

# **NATURAL HERITAGE REPORT - EXISTING CONDITIONS**

**IMPROVEMENTS TO REST ACRES ROAD  
FROM KING EDWARD STREET TO HIGHWAY 403  
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT STUDY**

*prepared for:*



*prepared by:*



**SEPTEMBER 2011**

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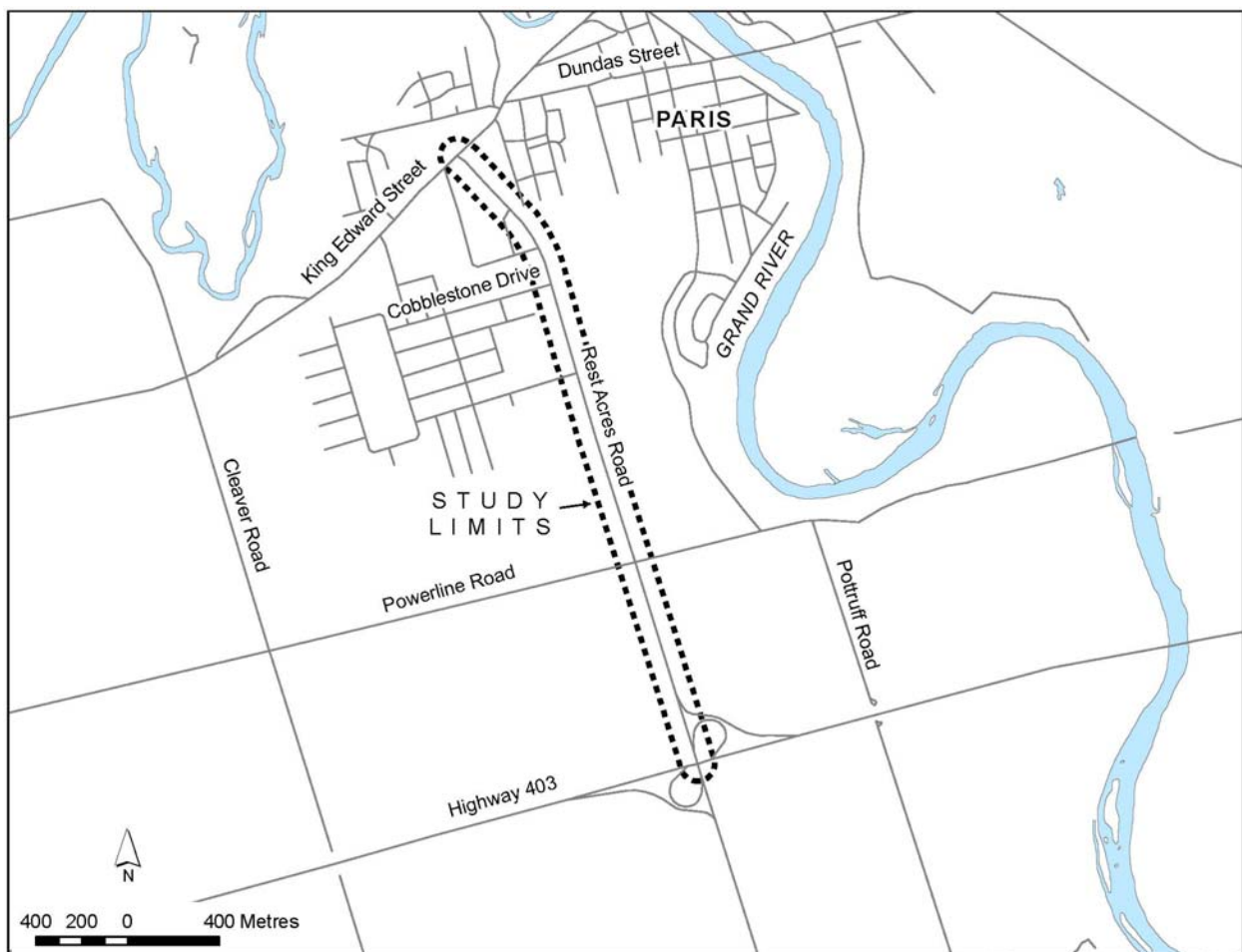
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## 1.0 INTRODUCTION

The County of Brant is undertaking a Schedule “C” Municipal Class Environmental Assessment (Class EA) Study for improvements to Rest Acres Road in Paris, Ontario. The purpose of the Class EA Study is to determine the recommended solution to provide enhanced capacity on Rest Acres Road to accommodate future growth in southwest Paris, as recommended by the County of Brant Transportation Master Plan (2008). The study area is defined as the section of Rest Acres Road from King Edward Street to Highway 403. The study limits are presented in **Figure 1**.

This Class EA is being conducted by IBI Group on behalf of the County of Brant. LGL Limited, as a sub-consultant to IBI Group, is providing natural heritage services. This Natural Heritage Report – Existing Conditions documents the results of data collection and analysis in the summer of 2011. The potential effects of this project on natural heritage, including environmental protection measures, will be presented in a final Natural Heritage Report.



**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 Horseshoe Moraines physiographic region, which extends in a horseshoe-shape through a large portion of southwestern Ontario. The “toe” of the horseshoe is in the high plateau of central Grey County and the two limbs of the horseshoe extend to the southwest, parallel to the Lake Huron shoreline, into Lambton County and to the south and southwest, through Caledon, to south of London. The horseshoe toe, the highest point of this physiographic region, is about 540 metres above sea level and the horseshoe heels are each about 390 metres above sea level. The Horseshoe Moraines predominately consist of two main types of landforms: (1) stony knobs and ridges composed mainly of till and gravel deposits (kames), and (2) pitted sand and gravel terraces and swampy valley floors (Chapman and Putnam 1984).

The soils in the study area are classified as Guelph Soils, Urban Land, and Wilsonville Soils. The study limits north of Powerline Road are classified as Urban Land and this encompasses approximately two-thirds of the study area. The soils of the study limits south of Powerline Road, the remaining one-third of the study area, are classified as Guelph Soils and Wilsonville Soils (Acton 1989).

#### **2.1.1 Guelph Soils**

Guelph Soils consist of loam glacial till materials and are well-drained. Within the study area, the topography consists of a regular surface with gently sloping grades of 3-6%. Guelph Soils are good agricultural soils for field crops such as grain corn, hay, winter wheat, spring grains, and soybeans (Acton 1989).

#### **2.1.2 Urban Land**

As described above, the lands north of Powerline Road are identified as a Miscellaneous Land Unit, Urban Land. This classification includes urban land uses, such as built up areas, parks, among others (Acton 1989).

#### **2.1.3 Wilsonville Soils**

Wilsonville Soils consist of gravelly sandy loam glacial till materials and have rapid drainage. Within the study limits, the topography consists of an irregular surface with moderately sloping grades of 6-12%. Wilsonville soils are moderately good agricultural soils that are often used for grain corn, hay, and pasture, but are often limited by moisture deficiencies, stoniness, and, if present, steep slopes (Acton 1989).

## **2.2 Aquatic Habitats and Communities**

The study area is located in the Grand River watershed and is within Grand River Conservation Authority (GRCA) and Ministry of Natural Resources (MNR) Guelph District jurisdiction. According to Grand River Conservation Authority Interactive Mapping, portions of the study area are within the Regulation Limit of the Grand River. Ontario Base Mapping data illustrates one first order watercourse near the intersection of Rest Acres Road and Powerline Road.

Based on a review of the *Distribution of Fish Species at Risk and Distribution of Mussel Species at Risk* published by Fisheries and Oceans Canada, Ministry of Natural Resources and Grand River Conservation Authority (2011), there are no aquatic species at risk records within the study area.

LGL conducted a survey of aquatic habitat on August 17, 2011 to characterize the aquatic habitat within the study area. The fish habitat was assessed approximately 50 m upstream and 100 m downstream of each feature, where applicable. 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. Habitat conditions were noted in the field and representative photographs were taken. **Figure 2** presents the location of drainage features and a summary of the aquatic habitat is presented below. Photos of the drainage features are provided in **Appendix A**.

### **2.2.1 Feature 1**

This drainage feature conveys flows along the northeast right-of-way of Rest Acres Road near King Edward Street. The channel is a trapezoidal vee-ditch with manicured grass and drains into a catch basin at the intersection with King Edward Street. This drainage feature is documented in photographs 1-3 of **Appendix A**. This ditch does not provide aquatic habitat and was dry during the site investigation. This feature is not mapped as a watercourse by GRCA. Residential neighbourhood surrounds this feature.

### **2.2.2 Feature 2**

Feature 2 appears to be a Storm Water Management (SWM) pond servicing the residential neighbourhood to the north and is situated outside of the Rest Acres Road right-of-way. Outfalls in the vicinity of Rest Acres Road were not noted. Although permanent standing water appears evident, and emergent vegetation present, it is unlikely this feature is considered fish habitat by GRCA. Feature 2 is presented on Photo 4 of **Appendix A**.

### **2.2.3 Feature 3**

The watercourse at Feature 3 crosses Rest Acres Road through an approximately 1.0 m diameter corrugated steel pipe (CSP) culvert from west to east approximately 100 m north of Powerline Road. Water was not evident during the site investigation. Agricultural practices downstream of Powerline Road plough through the drainage feature. Channel definition is not evident nor was a swale discernable. Crops (soy) were consistent in appearance throughout the area, suggesting that the feature is dry through most of the year.

A notable slope was observed from Rest Acres Road to Mile High Road (north east of study area), with a higher gradient from Mile High Road to the Grand River. It is highly unlikely that fish would have an opportunity to migrate into the study area from the Grand River.

### **2.2.4 Species at Risk**

No aquatic species at risk are known to inhabit the drainage features within this study area. However, drainage features located within the study area convey flows to the Grand River downstream where several aquatic species at risk occur. This should be considered when designing erosion and sediment controls to protect downstream habitat degradation during construction.

## 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 along Rest Acres Road, from just south of King Edward Street to just north of the Highway 403 interchange, was conducted August 19, 2011 within the road rights-of-way and adjacent habitat, to the extent possible. The field investigation was carried out to ground truth the boundaries of the vegetation communities and to conduct a vegetation 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 1999) and for Hamilton-Brant (Riley 1989). Vascular plant nomenclature follows Newmaster *et al.* (1998) with a few exceptions that have been updated to Newmaster *et al.* (2007).

### 2.3.1 Vegetation Communities

Vegetation communities located within the study area consist of a mixture of cultural communities. The limits of the study area include portions of vegetation communities that are already in a disturbed state as a result of the existing roadways. 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.

Two community types were identified within the study limits during the vegetation survey. The community types include: Dry-Moist Old Field Meadow (CUM1-1) and Norway Spruce- European Larch Coniferous Plantation (CUP3-9). 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 1**.

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, and agricultural fields (Ag). Both of these areas are noted on **Figure 2**.

### 2.3.2 Flora

A total of 97 plant species have been recorded within the study area. Of the 97 plant species identified, 32 (33%) plant species identified are native to Ontario and 65 (67%) plant species are considered introduced and non-native to Ontario. A list of vascular plants is presented in **Appendix B** which includes a description of regional and local species of concern.

### 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* (those plant species regulated as Special Concern, Endangered, Threatened) were encountered during LGL's botanical investigation within the subject area. A description of provincial species ranks is provided in **Appendix C**.

**TABLE 1.**  
**SUMMARY OF ECOLOGICAL LAND CLASSIFICATION VEGETATION COMMUNITIES**

ELC Code	Vegetation Type	Species Association	Community Characteristics
<b>TERRESTRIAL – CULTURAL</b>			
CUM	Cultural Meadow		
CUM1-1 (a to h)	Dry-Moist Old Field Meadow	<p><b>Canopy:</b> includes black walnut (<i>Juglans nigra</i>), Scotch pine (<i>Pinus sylvestris</i>), black locust (<i>Robinia pseudoacacia</i>), and Manitoba maple (<i>Acer negundo</i>).</p> <p><b>Understory:</b> includes riverbank grape (<i>Vitis riparia</i>), white mulberry (<i>Morus alba</i>), and black walnut.</p> <p><b>Ground cover:</b> includes Canada thistle (<i>Cirsium arvense</i>), common milkweed (<i>Asclepias syriaca</i>), common yarrow (<i>Achillea millefolium</i> ssp. <i>millefolium</i>), and tufted vetch (<i>Vicia cracca</i>).</p>	<ul style="list-style-type: none"> <li>• Cultural community resulting from, or maintained by, cultural or anthropogenic-based disturbance (CU).</li> <li>• Tree cover and shrub cover &lt; 25 % (M).</li> <li>• Parent mineral material or mineral soil (1).</li> <li>• This community can occur on a wide range of soil moisture regimes (Dry-Moist). Grasses and forbs are dominant (-1).</li> </ul>
CUP	Cultural Plantation		
CUP3-9	Norway Spruce-European Larch Coniferous Plantation	<p><b>Canopy:</b> includes black walnut, Norway spruce (<i>Picea abies</i>), white spruce (<i>Picea glauca</i>), Manitoba maple, and white pine (<i>Pinus strobus</i>).</p> <p><b>Understory:</b> includes riverbank grape, Manitoba maple, common buckthorn (<i>Rhamnus cathartica</i>), and black walnut.</p> <p><b>Ground cover:</b> includes garlic mustard (<i>Alliaria petiolata</i>), yellowish enchanter's nightshade (<i>Circaea lutetiana</i> ssp. <i>canadensis</i>), false Solomon's seal (<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>), and Canada goldenrod (<i>Solidago canadensis</i>).</p>	<ul style="list-style-type: none"> <li>• Cultural community resulting from, or maintained by, cultural or anthropogenic-based disturbance (CU).</li> <li>• Tree cover &gt; 50% (P).</li> <li>• Coniferous tree species &gt;75% of canopy cover (3).</li> <li>• Community dominated by Norway spruce (-9).</li> </ul>
Other*	Manicured		
M	Manicured grasses and planted shrubs and/or trees	<p>Areas where large expanses of grass/shrubs/trees are maintained and/or planted.</p> <p><b>Planted trees/shrubs:</b> include sugar maple (<i>Acer saccharum</i> var. <i>saccharum</i>), black walnut, and Norway maple (<i>Acer platanoides</i>).</p> <p><b>Grasses:</b> include Kentucky bluegrasses (<i>Poa pratensis</i> ssp. <i>pratensis</i>).</p>	

\*- not an Ecological Land Classification vegetation community, as defined in Lee, et al., 1998.



**FIGURE 2. REST ACRES ROAD FROM KING EDWARD STREET TO HIGHWAY 403 NATURAL HERITAGE EXISTING CONDITIONS**

## 2.4 Wildlife and Wildlife Habitat

Field investigations along Rest Acres Road from King Edward Street to Highway 403, County of Brant, were conducted within and directly adjacent to the right-of-way on August 17, 2011 to document wildlife and wildlife habitat and to characterize the nature, extent, and significance of animal usage within the project limits. Direct observations, calls, tracks, scats, and runways were used to record wildlife present within the study area. Weather conditions on August 17, 2011 included partly clouded skies and light wind with a temperature of 25° C.

### 2.4.1 Wildlife Habitat

Wildlife and wildlife habitat was found to be distributed across the entire study area, however given the cleared landscape practices (agriculture and development) and disturbed nature of the study area, natural heritage features were generally restricted to several areas. These included: small inclusions of cultural meadow, coniferous forest plantation and a storm pond situated east of Cedar Street. These natural areas provide the most suitable wildlife habitat in the study area; however, only a small assemblage of bird and mammal species was documented within these habitats.

Natural areas within the study area are fragmented from surrounding natural areas by the presence of roads and cleared agricultural lands. No significant wildlife habitat or passage corridors were identified within the lands examined. This disturbed landscape supports minimal natural heritage features, resulting in the presence of wildlife species generally considered urban or tolerant of anthropogenic features and disturbance.

### 2.4.2 Fauna

Based on field observations, eight species of wildlife could be verified in the study area and the majority of these recordings came from mammalian signs or identification (through calls and sightings) of bird species. However, by comparing the natural heritage features found in the study area with secondary source information that describes wildlife previously recorded within this region, there is potential for a total of 36 wildlife species (**Table 2**).

A total of seven species of birds were observed in the study area during field investigations. Based on the habitat types present in the study area and secondary source information, an additional 17 species of birds are likely to inhabit the study area. Small inclusions of cultural meadow habitat associated with agricultural lands adjacent to Rest Acres Road provide habitat for bird species such as Eastern Kingbird (*Tyrannus tyrannus*) and American Goldfinch (*Carduelis tristis*).

The coniferous forest found east of Rest Acres Road approximately 600 m south of King Edward Street, provides low quality habitat but species such as Black-capped Chickadee (*Poecile atricapillus*), American Crow (*Corvus brachyrhynchos*) and White-breasted Nuthatch (*Sitta carolinensis*) would be found within these forested communities.

Highly anthropogenic communities, such as manicured grass and residential areas provide habitat for highly adaptable species such as American Robin (*Turdus migratorius*), European Starling (*Sturnus vulgaris*), and Rock Dove (*Columba livia*). Agricultural lands provide habitat for species such as Savannah Sparrow (*Passerculus sandwichensis*) and Song Sparrow (*Melospiza melodia*). The storm pond near the north limit of the study area provides potential nesting habitat for the Mallard (*Anas platyrhynchos*) and Red-winged Blackbird (*Agelaius phoeniceus*).

**TABLE 2.**  
**WILDLIFE SPECIES DOCUMENTED IN STUDY AREA**

Wildlife	Scientific Name	Common Name	ESA <sup>2</sup>	SARA <sup>2</sup>	Local <sup>1</sup>	Legal Status <sup>2</sup>	Others
<b>Herpetofauna</b>	<i>Bufo Americanus</i>	American Toad					*
	<i>Thamnophis sirtalis</i>	Eastern Garter Snake					*
<b>Birds</b>	<i>Anas platyrhynchos</i>	Mallard				MBCA	*
	<i>Charadrius vociferus</i>	Killdeer				MBCA	*
	<i>Columba livia</i>	Rock Dove					
	<i>Zenaida macroura</i>	Mourning Dove				MBCA	*
	<i>Picoides pubescens</i>	Downy Woodpecker				MBCA	*
	<i>Picoides villosus</i>	Hairy Woodpecker				MBCA	*
	<i>Tyrannus tyrannus</i>	Eastern Kingbird			BSC	MBCA	*
	<i>Cyanocitta cristata</i>	Blue Jay				FWCA(P)	*
	<i>Corvus brachyrhynchos</i>	American Crow					
	<i>Poecile atricapilla</i>	Black-capped Chickadee			BSC	MBCA	
	<i>Sitta carolinensis</i>	White-breasted Nuthatch				MBCA	*
	<i>Troglodytes aedon</i>	House Wren				MBCA	*
	<i>Turdus migratorius</i>	American Robin				MBCA	*
	<i>Sturnus vulgaris</i>	European Starling					
	<i>Bombycilla cedrorum</i>	Cedar Waxwing				MBCA	
	<i>Spizella passerina</i>	Chipping Sparrow				MBCA	*
	<i>Passerculus sandwichensis</i>	Savannah Sparrow			BSC	MBCA	*
	<i>Melospiza melodia</i>	Song Sparrow				MBCA	*
	<i>Cardinalis cardinalis</i>	Northern Cardinal				MBCA	
	<i>Agelaius phoeniceus</i>	Red-winged Blackbird					*
<i>Quiscalus quiscula</i>	Common Grackle					*	
<i>Molothrus ater</i>	Brown-headed Cowbird					*	
<i>Carduelis tristis</i>	American Goldfinch			BSC	MBCA		
<i>Passer domesticus</i>	House Sparrow					*	

**TABLE 2.**  
**WILDLIFE SPECIES DOCUMENTED IN STUDY AREA**

<b>Wildlife</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>ESA<sup>2</sup></b>	<b>SARA<sup>2</sup></b>	<b>Local<sup>1</sup></b>	<b>Legal Status<sup>2</sup></b>	<b>Others</b>
<b>Mammals</b>	<i>Didelphis virginiana</i>	Virginia Opossum				FWCA(F)	*
	<i>Sylvilagus floridanus</i>	Eastern Cottontail				FWCA(G)	*
	<i>Sciurus carolinensis</i>	Gray Squirrel				FWCA(G)	*
	<i>Microtus pennsylvanicus</i>	Meadow Vole					*
	<i>Ondatra zibethica</i>	Muskrat				FWCA(F)	*
	<i>Canis latrans</i>	Coyote				FWCA(F)	*
	<i>Vulpes vulpes</i>	Red Fox				FWCA(F)	*
	<i>Procyon lotor</i>	Raccoon				FWCA(F)	
	<i>Mephitis mephitis</i>	Striped Skunk				FWCA(F)	*
<i>Odocoileus virginianus</i>	White-tailed Deer				FWCA(G)	*	

\*Species identified as likely to utilize the study area based on an analysis of existing habitat and secondary sources.

<sup>1</sup>BSC – Bird Studies Canada Species of Conservation Priority.

<sup>2</sup>A description of federal and provincial species ranks is provided in **Appendix C**.

Four priority species for conservation were identified based on field observation or secondary source review, including Black-capped Chickadee, Eastern Kingbird (*Tyrannus tyrannus*), Savannah Sparrow and American Goldfinch. Within the study area, these species would be found within cultural meadow, deciduous and coniferous forest, agricultural lands, and residential areas, as described above.

A single mammal species, the raccoon (*Procyon lotor*) was directly observed during field investigations in the study area. Based on the habitat types present and secondary source information, nine additional species are likely to inhabit the study area. The mammal species documented represent an assemblage that readily utilizes human influenced landscapes. No significant mammal habitat or movement corridors were identified within the study area.

No herpetofauna species were observed in the study area during field investigations. Based on the habitats present and secondary source information, two species of herpetofauna are likely to inhabit the study area. Cultural meadow, agricultural lands and the storm pond found within the study area may provide habitat for high adaptable herpetofauna species such as American Toad (*Bufo americanus*) and Eastern Gartersnake (*Thamnophis sirtalis*). No significant herpetofauna habitat was documented within the study area.

A summary of wildlife species documented in the study area during field investigations and through secondary source information is presented in **Table 2**.

### 2.4.3 Species at Risk

Background information indicated that of the 36 wildlife species recorded within the study area, none are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act*. Sixteen recorded species of bird are protected under the *Migratory Birds Convention Act* (MBCA) and one bird is protected under the *Fish and Wildlife Conservation Act* (FWCA). As noted above, four bird species found within the study area are recommended by Bird Studies Canada as priority species for conservation. Nine of ten species of mammal are offered protection under the FWCA.

Prior to field investigations, secondary source data from the MNR Natural Heritage Information Centre (NHIC) was reviewed to screen for the presence or absence of wildlife species at risk within or adjacent to the study area. The NHIC database for rare species records indicates that within the vicinity of the study area there is a historic occurrence of American Badger (*Taxidea taxus jacksoni*).

The American Badger (Ontario Population) is regulated as ‘Endangered’ under the Ontario *Endangered Species Act* and the Canada *Species at Risk Act*. Little is known about American Badger abundance, distribution, habitat requirements and population trends in Ontario (Ontario American Badger Recovery Team 2010). The preferred habitat of the American Badger includes natural and undisturbed grasslands, shrubby areas and woodlots (Baker 1983). Suitable habitat for this species is unlikely to exist within the study area; however, the species is known to have a very large home range so transient movement through the study area by this species is possible.

## **2.5 Designated Natural Areas**

Designated natural areas include areas identified for protection by the Ontario Ministry of Natural Resources (OMNR), upper and lower tier municipalities. A review of the Natural Heritage Information Centre (OMNR 2011) indicates that there are no Provincially Significant Wetlands (PSWs), Areas of Natural and Scientific Interest (ANSIs), or Environmentally Significant/Sensitive Areas (ESAs) located within the study area. However, there are wetlands west and east of Rest Acres Road that are located within the Grand River Conservation Authority Regulation Limit. The location of these wetlands are presented on **Figure 2**.

### 3.0 REFERENCES

- Acton, C.J. 1989. *The Soils of Brant County*; Volume 1, 62 pp. Report No. 55 of the Ontario Institute of Pedology. Land Resource Research Centre Contribution No. 89-19. Guelph, Ontario. Accompanied by Map No. 3 (Brantford), scale 1:25 000.
- Baker, R.H. 1983. *Michigan Mammals*. Michigan State University Press, East Lansing, Michigan. 642 pp.
- Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (Eds.). 2007. *Atlas of the Breeding Birds of Ontario, 2001-2005*. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.
- Chapman, L.J. and D.F. Putnam. 1984. *The Physiography of Southern Ontario*. Ontario Geological Survey, Special Volume 2, 270 p. Toronto, Ontario. Accompanied by Map P.2715 (coloured), scale 1:600 000.
- Committee on the Status of Endangered Wildlife in Canada. 2002. *Species at Risk*. Ottawa, Ontario.
- County of Brant. 2004 Office Consolidation. *Official Plan*.
- County of Brant. 2008. *Transportation Master Plan – Final Report*.
- Couturier, A. 1999. *Conservation Priorities for the Birds of Southern Ontario*. Bird Studies Canada.
- Dobbyn, J.S. 1994. *Atlas of the Mammals of Ontario*. Federation of Ontario Naturalists. Toronto, Ontario.
- Fisheries and Oceans Canada (2011). *Distribution of Fish Species at Risk and Distribution of Mussel Species at Risk*. Ottawa, Ontario.
- Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. *Ecological Land Classification for Southern Ontario: First Approximation and Its Application*. Natural Heritage Information Centre.
- Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. *Ontario Plant List*. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario, Forest Research Information Paper No. 123, 550 pp. + appendices.
- Oldham, M.J. 1999. *Natural Heritage Resources of Ontario: Rare Vascular Plants*. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough, Ontario.
- Ontario American Badger Recovery Team. 2010. *Recovery strategy for the American Badger (Taxidea taxus) in Ontario*. Ontario Recovery Strategy Series. Prepared for Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 27 pp.
- Ontario Ministry of Natural Resources. 2000. *Significant Wildlife Habitat Technical Guide*. Fish and Wildlife Branch, Wildlife Section, Peterborough, Ontario.
- Ontario Ministry of Natural Resources. 2001. *Index List of Vulnerable, Threatened, Endangered, Extirpated or Extinct Species of Ontario*. Wildlife Section. Peterborough, Ontario.
- Ontario Ministry of Natural Resources. 2011. *Natural Heritage Information Centre - Biodiversity Explorer*. Website available online: <http://www.mnr.gov.on.ca/MNR/nhic/nhic.cfm>. Peterborough, Ontario.
- Riley, J.L. 1989. *Hamilton- Brant. Distribution and Status of the Vascular Plants of Central Region*. Ontario Ministry of Natural Resources. Richmond Hill, Ontario.

**APPENDIX A**  
**PHOTOGRAPHIC RECORD**



**APPENDIX B**  
**VASCULAR PLANT LIST**

VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Hamilton-Brant	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUP3-8	Manicured
<b>DRYOPTERIDACEAE</b>	<b>WOOD FERN FAMILY</b>															
<i>Dryopteris carthusiana</i>	spinulose wood fern					X									x	
<b>PINACEAE</b>	<b>PINE FAMILY</b>															
* <i>Picea abies</i>	Norway spruce	G?	SE3												x	
<i>Picea glauca</i>	white spruce	G5	S5												x	
* <i>Pinus strobus</i>	white pine	G?	SE5			X									x	
<b>CUPRESSACEAE</b>	<b>CEDAR FAMILY</b>															
<i>Juniperus communis</i>	common juniper	G5	S5										x			
<b>RANUNCULACEAE</b>	<b>BUTTERCUP FAMILY</b>															
<i>Actaea pachypoda</i>	white baneberry	G5	S5			X									x	
<i>Actaea rubra</i>	red baneberry	G5	S5			X									x	
<b>ULMACEAE</b>	<b>ELM FAMILY</b>															
* <i>Ulmus pumila</i>	Siberian elm	G?	SE3											x		
<b>MORACEAE</b>	<b>MULBERRY FAMILY</b>															
* <i>Morus alba</i>	white mulberry	G?	SE5			X					x					
<b>JUGLANDACEAE</b>	<b>WALNUT FAMILY</b>															
<i>Juglans nigra</i>	black walnut	G5	S4			X			x	x		x		x	x	x
<b>CHENOPODIACEAE</b>	<b>GOOSEFOOT FAMILY</b>															
* <i>Chenopodium album</i> var. <i>album</i>	lamb's quarters	G5T5	SE5			X						x		x		
<b>CARYOPHYLLACEAE</b>	<b>PINK FAMILY</b>															
* <i>Silene latifolia</i>	bladder campion	G?	SE5				x		x			x				
<b>POLYGONACEAE</b>	<b>SMARTWEED FAMILY</b>															
* <i>Polygonum persicaria</i>	lady's-thumb	G?	SE5			X		x		x		x				

VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Hamilton-Brant	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUP3-8	Manicured
* <i>Rumex crispus</i>	curly-leaf dock	G?	SE5			X	x	x	x	x	x		x	x		
<b>GUTTIFERAE</b>	<b>ST. JOHN'S-WORT FAMILY</b>															
* <i>Hypericum perforatum</i>	common St. John's-wort	G?	SE5			X			x	x	x					
<b>TILIACEAE</b>	<b>LINDEN FAMILY</b>															
<i>Tilia americana</i>	basswood	G5	S5			X									x	
<b>MALVACEAE</b>	<b>MALLOW FAMILY</b>															
* <i>Abutilon theophrasti</i>	velvet-leaf	G?	SE5			X				x						
<b>CUCURBITACEAE</b>	<b>GOURD FAMILY</b>															
<i>Sicyos angulatus</i>	one-seeded bur-cucumber	G5	S5			X								x	x	
<b>SALICACEAE</b>	<b>WILLOW FAMILY</b>															
<i>Populus deltoides</i> ssp. <i>deltoides</i>	eastern cottonwood	G5T?	SU			X								x		
<i>Populus tremuloides</i>	trembling aspen	G5	S5			X										x
<b>BRASSICACEAE</b>	<b>MUSTARD FAMILY</b>															
* <i>Alliaria petiolata</i>	garlic mustard	G5	SE5			X		x			x				x	x
* <i>Hesperis matronalis</i>	dame's rocket	G4G5	SE5			X			x							
* <i>Lepidium campestre</i>	field cress	G?	SE5			X	x				x					
<b>ROSACEAE</b>	<b>ROSE FAMILY</b>															
<i>Geum aleppicum</i>	yellow avens	G5	S5			X									x	
* <i>Potentilla recta</i>	rough-fruited cinquefoil	G?	SE5			X			x	x						
* <i>Rubus idaeus</i> ssp. <i>idaeus</i>	red raspberry	G5T5	SE1												x	
<i>Rubus occidentalis</i>	thimble-berry	G5	S5			X			x	x				x		x
<b>FABACEAE</b>	<b>PEA FAMILY</b>															
* <i>Lathyrus latifolius</i>	everlasting pea	G?	SE4			X			x							



VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Hamilton-Brant	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUP3-8	Manicured
<i>Acer saccharinum</i>	silver maple	G5	S5			X								x		x
<i>Acer saccharum</i> var. <i>saccharum</i>	sugar maple	G5T?	S5			X								x		x
<b>ANACARDIACEAE</b>	<b>SUMAC FAMILY</b>															
<i>Rhus hirta</i>	staghorn sumac	G5	S5			X					x					
<b>OXALIDACEAE</b>	<b>WOOD SORREL FAMILY</b>															
<i>Oxalis stricta</i>	upright yellow wood-sorrel	G5	S5			X	x				x	x				
<b>GERANIACEAE</b>	<b>GERANIUM FAMILY</b>															
* <i>Geranium robertianum</i>	herb-robert	G5	SE5			X									x	
<b>APIACEAE</b>	<b>PARSLEY FAMILY</b>															
* <i>Daucus carota</i>	wild carrot	G?	SE5			X	x	x	x	x	x	x	x	x		x
<b>APOCYNACEAE</b>	<b>DOGBANE FAMILY</b>															
<i>Apocynum androsaemifolium</i> ssp. <i>androsaemifolium</i>	spreading dogbane	G5T?	S5			X							x			
<b>ASCLEPIADACEAE</b>	<b>MILKWEED FAMILY</b>															
<i>Asclepias syriaca</i>	common milkweed	G5	S5			X			x	x	x	x	x	x		
* <i>Cynanchum rossicum</i>	swallow-wort	G?	SE5			X			x							
<b>SOLANACEAE</b>	<b>POTATO FAMILY</b>															
* <i>Solanum dulcamara</i>	bitter nightshade	G?	SE5			X						x		x	x	
<b>CONVOLVULACEAE</b>	<b>MORNING-GLORY FAMILY</b>															
* <i>Convolvulus arvensis</i>	field bindweed	G?	SE5					x								
<b>BORAGINACEAE</b>	<b>BORAGE FAMILY</b>															
* <i>Echium vulgare</i>	blueweed	G?	SE5			X			x					x		

VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Hamilton-Brant	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUP3-8	Manicured
<b>LAMIACEAE</b>	<b>MINT FAMILY</b>															
* <i>Leonurus cardiaca</i> ssp. <i>cardiaca</i>	common motherwort	G?T?	SE5			X			x						x	
* <i>Prunella vulgaris</i> ssp. <i>vulgaris</i>	common heal-all	G5T?	SE3			X		x								
<b>PLANTAGINACEAE</b>	<b>PLANTAIN FAMILY</b>															
* <i>Plantago lanceolata</i>	ribgrass	G5	SE5			X	x	x						x		
* <i>Plantago major</i>	common plantain	G5	SE5			X	x	x	x		x	x		x		
<b>OLEACEAE</b>	<b>OLIVE FAMILY</b>															
* <i>Syringa vulgaris</i>	common lilac	G?	SE5			X										x
<b>SCROPHULARIACEAE</b>	<b>FIGWORT FAMILY</b>															
* <i>Linaria vulgaris</i>	butter-and-eggs	G?	SE5			X	x	x		x	x			x		
* <i>Verbascum blattaria</i>	moth mullein	G?	SE5			X		x	x							
* <i>Verbascum thapsus</i>	common mullein	G?	SE5			X			x	x	x	x	x			
<b>RUBIACEAE</b>	<b>MADDER FAMILY</b>															
* <i>Galium mollugo</i>	white bedstraw	G?	SE5			X				x	x					
<b>DIPSACACEAE</b>	<b>TEASEL FAMILY</b>															
* <i>Dipsacus fullonum</i> ssp. <i>sylvestris</i>	wild teasel	G?T?	SE5			X				x		x	x	x		
<b>ASTERACEAE</b>	<b>ASTER FAMILY</b>															
* <i>Achillea millefolium</i> var. <i>millefolium</i>	common yarrow	G5T?	SE?			X			x	x						
<i>Ambrosia artemisiifolia</i>	common ragweed	G5	S5			X	x	x	x	x	x	x	x	x		
* <i>Anthemis arvensis</i>	corn chamomille	G?	SE5			X		x	x							
* <i>Arctium lappa</i>	great burdock	G?	SE5			X		x			x					
<i>Aster lanceolatus</i> ssp. <i>lanceolatus</i>	tall white aster	G5T?	S5			X	x				x	x				

VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Hamilton-Brant	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUP3-8	Manicured
* <i>Centaurea biebersteinii</i>	spotted knapweed	G?	SE5			X			x			x				
* <i>Cichorium intybus</i>	chicory	G?	SE5			X	x	x	x	x	x	x	x	x		x
* <i>Cirsium arvense</i>	Canada thistle	G?	SE5			X			x	x	x	x	x			
* <i>Cirsium vulgare</i>	bull thistle	G5	SE5			X	x	x	x	x		x	x	x		
<i>Conyza canadensis</i>	horseweed	G5	S5			X					x	x	x	x		
* <i>Crepis capillaris</i>	smooth hawk's beard	G?	SE1						x	x	x	x				
* <i>Matricaria discoidea</i>	pineapple-weed	G5	SE5			X	x					x				x
<i>Solidago canadensis</i>	canada goldenrod	G5	S5			X	x	x	x	x	x	x	x	x	x	x
<i>Solidago canadensis</i> var. <i>scabra</i>	tall goldenrod		S5			X		x	x				x			
* <i>Sonchus arvensis</i> ssp. <i>arvensis</i>	field sow-thistle	G?T?	SE5			X	x	x	x			x	x	x		
<i>Symphyotrichum novae-angliae</i>	New England aster	G5	S5			X					x	x	x	x		
* <i>Tanacetum vulgare</i>	common tansy	G?	SE5			X							x	x		
* <i>Taraxacum officinale</i>	common dandelion	G5	SE5			X	x	x	x	x	x	x		x		x
* <i>Tragopogon pratensis</i> ssp. <i>pratensis</i>	meadow goat's-beard	G?T?	SE5			X				x	x	x				
<b>POACEAE</b>	<b>GRASS FAMILY</b>															
* <i>Agrostis gigantea</i>	red-top	G4G5	SE5			X					x			x		
* <i>Agrostis stolonifera</i>	redtop	G5	S5			X	x		x	x	x	x	x			
* <i>Bromus inermis</i> ssp. <i>inermis</i>	awnless brome	G4G5T?	SE5			X	x		x	x	x	x	x	x		
* <i>Bromus japonicus</i>	Japanese chess	G?	SE4			X							x	x		
* <i>Dactylis glomerata</i>	orchard grass	G?	SE5			X			x	x				x		
* <i>Elymus repens</i>	quack grass	G?	SE5			X	x		x	x	x	x				
<i>Phalaris arundinacea</i>	reed canary grass	G5	S5			X	x			x	x	x	x	x		
* <i>Phleum pratense</i>	timothy	G?	SE5			X							x			

### VASCULAR PLANT LIST

Scientific Name	Common Name	GRank	SRank	MNR	COSEWIC	Hamilton-Brant	CUM1-1a	CUM1-1b	CUM1-1c	CUM1-1d	CUM1-1e	CUM1-1f	CUM1-1g	CUM1-1h	CUP3-8	Manicured
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky bluegrass	G5T	S5			X		x	x							x
* <i>Setaria faberi</i>	giant foxtail	G?	SE4			X			x	x	x		x	x		
<b>LILIACEAE</b>	<b>LILY FAMILY</b>															
* <i>Asparagus officinalis</i>	garden asparagus	G5?	SE5			X	x		x	x	x	x	x	x		
<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>	false Solomon's seal	G5T	S5			X									x	

\*Non-native Plant Species / X=Identifies Species Presence



**APPENDIX C**  
**ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS**

## 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 Conservancy 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.

- 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.

- 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.
- 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).

MBCA *Migratory Birds Convention Act*

FWCA *Fish and Wildlife Conservation Act*  
(P) Protected Species (G) Game species  
(F) Furbearing mammals

BSC Bird Studies Canada – identifies species of high conservation priority