online dam within Tributary 2 of Mullet Creek (approximately 700m west of study area). No sampling or capture records have been provided by CVC for Tributary 1 of Mullet Creek. Fish collection records by both LGL field sampling and background information provided by CVC are presented in **Table 1**, below.

Field Investigations
LGL conducted a survey of aquatic habitat on September 16, 2013 to characterize the aquatic habitat within the study area. The weather during the September site visit was sunny, 15°C, with west wind at 5 km/h. Water levels were likely above baseflow as rain occurred the previous evening. The watercourses within the study area were assessed approximately 50 m upstream and 100 m downstream of each crossing, where applicable and accessible.

Physical habitat features were surveyed in sufficient detail to enable mapping and identification of key habitat types. The physical habitat attributes assessed included: (a) instream cover, (b) bank stability, (c) substrate characteristics, (d) stream dimensions, (e) barriers, (f) stream morphology, (g) terrain characteristics, (h) stream canopy cover, (i) stream gradient, (j) aquatic vegetation, (k) ground water seepage areas, and (l) general comments. Representative photographs were taken. **Figure 2** presents the location of the crossings and an aquatic habitat summary is presented below. Site photos of the crossings are provided in **Appendix A**.

2.2.1 Tributary 1 of Mullet Creek

Tributary 1 of Mullet Creek occurs just north of Highway 401 and flows across Derry Road in a general west to east direction towards the main tributary of Mullet Creek. West of the study area, this tributary appears to originate as a drainage ditch for Highway 401. Upstream (west) of Derry Road, this tributary appears to be piped as no wetted channel or culvert inlet was observed.

Approximately 10 m east (downstream) of Derry Road, a headwall occurs, with a grated opening which is nearly completely plugged with garbage and other debris. During the September site visit, a trickle of flow was emerging from this opening and discharging into the channel. This tributary is defined as a wetted cattail corridor of approximately 4 m in width. Wetted width of this channel is approximately 3 m with a depth of 10-15 cm. The channel is choked with cattails and *Phragmites*. Substrates consist of silt and organic materials. Riparian and instream cover is very high primarily due to the abundance of emergent and overhanging cattails and *Phragmites*. Flow was not apparent during the September site visit. The water appeared stagnant and is unlikely to provide fish habitat during the dry months of the year. The channel downstream of the concrete headwall was sampled with a dip net and yielded no catch.

The headwall which occurs approximately 10 m east of Derry Road functions as a complete barrier to fish movement, therefore the potential for seasonal fish habitat does not occur upstream of this point. Based on the single site visit, Tributary 1 of Mullet Creek can be classified as indirect warmwater fish habitat.

2.2.2 Tributary 2 of Mullet Creek

Tributary 2 of Mullet Creek flows across Derry Road in a general west to east direction. Upstream of Derry Road, the channel characteristics consist of a largely flat and riffle dominated morphology within a well shaded woodlot. Average channel dimensions are 4 m in width and 20 cm in depth. Substrates include cobble, shale, gravel and silt. This creek appears to receive a large contribution of groundwater due to the presence of iron staining, watercress and other indicative vegetation. Approximately 10 m west (upstream) of the concrete inlet, the channel is braided and flows into the inlet. This concrete structure is set back from Derry Road by approximately 30 m to the west. The watercourse enters this inlet and flow is piped for

approximately 700 m to the northwest before discharging into the main tributary of Mullet Creek. The pipe functions as a complete barrier to fish movement and, therefore, it is unlikely this watercourse provides fish habitat to the west (upstream) of Derry Road. The channel upstream of Derry Road was sampled with a dip net and yielded no catch.

Based on the historic nature of the station data provided by CVC, and the presence of an online dam between this station and the study area, this watercourse within the vicinity of the study area
should be classified as indirect fish habitat as it provides flow and likely thermal relief to downstream fish communities (note that the main tributary of Mullet Creek is direct fish habitat – see **Table 1**).

TABLE 1.
FISH COLLECTED WITHIN THE VICINITY OF THE STUDY AREA

Scientific Name	Common Name	LGL	Background (2000)	COSEWIC	MNR	Provincial	Legal Status
Semotilus atromaculatus	Creek Chub	X		-	-	S5	-
Rhinichthys cataractae	Longnose Dace		X			S5	

X = fish observed/captured recorded during this study
Background Fisheries Station Data from CVC Personal Correspondence (October, 2013)
LGL: Dip Net sampling downstream of study area (September, 2013)
(Both LGL and Background capture records within main tributary of Mullet Creek)
Note: See Appendix C for description of acronyms

2.2.3 Species at Risk

Based upon a review of the MNR Natural Heritage Information Centre – Biodiversity Explorer on-line database, CVC, MNR and DFO Species at Risk mapping, and personal correspondence with CVC, no aquatic species at risk occur in Mullet Creek within the vicinity of the study area.

2.3 Vegetation and Vegetation Communities

The geographical extent, composition, structure and function of the vegetation communities were identified through air photo interpretation and a field investigation. Air photos were interpreted to determine the limits and characteristics of the vegetation communities in the study area. A field investigation of the vegetation communities at the intersection of Derry Road and Argentia Road and 300 metres beyond was conducted on August 19, 2013 within the right-of-way, to the extent possible. The field investigation was carried out to ground truth the boundaries of the vegetation communities and to conduct a botanical survey.

The vegetation communities were classified according to the *Ecological Land Classification for Southern Ontario: First Approximation and Its Application* (Lee *et al*. 1998). A plant list and a description of the general structure of vegetation were obtained during the field investigations. Plant species status was reviewed for Ontario (Oldham 2009), Region of Peel (Varga 2000 and Riley 1989), and Credit Valley Conservation Authority (CVC 2002). Vascular plant nomenclature follows Newmaster *et al*. (1998) with a few exceptions that have been updated to Newmaster *et al.* (2005).

LEGEND

Fisheries

- Permanent Direct
- Permanent Indirect
- Intermittent Indirect
- Piped
- Flow Direction

Vegetation Communities

- Vegetation Community Boundary

CUM1-1	Dry-Moist Old Field Meadow Type
CUT1	Mineral Cultural Thicket Ecosite
FOD5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest Type
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest Type
M	Manicured
MAS2	Mineral Shallow Marsh Ecosite

Data Sources: LGL Limited field surveys, Credit Valley Conservation Authority.

40 20 0 40 Metres

N

NATURAL HERITAGE

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environmental research associates

Project:	TA8368	**Figure:**	2
Date:	October, 2013	**Prepared By:**	MWF
Scale:	1 : 2500	**Checked By:**	LMC

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2.3.1 Vegetation Communities

The study area consists of a mixture of cultural and forest vegetation communities, including portions of vegetation communities that are already in a disturbed state as a result of the existing roadways and residential land uses. Evidence of disturbance includes a high proportion of non-native plant species that are well adapted to persist in areas that are regularly disturbed including species that are adapted to high light conditions, limited soil moisture, and species that are tolerant of salt spray.

Five Ecological Land Classification (ELC) community types were identified within the study limits during LGL's botanical surveys. The community types include: Dry-Moist Old Field Meadow (CUM1-1), Mineral Cultural Thicket (CUT1), Dry-Fresh Sugar Maple-Beech Deciduous Forest (FOD5-2), and Fresh-Moist Ash Lowland Deciduous Forest/Mineral Shallow Marsh (FOD7-2/MAS2). All of the vegetation communities identified within the study area are considered widespread and common in Ontario and are secure globally. These communities are delineated in **Figure 2** and are described in **Table 2.**

There are several areas that are not identified by an ELC classification such as areas of manicured grass (M) which include mown lawns, gardens and planted trees.

The Mississauga Natural Areas Survey (2010) was conducted to inventory all natural areas within the City of Mississauga, including woodlands, wetlands, creeks, and streams. As part of the Natural Areas Survey (2011) the woodlot on the west side of Derry Road was surveyed. The Natural Areas Survey notes the FOD5-2 community is a mature forest with a closed canopy approximately 26 m in height. Regeneration within the FOD5-2 is good and dominated by sugar maple (*Acer saccharum* spp. *saccharum*), white ash (*Fraxinus americana*), and black cherry (*Prunus serotina*) (North-South Environmental 2010). The FOD7-2 is located on the southeast end of the natural area and is a small lowland community along Mullet Creek (North-South Environmental 2010).

2.3.2 Flora

A total of 75 plant species have been recorded within the study area. Three of these plants could only be identified to genus and are not included in the following calculations. Of the 72 plants identified to species, thirty-four (48%) plant species identified are native to Ontario and thirty-eight (52%) plant species are considered introduced and non-native to Ontario. A list of vascular plants is presented in **Appendix B.** Definitions of the acronyms and species ranks used in **Appendix B** are described in **Appendix C.**

TABLE 2.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Community Characteristics
TERRESTRIAL – CULTURAL			
CUM	Cultural Meadow		
CUM1-1	Dry-Moist Old Field Meadow	**Emergent Trees/ Shrubs:** includes Norway spruce (*Picea abies*), Austrian pine (*Pinus nigra*), eastern red cedar (*Juniperus virginiana*), apple (*Malus pumila*), and black locust (*Robinia pseudo-acacia*). **Ground cover:** includes Canada goldenrod (*Solidago canadensis*), New England aster (*Symphyotrichum novae-angliae*), timothy (*Phleum pratense*), butter-and-eggs (*Linaria vulgaris*), and blueweed (*Echium vulgare*).	• Cultural community (CU). • Tree cover and shrub cover < 25 % (M). • Parent mineral material or mineral soil (1). • Grasses and forbs are dominant (-1). • Community can occur on a wide range of soil moisture regimes (Dry-Moist). • Pioneer community resulting from, or maintained by, anthropogenic-based influences.
CUT1	Mineral Cultural Thicket	**Canopy cover:** includes Austrian pine, Siberian elm (*Ulmus pumila*), black locust, and sugar maple (*Acer saccharum* spp. *saccharum*). **Understory cover:** includes common buckthorn (*Rhamnus cathartica*), staghorn sumac (*Rhus hirta*), swallow-wort (*Cynanchum rossicum*). **Grover cover:** includes swallow-wort, Canada goldenrod, and common ragweed (*Ambrosia artemisifolia*).	• Cultural community (CU). • Tree cover <25 %; shrub cover >25% (T). • This community can occur on a wide range of soil moisture regimes (Dry-Moist) (-1). • Pioneer community resulting from, or maintained by, anthropogenic-based influences.
TERRESTRIAL – NATURAL/SEMI-NATURAL			

TABLE 2.
SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES

ELC Code	Vegetation Type	Species Association	Community Characteristics
FOD5-2	Dry-Fresh Sugar Maple-Beech Deciduous Forest	**Canopy cover:** includes sugar maple, American beech (*Fagus grandifolia*), black cherry, white ash, and eastern cottonwood (*Populus deltoides* spp. *deltoides*). **Understory cover:** includes sugar maple, American beech, black cherry, common buckthorn, and riverbank grape (*Vitis riparia*). **Grover cover:** includes yellowish enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*), garlic mustard (*Alliaria petiolata*), and white baneberry (*Actaea pachypoda*).	• Tree cover >60 % (FO). • Deciduous trees >75 % of canopy cover (D). • Sugar maple forest (5). • Beech is co-dominant (-2). • Site conditions and substrate types variable.
FOD7-2/MAS2	Fresh-Moist Ash Lowland Deciduous Forest/Mineral Shallow Marsh	**Canopy cover:** includes red ash (*Fraxinus pennsylvanica*), white elm (*Ulmus americana*), reddish willow (*Salix* X *rubens*), black locust, and Manitoba maple (*Acer negundo*). **Understory cover:** includes common buckthorn, red osier dogwood (*Cornus sericea* ssp. *sericea*), and bitter nightshade (*Solanum dulcamara*). **Ground cover:** includes Canada goldenrod, quack grass (*Elymus repens*), yellowish enchanter's nightshade.	• Tree cover >60 % (FO). • Deciduous trees >75 % of canopy cover (D). • Ash forest (7). • Green or black ash is dominant (2). Inclusion: • Tree and shrub cover <25% with variable flooding regimes (water depth <2m) (MA). • Water up to 2 m deep (MAS). • Mineral soil (2).
OTHER*	Manicured		
M	Manicured grasses and planted shrubs and/or trees	Areas where large expanses of grass/shrubs/trees are maintained and/or planted. **Includes**: white spruce (*Picea glauca*), Austrian pine, bur oak (*Quercus macrocarpa*), and Amur maple (*Acer ginnala*), Morton shining sumac (*Rhus copallinum* var. *latifolia* 'Morton').	

2.3.3 Species at Risk

No plant species that are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act* were encountered during LGL's botanical investigation within the subject area (those plant species regulated as Endangered, Threatened, or Special Concern). A description of provincial species ranks is provided in **Appendix C**.

Two plant species that are considered rare in the Region of Peel were identified within the study area. White spruce (*Picea glauca*) and eastern red cedar (*Juniperus virginiana*) were identified in the manicured areas and as such, are likely planted.

2.4 Wildlife and Wildlife Habitat

Field investigations at the intersection of Derry Road West and Argentia Road, City of Mississauga, were conducted within and directly adjacent to the existing right-of-way way on September 10, 2013. The purpose of the field investigations was to document wildlife and wildlife habitat and to characterize the nature, extent, and significance of animal usage within the study limits.

2.4.1 Wildlife Habitat

Wildlife and wildlife habitat was found to be distributed across the entire study area; however, given the land uses within this area (e.g., commercial development and roads), natural heritage features were generally restricted to several areas. Naturalized areas within the study area consist of a relatively small deciduous forest community that borders the study area north of Derry Road West between Highway 401 and Millcreek Drive. Small inclusions of heavily disturbed natural area were also present southeast of Derry Road West and Argentia Road and north of Argentia Road west of Derry Road West. The remainder of the study area consisted of developed lands or scattered ornamental trees and manicured grassland No significant wildlife movement or passage corridors were identified within the study area.

Overall, natural areas within the study area are restricted to several areas (as identified above), and support a low diversity of wildlife species. Wildlife species identified within the study area are generally considered urban or tolerant of anthropogenic features and disturbance.

2.4.2 Fauna

Based on field observations, a total of nine species of wildlife could be verified in the study area. An additional five wildlife species (4 herpetofauna and one bird) were identified as present within the study area based on a review of secondary source data. The majority of these recordings came from identification (through calls and sightings) of bird species and mammalian observations. A summary of wildlife species documented in the study area during field investigations and through a review of secondary sources is presented in **Table 3**. The City of Mississauga Natural Areas Survey (North-South Environmental 2010) has identified 30 fauna species as being present within the woodlot west of Derry Road. A list of fauna species has not been made available to date. However, a number of these fauna species may be expected to utilize habitats within the study area.

Herpetofauna Species

No herpetofauna species were observed in the study area during LGL's field investigations. A review of secondary source data suggests that four herpetofauna species have been previously identified within the study area (see **Table 3**). Given the highly anthropogenic nature of the lands examined, herpetofauna use of habitats within the study area is expected to be limited.

Bird Species
A total of seven species of birds have been identified within the study area during LGL's field investigations (see **Table 3**). A review of secondary source data suggests that one additional bird species has been previously identified within the study area (see **Table 3**). Bird species identified within the study area are species that typically inhabit open country and urbanized landscapes. The species identified are tolerant of anthropogenic features and disturbance. Cultural meadow communities were found to support bird species such as Mourning Dove (*Zenaida macroura*) and European Starling (*Sturnus vulgaris*). Highly anthropogenic communities, such as manicured grass and commercial areas provide habitat for highly adaptable/introduced species such as Canada Goose (*Branta canadensis*), Killdeer (*Charadrius vociferus*), Cedar Waxwing (*Bombycilla cedrorum*), European Starling, American Crow (*Corvus brachyrhynchos*) and Rock Pigeon (*Columba livia*). Given the highly anthropogenic nature of the lands examined, bird use of habitats within the study area is expected to be limited.

No nests of migratory birds were documented within the study area.

Mammal Species
Two mammal species, Eastern Cottontail and Eastern Grey Squirrel were identified within the study area based on observations during field investigations. The mammal species identified during 2013 field investigations represent an assemblage that readily utilizes human influenced landscapes. No significant mammal movement corridors were identified within the study area.

2.4.3 Species at Risk

Of the 14 wildlife species recorded within the study area (based on field observations and a review of habitat types present), none are regulated under the Ontario *Endangered Species Act*, 2007 (ESA) or the federal *Species at Risk Act* (SARA).

Four species of bird are protected under the *Migratory Birds Convention Act* (MBCA). Both species of mammal and one bird species identified within the study area are offered protection under the *Fish and Wildlife Conservation Act* (FWCA). A single bird species documented within the study area, the killdeer, is considered to be of 'conservation concern' by the Credit Valley Conservation Authority. Though this species is considered to be of conservation concern, its population is secure across the province.

TABLE 3.
WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA

Wildlife	Scientific Name	Common Name	Species Status under Legislation/ Local Sensitivity				Secondary Source[1]
			Federal SARA	Ontario ESA	Local	Legal Status	
Herpetofauna	*Anaxyrus americanus*	American Toad			N/A		*
	Lithobates clamitans	Green Frog			N/A		*
	Lithobates pipiens	Northern Leopard Frog			N/A		*
	Thamnophis sirtalis sirtalis	Eastern Gartersnake			N/A		*
Birds	*Branta canadensis*	Canada Goose			N/A	MBCA	
	Buteo jamaicensis	Red-tailed hawk			N/A	FWCA(P)	*
	Charadrius vociferus	Killdeer			CC	MBCA	
	Corvus brachyhrynchos	American Crow			N/A		
	Columba livia	Rock Pigeon			N/A		
	Zenaida macroura	Mourning Dove			N/A	MBCA	
	Sturnus vulgaris	European Starling			N/A		
	Bombycilla cedrorum	Cedar Waxwing			N/A	MBCA	
Mammals	*Sylvilagus floridanus*	Eastern Cottontail			N/A	FWCA(G)	
	Sciurus carolinensis	Eastern Gray Squirrel			N/A	FWCA(G)	

All acronyms used in this table are defined in Appendix C (Acronyms and Definitions Used in Species Lists).

[1]Species identified as likely to utilize the study area based on a review of secondary source data.

Legislation Referenced in the Table:
SARA – Federal *Species at Risk Act*
ESA – Ontario *Endangered Species Act, 2007*
MBCA – *Migratory Bird Convention Act*
FWCA – *Fish and Wildlife Conservation Act*

Local Ranks:
BSC – Bird Studies Canada, Species of Conservation Priority.
CVC –Credit Valley Conservation Authority – CC= Conservation Concern.

2.5 Designated Natural Areas

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources (OMNR), CVC, the City of Mississauga, and the Region of Peel. A review of the Region of Peel Official Plan (2005) and the City of Mississauga Official Plan (2010) indicates that there are no Provincially Significant Wetlands (PSWs), Areas of Natural and Scientific Interest (ANSIs), or Environmentally Sensitive Areas (ESAs) located within 120 m of the study area. The Mississauga Official Plan (2010) identifies the woodlot west of Derry Road as 'natural areas' of the Natural Areas System.

3.0 PROJECT DESCRIPTION

The proposed improvements to the Derry Road and Argentia Road intersection will address travel demand management, signal timing improvements and infrastructure upgrades. Improvements will include the addition of a new northbound and southbound lane on Argentia Road and a new westbound dual-left turn lane from Derry Road to Argentia Road. Infrastructure improvements will include the extension of existing sidewalks on the north side of the intersection. In addition, improvements will include a 3 m wide Multi-Use Path on the south side of Derry Road between Argentia Road and Highway 401, the existing Multi-Use Path west of Argentia Road will be maintained. The urban cross-section will be maintained.

4.0 IMPACT ASSESSMENT AND ENVIRONMENTAL PROTECTION

4.1 Soils

Soil disturbance within the Derry Road and Argentia Road intersection will occur generally within the existing right-of-way. Impacts resulting from grading operations will be temporary in nature and will affect areas that are already disturbed. Erosion and sedimentation mitigation measures will be implemented prior to and during the construction phase. These control measures will include:

- Limiting the geographical extent and duration that soils are exposed to the elements;
- Implementing standard erosion and sedimentation control measures in accordance with Ontario Provincial Standing Specification (OPSS 577) Construction Specification for Temporary Erosion and Sediment Control Measures and CVC Erosion and Sediment Control Guidelines for Urban Construction. These standard measures include: silt fence placed along the margins of areas of soil disturbance, applying conventional seed and mulch and/or erosion control blanket in areas of soil disturbance to provide adequate and long term slope stabilization; and,
- Managing surface water outside of work areas to prevent water from coming in contact with exposed soils.

Monitoring of these erosion and sedimentation control measures during and after construction will be implemented to ensure their effectiveness. These environmental measures will greatly reduce/minimize adverse environmental impacts.

4.2 Aquatic Habitats and Communities

Two of the watercourses within the vicinity of the study area provide indirect fish habitat. As such, although very unlikely, the works discussed above have the potential to result in "*Serious Harm to Fish*" due to the following effects:

- temporary disruption of site-specific habitat;
- changes to water quality and quantity;
- changes in water temperature; and,
- barriers to fish passage.

4.2.1 Temporary Disruption or Permanent Loss of Site-Specific Habitat

There is no potential for direct impacts to Tributary 1 of Mullet Creek that is located at the southwest end of the study area since there is no work proposed in the water or on watercourse banks.

There is no potential for direct impacts to Tributary 2 of Mullet Creek which is located approximately 30 m north of Highway 401 since there is no work proposed in the water or on watercourse banks.

4.2.2 Temporary Change to Water Quality

The construction associated with the proposed works has the potential to alter water quality through on-site erosion of exposed materials and the subsequent impairment of downstream water quality with sediments and road-related contaminants. Standard erosion and sediment controls (silt fencing, straw bale flow checks, etc.) will be employed to prevent the sediments from reaching the watercourses from exposed soils associated with the construction activities upslope from the streams. Exposed areas will be planted/seeded as soon as possible after construction works have been completed to reduce erosion potential.

4.2.3 Changes in Water Temperature

Due to the distance of the proposed works from the watercourses within the study area, it is anticipated that temperatures will not increase as a result of the proposed works.

4.2.4 Barriers to Fish Passage

No barriers to fish passage will result from this project as no in-water work will occur.

4.3 Vegetation and Vegetation Communities

Improvements to the Derry and Argentia Road intersection have the potential to results in impacts to vegetation and vegetation communities. Effects on vegetation related to these modifications could include:

- Disturbance/displacement of vegetation and vegetation communities
- Displacement of rare, threatened or endangered vegetation or significant vegetation communities.

4.3.1 Disturbance/Displacement of Vegetation and Vegetation Communities

Clearing of vegetation will be required to accommodate the proposed improvements to the intersection of Derry Road and Argentia Road. A total of approximately 0.082 ha (820 m^2) of cultural vegetation communities will be impacted by the proposed intersection improvements, including approximately 0.002 ha (20 m^2) of Dry-Moist Old Field Meadow (CUM1-1) and 0.08 ha (800 m^2) of Mineral Cultural Thicket (CUT1).

Overall, impacts resulting in the loss of vegetation within these cultural communities are considered to be minor. Cultural communities typically persist in areas that are regularly disturbed, and as a result, generally contain a high proportion of invasive and non-native plant species that are tolerant of these conditions. In addition, a total of 0.55 ha (5,500 m^2) of manicured area (i.e., mown lawn with planted trees) in all four quadrants of the intersection will be impacted.

Disturbance to vegetation as a result of the intersection improvements within the study area is considered to be minor since the vegetation located within and adjacent to the rights-of-way are adaptable to regular disturbance activities as a result of existing infrastructure and land-use practices. It is expected that plant species displaced and/or disturbed due to the intersection improvements will re-colonize available lands adjacent to the new right-of-way post-construction. Disturbance activities often serve to promote the established and/or spread of certain plant species such as those disturbance tolerant species identified within the exiting rights-of-way.

4.3.2 Displacement of Rare, Threatened or Endangered Vegetation or Significant Vegetation Communities

As noted in **Section 2.3.3**, no plant species that are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act* were identified within the study area (those plant species regulated as Endangered, Threatened or Special Concern). Two plant species considered rare in Peel Region, white spruce and eastern red cedar were identified within the study area. These two species were planted as amenity features and are not naturally occurring as a result, they should not be considered significant within the study area.

4.4 Wildlife and Wildlife Habitat

The proposed improvements to the intersection of Derry Road and Argentia Road have the potential to result in the displacement of and disturbance to wildlife and wildlife habitat. Effects on wildlife related to these modifications may include:

- displacement of wildlife and wildlife habitat;
- barrier effects on wildlife passage;
- wildlife/vehicle conflicts;
- disturbance to wildlife from noise, light and visual intrusion;
- potential impacts to migratory birds; and
- displacement of rare, threatened or endangered wildlife and significant wildlife habitat.

4.4.1 Displacement of Wildlife and Wildlife Habitat

The improvements to the intersection of Derry Road and Argentia Road will take place within and outside of the existing road right-of-way. The areas potentially impacted by the works described above are dominated by manicured grass with small inclusions of old field meadow and cultural thicket habitat types. The natural heritage features potentially impacted by the intersection improvements consist entirely of disturbed low quality wildlife habitat. These habitats were found to contain a wildlife assemblage which is considered tolerant to human disturbance/anthropogenic influences. Limited negative effects are anticipated as habitats identified within the study area consist entirely of previously modified/disturbed wildlife habitat with low habitat diversity and limited habitat potential. For an analysis of vegetation removal per vegetation (habitat) community refer to **Section 4.3**.

4.4.2 Barrier Effects on Wildlife Passage

From a landscape perspective no new migratory/movement barriers to wildlife will be created as a result of the proposed improvements to the intersection of Derry Road and Argentia Road. Given the highly disturbed nature of the landscape, any wildlife passage/barrier effects are expected to be minor.

4.4.3 Wildlife/Vehicle Conflicts

The improvements to the intersection of Derry and Argentia Road may increase the width of the travelled surface resulting in an increased risk of mortality for wildlife that elects to cross the road. The existing Derry Road and Argentia Road intersection right-of-way poses a potential barrier to wildlife movement. While the increase in width of road increases exposure of wildlife to vehicle conflicts, the potential increase in wildlife mortality above existing conditions is considered minor.

4.4.4 Disturbance to Wildlife from Noise, Light and Visual Intrusion

Noise, light and visual intrusion may alter wildlife activities and patterns. In urban settings, such as the study area, wildlife has become acclimatized to urban conditions and only those fauna that are tolerant of human activities tend to persist. Given that wildlife found within the study area are acclimatized to the presence of road infrastructure and other anthropogenic influences, disturbance to wildlife from any increase in noise, light and visual intrusion are not expected to have any significant adverse effects.

Potential disturbance caused by light pollution from the proposed improvements to the transportation network can be mitigated by using reflectors to focus light beams onto the and away from natural heritage features adjacent to the road.

4.4.5 Potential Impacts to Migratory Birds

A number of bird species listed under the *Migratory Birds Convention Act* (MBCA) are located within the study area. The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. While migratory insectivorous and non-game birds are protected year-round, migratory game birds are only protected from March 10 to September 1. To comply with the requirements of the MBCA, disturbance, clearing or disruption of vegetation where birds may be nesting should be completed outside the window of April 1 to July 31. In the event that these activities must be undertaken from April 1 to July 31, a nest survey will be conducted by a qualified avian biologist to identify and locate active nests of species covered by the MBCA. If an active nest is located, a mitigation plan shall be developed and provided to Environment Canada – Ontario Region for review prior to implementation. No nests of migratory bird species were found under bridge or culvert structures.

4.4.6 Displacement of Rare, Threatened or Endangered Wildlife or Significant Wildlife Habitat

No rare, threatened or endangered wildlife or significant wildlife habitat was documented within the study area.

4.5 Designated Natural Areas

As noted in **Section 2.5**, no Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs) or Provincially Significant Wetlands (PSWs) are located within 120 m of the study limits. The Mississauga Official Plan (2010) identifies the woodlot west of Derry Road as 'natural areas' of the Natural Areas System; no impacts are anticipated to the woodlot.

5.0 MONITORING

To ensure that erosion and sediment controls are installed prior to and maintained during construction, an Erosion and Sediment Control (ESC) Plan will be prepared in accordance with the CVC Erosion and Sediment Control Guideline for Urban Construction (2006). The ESC plan will provide details regarding the inspection, maintenance (e.g. need for repair), and documentation procedures during all stage of construction. An environmental inspector will monitor the site during construction to ensure that construction fencing, tree protection barriers and erosion and sedimentation control measures are installed correctly and function as designed. In addition, the environmental inspector will be responsible for delineating work areas and ensuring that the provisions related to fisheries and watercourse protection are met.

6.0 REFERENCES

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APPENDIX A
PHOTOGRAPHIC RECORD

PROJECT #TA8368
September 2013

PHOTO APPENDIX
Derry Road and Argentia Road

LGL LIMITED
environmental research associates

Tributary 1 of Mullet Creek: Looking east (downstream) from Derry Road.

Tributary 1 of Mullet Creek: Looking west (upstream) towards the pipe outlet.

Tributary 1 of Mullet Creek: Looking east (downstream) along the channel from East of Derry Road.

Tributary 1 of Mullet Creek: Outlet of pipe.

Tributary 1 of Mullet Creek: Looking east (downstream) towards Derry Road. (note: no culvert inlet was observed, likely piped underground).

Tributary 1 of Mullet Creek: Looking west (upstream) from west of Derry Road.

PROJECT #TA8368
September 2013

PHOTO APPENDIX
Derry Road and Argentia Road

LGL LIMITED
environmental research associates

Tributary 2 of Mullet Creek: Overlooking pipe inlet approximately 30 m west of Derry Road.

Tributary 2 of Mullet Creek: Overlooking pipe inlet approximately 30 m west of Derry Road.

Tributary 2 of Mullet Creek: Looking west (upstream) from upstream of the pipe inlet.

APPENDIX B
VASCULAR PLANT LIST

APPENDIX B.
VASCULAR PLANT LIST

	Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Peel-Riley	Peel - Varga	Peel CVC	CUM1-1	CUT1	FOD5-2	FOD7-2/MAS2	Manicured
	PINACEAE	**PINE FAMILY**												
*	*Picea abies*	Norway spruce	G?	SE3			X	X		X				
	Picea glauca	white spruce	G5	S5			X	R3						X
*	*Picea pungens*	Colorado spruce	G5	SE1										X
*	*Pinus nigra*	Austrian pine	G?	SE2						X	X			X
	CUPRESSACEAE	**CEDAR FAMILY**												
	Juniperus virginiana	eastern red cedar	G5	S5					Rare	X				X
	RANUNCULACEAE	**BUTTERCUP FAMILY**												
	Actaea pachypoda	white baneberry	G5	S5			X	X				X		
	Actaea rubra	red baneberry	G5	S5			X	X				X		
	ULMACEAE	**ELM FAMILY**												
	Ulmus Americana	white elm	G5?	S5			X	X			X		X	
*	*Ulmus pumila*	Siberian elm	G?	SE3			X	X			X			
	FAGACEAE	**BEECH FAMILY**												
	Fagus grandifolia	American beech	G5	S5			X	X				X		
	Quercus macrocarpa	bur oak	G5	S5			X	X						X
	POLYGONACEAE	**SMARTWEED FAMILY**												
*	*Rumex crispus*	curly-leaf dock	G?	SE5			X	X		X				
	GUTTIFERAE	**ST. JOHN'S-WORT FAMILY**												
*	*Hypericum perforatum*	common St. John's-wort	G?	SE5			X	X		X				
	TILIACEAE	**LINDEN FAMILY**												
*	*Tilia cordata*	small leaf linden	G?	SE1										X

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VASCULAR PLANT LIST

	Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Peel-Riley	Peel - Varga	Peel CVC	CUM1-1	CUT1	FOD5-2	FOD7-2/MAS2	Manicured
	SALICACEAE	**WILLOW FAMILY**												
	Populus deltoides ssp. *deltoids*	eastern cottonwood	G5T?	SU			X Nat					X		
*	*Salix* X *rubens*	reddish willow	HYB	SE4				XSR					X	
	BRASSICACEAE	**MUSTARD FAMILY**												
*	*Alliaria petiolata*	garlic mustard	G5	SE5			X	X				X	X	
*	*Hesperis matronalis*	dame's rocket	G4G5	SE5			X	X		X	X	X	X	
	ROSACEAE	**ROSE FAMILY**												
	Fragaria virginiana ssp. *virginiana*	scarlet strawberry	G5T?	SU			X	X		X				
	Geum sp.	Avens										X		
*	*Malus pumila*	common apple	G5	SE5			X	X		X	X			
	Potentilla simplex	old-field cinquefoil	G5	S5			X	U		X				
	Prunus serotina	black cherry	G5	S5			X	X				X		
	FABACEAE	**PEA FAMILY**												
	Gleditsia triacanthos	honey locust	G5	S2			XINT	X						X
*	*Lotus corniculatus*	bird's-foot trefoil	G?	SE5			X	X		X				
*	*Melilotus alba*	white sweet-clover	G?	SE5			X	X		X				
*	*Melilotus officinalis*	yellow sweet-clover	G?	SE5			X	X		X				
*	*Robinia pseudo-acacia*	black locust	G5	SE5			X	X		X	X		X	X
	ELAEAGNACEAE	**OLEASTER FAMILY**												
*	*Elaeagnus angustifolia*	Russian olive	G?	SE3			X	X		X				
	LYTHRACEAE	**LOOSESTRIFE FAMILY**												

APPENDIX B.
VASCULAR PLANT LIST

	Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Peel-Riley	Peel - Varga	Peel CVC	CUM1-1	CUT1	FOD5-2	FOD7-2/MAS2	Manicured
*	*Lythrum salicaria*	purple loosestrife	G5	SE5			X	X					X	
	ONAGRACEAE	**EVENING-PRIMROSE FAMILY**												
	Circaea lutetiana ssp. *canadensis*	yellowish enchanter's nightshade	G5T5	S5			X	X				X	X	
	CORNACEAE	**DOGWOOD FAMILY**												
	Cornus sericea ssp. *sericea*	red-osier dogwood	G5	S5			X	X					X	
	RHAMNACEAE	**BUCKTHORN FAMILY**												
*	*Rhamnus cathartica*	common buckthorn	G?	SE5			X	X		X	X	X	X	
	VITACEAE	**GRAPE FAMILY**												
	Vitis riparia	riverbank grape	G5	S5			X	X		X		X		
	ACERACEAE	**MAPLE FAMILY**												
*	*Acer ginnala*	amur maple	G?	SE1				XSR						X
	Acer negundo	Manitoba maple	G5	S5			X	X				X	X	
*	*Acer platanoides*	Norway maple	G?	SE5			X	X						X
	Acer saccharum var. *saccharum*	sugar maple	G5T?	S5			X	X			X	X		
	Acer X *freemanii*	freeman's maple						XSR		X				
	ANACARDIACEAE	**SUMAC FAMILY**												
	Rhus copallinum var. *latifolia* 'Morton'	Morton shining sumac												X
	Rhus hirta	staghorn sumac	G5	S5			X	X			X			
	APIACEAE	**PARSLEY FAMILY**												
*	*Daucus carota*	wild carrot	G?	SE5			X	X		X				
	ASCLEPIADACEAE	**MILKWEED FAMILY**												

APPENDIX B.
VASCULAR PLANT LIST

	Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Peel-Riley	Peel - Varga	Peel CVC	CUM1-1	CUT1	FOD5-2	FOD7-2/MAS2	Manicured
*	*Cynanchum rossicum*	swallow-wort	G?	SE5			SR	X			X		X	
	SOLANACEAE	**POTATO FAMILY**												
*	*Solanum dulcamara*	bitter nightshade	G?	SE5			X	X					X	
	HYDROPHYLLACEAE	**WATER-LEAF FAMILY**												
	Hydrophyllum virginianum	Virginia water-leaf	G5	S5			X	X				X	X	
*	*Echium vulgare*	blueweed	G?	SE5			X	X		X				
*	*Plantago lanceolata*	ribgrass	G5	SE5			X	X		X				
	OLEACEAE	**OLIVE FAMILY**												
	Fraxinus Americana	white ash	G5	S5			X	X				X		
	Fraxinus pennsylvanica	red ash	G5	S5			X	X					X	X
*	*Syringa vulgaris*	common lilac	G?	SE5			X	X						X
	SCROPHULARIACEAE	**FIGWORT FAMILY**												
*	*Linaria vulgaris*	butter-and-eggs	G?	SE5			X	X		X				
	CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**												
*	*Lonicera tatarica*	Tartarian honeysuckle	G?	SE5			X	X					X	
	DIPSACACEAE	**TEASEL FAMILY**												
*	*Dipsacus fullonum* ssp. *sylvestris*	wild teasel	G?T?	SE5			X	X		X				
	ASTERACEAE	**ASTER FAMILY**												
	Ambrosia artemisiifolia	common ragweed	G5	S5			X	X			X			
*	*Arctium lappa*	great burdock	G?	SE5			X	X		X				
	Aster ericoides var. *ericoides*	white heath aster	G5T?	S5			X			X				
*	*Cichorium intybus*	chicory	G?	SE5			X	X		X				

APPENDIX B.
VASCULAR PLANT LIST

	Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Peel-Riley	Peel - Varga	Peel CVC	CUM1-1	CUT1	FOD5-2	FOD7-2/MAS2	Manicured
*	*Cirsium vulgare*	bull thistle	G5	SE5			X	X		X				
	Euthamia graminifolia	flat-topped bushy goldenrod	G5	S5				X		X				
*	*Hieracium caespitosum*	field hawkweed		SE5			X	X		X				
	Solidago Canadensis	Canada goldenrod	G5	S5			X	X		X	X		X	
	Symphyotrichum novae-angliae	New England aster	G5	S5			X	X		X				
*	*Tragopogon dubius*	doubtful goat's-beard	G?	SE5			X	X		X				
	ARACEAE	**ARUM FAMILY**												
	Arisaema triphyllum ssp. *triphyllum*	small jack-in-the-pulpit	G5T5	S5			X	X				X		
	LEMNACEAE	**DUCKWEED FAMILY**												
	Lemna minor	lesser duckweed	G5	S5			X	X					X	
	POACEAE	**GRASS FAMILY**												
*	*Elymus repens*	quack grass	G?	SE5			X	X		X			X	
*	*Phleum pretense*	timothy	G?	SE5			X	X		X				
	Phragmites australis	common reed	G5	S5			X	X					X	
	Poa pratensis ssp. *Pratensis*	Kentucky bluegrass	G5T	S5			X	X		X				
	Poa sp.	blue grass												X
*	*Setaria viridis*	green foxtail	G?	SE5			X			X				
	TYPHACEAE	**CATTAIL FAMILY**												
	Typha latifolia	broad-leaved cattail	G5	S5			X	X					X	
	LILIACEAE	**LILY FAMILY**												
*	*Hemerocallis fulva*	orange day-lily	G?	SE5			X							X
	Polygonatum pubescens	hairy Solomon’s seal	G5	S5			X	X				X		

APPENDIX B.
VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Peel-Riley	Peel - Varga	Peel CVC	CUM1-1	CUT1	FOD5-2	FOD7-2/MAS2	Manicured
Trillium sp.	trillium										X		

* Non-native species
x present

Refer to **Appendix C** for species rank definitions.

APPENDIX C
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

APPENDIX X
ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

Species Rank

GRANK Global Rank

Global ranks are assigned by a consensus of the network of Conservation Data Centres, scientific experts, and The Nature Conservatory to designate a rarity rank based on the range-wide status of a species, subspecies or variety.

The most important factors considered in assigning global ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria include the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

Short Form	Definition
G1	**Extremely rare;** usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2	**Very rare;** usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3	**Rare to uncommon**; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4	**Common**; usually more than 100 occurrences; usually not susceptible to immediate threats.
G5	**Very common**; demonstrably secure under present conditions.
GH	Historic, no records in the past 20 years.
GU	Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GX	Globally extinct. No recent records despite specific searches.
?	Denotes inexact numeric rank (i.e. G4?).
G	A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.
G?	Unranked**,** or, if following a ranking, rank tentatively assigned (e.g. G3?).
Q	Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
T	Denotes that the rank applies to a subspecies or variety.

SRANK Provincial Rank

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually.

Short Form	Definition
S1	**Critically Imperiled** in Ontario because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.
S2	**Imperiled** in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurrences) steep declines or other factors making it very vulnerable to extirpation.

SRANK **Provincial Rank**

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually.

Short Form	Definition
S3	**Vulnerable** in Ontario due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	**Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5	**Secure**—Common, widespread, and abundant in Ontario.
SX	**Presumed Extirpated** – Species or community is believed to be extirpated from Ontario.
SH	**Possibly Extirpated** – Species or community occurred historically in Ontario and there is some possibility that it may be rediscovered.
SNR	**Unranked**—Conservation status in Ontario not yet assessed
SU	**Unrankable**—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA	**Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#	**Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

COSEWIC **Committee on the Status of Endangered Wildlife in Canada**

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species that are considered to be at risk in Canada.

Status	Definition
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)	A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

COSSARO/OMNR **Committee on the Status of Species at Risk in Ontario/Ontario Ministry of Natural Resources**

The Committee on the Status of Species at Risk in Ontario (COSSARO)/Ontario Ministry of Natural Resources (OMNR) assesses the provincial status of wild species that are considered to be at risk in Ontario.

Status	Definition
Extinct (EXT)	A species that no longer exists anywhere.
Extirpated (EXP)	A species that no longer exists in the wild in Ontario but still occurs elsewhere.
Endangered (Regulated) (END–R)	A species facing imminent extinction or extirpation in Ontario which has be regulated under Ontario's *Endangered Species Act*.
Endangered (END)	A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's *Endangered Species Act*.
Threatened (THR)	A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
Special Concern (SC)	A species with characteristics that make it sensitive to human activities or natural events.
Not at Risk (NAR)	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)	A species for which there is insufficient information for a provincial status recommendation.

Species Status under Federal Legislation

MBCA **Migratory Birds Convention Act**

The Canada *Migratory Birds Convention Act* provides for the protection of migratory birds in Canada and the United States. The provisions of this Act are implemented through the Migratory Bird Regulations.

Bird species that are regulated under the *Migratory Birds Convention Act* are noted in the applicable species lists.

SARA **Species at Risk Act**

The Canada *Species at Risk Act* provides a framework for actions across Canada to ensure the survival of wildlife species and the protection of our natural heritage. It sets out how to decide which species are a priority for action and what to do to protect a species. It identifies ways governments, organizations and individuals can work together, and it establishes penalties for a failure to obey the law. Regulated species are listed in Schedules 1, 2 and 3 of the Act.

Schedule 1 SARA (1)	Species that are currently covered under the Act.
Schedule 2 SARA (2)	Species that are endangered or threatened that have not been re-assessed by COSEWIC for inclusion on Schedule 1.
Schedule 3 SARA (3)	Species that are of special concern that have not yet been re-assessed by COSEWIC for inclusion on Schedule 1.

Species Status under Provincial Legislation

ESA Endangered Species Act

The Ontario *Endangered Species Act* provides for the conservation, protection, restoration and propagation of species of fauna and flora of the Province of Ontario that are threatened with extinction. Regulated species are listed in Ontario Regulation 338.

Schedule No.	Short Form	Status
Schedule 1 ESA (1)	EXT	The species of flora and fauna listed in Schedule 1 are declared to be threatened with extinction.
Schedule 2 ESA (2)	EXP	The species of flora and fauna listed in Schedule 2 are declared to be extirpated.
Schedule 3 ESA (3)	END	The species of flora and fauna listed in Schedule 3 are declared to be endangered.
Schedule 4 ESA (4)	THR	The species of flora and fauna listed in Schedule 4 are declared to be threatened.
Schedule 5 ESA (5)	SC	The species of flora and fauna listed in Schedule 5 are declared to be special concern.

FWCA Fish and Wildlife Conservation Act

The Ontario *Fish and Wildlife Conservation Act* outlines the restrictions for hunting, trapping and fishing; handling of live wildlife; sale, purchase and transport of wildlife; and, licences that can be secured under the Act. Under Schedules 1 to 11 of the Act, wildlife are grouped for the purpose of regulating these species. These schedules are further defined below.

Note: where there is a conflict between this Act and the Ontario *Endangered Species Act*, the provision with the most protection will prevail (s. 2 of the *Fish and Wildlife Conservation Act*).

Schedule No.	Short Form	Status
Schedule 1	Furbearing – M	The species of fauna listed in Schedule 1 are declared to be furbearing mammals.
Schedule 2	Game – M	The species of fauna listed in Schedule 2 are declared to be game mammals.
Schedule 3	Game – B	The species of fauna listed in Schedule 3 are declared to be game birds.
Schedule 4	Game – R	The species of fauna listed in Schedule 4 are declared to be game reptiles.
Schedule 5	Game – A	The species of fauna listed in Schedule 5 are declared to be game amphibians.
Schedule 6	Specially Protected – M	The species of fauna listed in Schedule 6 are declared to be specially protected mammals.
Schedule 7	Specially Protected – R	The species of fauna listed in Schedule 7 are declared to be specially protected birds (raptors).
Schedule 8	Specially Protected – B	The species of fauna listed in Schedule 8 are declared to be specially protected birds (other than raptors).
Schedule 9	Specially Protected – R	The species of fauna listed in Schedule 9 are declared to be specially protected reptiles.
Schedule 10	Specially Protected – A	The species of fauna listed in Schedule 10 are declared to be specially protected amphibians.
Schedule 11	Specially Protected – I	The species of fauna listed in Schedule 11 are declared to be specially protected invertebrates.

Local Species Status

Local Status:

Credit Valley Conservation Authority Species list (2002), Peel (Varga *et al.* 2000; Riley 1999).

CVC (Peel)		Peel	
Rare	A species that occurs at fewer than 11 locations in Peel	Nat	Naturalized
		Int	Introduced
		R	Rare
		U	Uncommon

BSC Bird Studies Canada

The Bird Studies Canada *Conservation Priorities for the Birds of Southern Ontario* (1999), based on work completed by Bird Studies Canada, the Canadian Wildlife Service and the MNR identifies bird species of high conservation priority. This list was prepared to assist municipalities in identifying significant natural heritage features, through using the information regarding the presence of birds of conservation priority in their municipality.

Birds of conservation priority have been noted (BSC) in the appropriate species lists.