March 2013

TECHNICAL REPORT

2012 Scoped Environmental Impact Statement for Lakeland Meadows Phase 2 Development

Submitted to:
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TECHNICAL REPORT

Golder Associates

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1.0 INTRODUCTION

Golder Associates Ltd. ("Golder") has been retained by Mr. Glenn McInnes to conduct an Environmental Impact Statement (EIS) in support of the Lakeland Meadows Phase 2 subdivision proposal. Golder understands that the City of Ottawa indicated that the current subdivision proposal for Phase 2 requires a fish assessment, species at risk assessment, and the completion of a scoped Environmental Impact Statement (EIS) as the area falls within the Shields Creek Subwatershed Study.

1.1 Site Description

The subject property (hereafter referred to as the 'Site) is located on part of Lot 8, Concession 4, Geographic township of Osgoode, now the City of Ottawa, within the village of Greely (Figure 1). The plan of subdivision is for a parcel of the property adjacent to Old Prescott Road (Figure 2).

Currently, the Site consists of abandoned farm lands with hedgerows between fields. There are a number of ditches crossing the Site that all drain towards the former municipal drain within the western half of the Site.

1.1.1 Adjacent Land Use

The surrounding lands to the north consist of farmlands and residential developments. Residential land use borders the eastern and western boundaries of the Site. To the south the land use type is dominated by industrial uses as well as abandoned farm lands and some residential developments. A large woodland is located approximately 350 m southeast of the Site (Figure 1). The Provincially Significant (PSW) Osgoode Wetland is located within this woodland approximately 900 m from the Site.

1.2 Purpose

This report identifies environmental features on the Site from the perspective of natural heritage, along with potential impacts and mitigation/compensation recommendations to meet the requirements of a scoped EIS. More specifically, it provides a determination of potential for species at risk (SAR), rare or significant species and sensitive habitat(s), as well as fish habitat found on the Site. It includes a constraints analysis to identify areas that may pose agency approval issues and provides recommendations to mitigate/refine development plans in light of these constraints.

The proposed development is the second phase of the "Lakeland Meadows" development and includes an institutional block, a park, 140 apartment units, 164 single lots, 86 semi-detached lots, and 136 townhouse lots. It is anticipated that stormwater management will be managed in the Shadow Ridge Subdivision.

The Lakeland Meadows development is one of several land parcels being developed within the catchment area of the former Kehoe Drain, which flows into the Middle Castor River. Immediately north of the development area, drainage flows into the Shields Creek – North Castor River.

Based on the Shield Creek Subwatershed Study, the Site lies within the South Nation-Gray's Creek watershed and the Middle Castor River Subwatershed (City of Ottawa, 2004). The Site and particularly the area of the planned subdivision, was formerly used for agricultural purposes. A drainage network remains on the property and consists of a primary ditch which flows eastward, and three tributary ditches which flow southward, into the primary ditch. The primary ditch eventually drains into the former Kehoe Municipal Drain, located off-Site.

In addition to the phased development of the Lakeland Meadow development, there are a number of proposed developments in various stages of planning and approvals. The South Nation Conservation (SNC) has been working with the various parties toward completion of a Fisheries Act Authorization and fish habitat compensation plan for the various drainage features on and downstream of the proposed development area within the village of Greely. The final Fish Habitat Compensation Plan will be completed, once development plans for the area near completion. Part of the objective of this scoped EIS is to provide details on baseline conditions to assist in determining the appropriate compensation measures to be implemented. This may include onsite or off-site habitat compensation.

2.0 ENVIRONMENTAL POLICY CONTEXT

2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS), issued under Section 3 of *The Planning Act*, came into effect on March 1, 2005. Planning authorities are required to make decisions that are consistent with policy statements issued under the Act. The PPS is intended to be read in its entirety and the relevant policies are to be applied to each situation. The PPS includes policies on development and land use patterns, resources, and public health and safety. This report deals with Policy 2.1 directed at the protection and management of natural heritage resources. The eight types of natural heritage features to be considered in accordance with Policy 2.1 (2.1.3, 2.1.4 and 2.1.5) are:

- Significant habitat of endangered species and threatened species;
- Provincially significant wetlands (PSWs);
- Significant coastal wetlands;
- Significant woodlands south and east of the Canadian Shield;
- Significant valleylands south and east of the Canadian Shield;
- Significant wildlife habitat;
- Significant Areas of Natural and Scientific Interest (ANSIs); and,
- Fish habitat.

Development and site alteration shall not be permitted in significant habitat of endangered and threatened species; significant wetlands in Ecoregions 5E, 6E and 7E; and significant coastal wetlands. Development and site alteration shall not be permitted in significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E; significant woodlands south and east of the Canadian Shield; significant valleylands south and east of the Canadian Shield; significant wildlife habitat; and significant areas of natural and scientific interest, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements. Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in Policies 2.1.3, 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions (MMAH 2005).

2.2 Species at Risk

2.2.1 *Species at Risk Act* (SARA)

At a federal level, species at risk designations for species occurring in Canada are initially determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). If approved by the federal Minister of the Environment, species are added to the federal List of Wildlife Species at Risk (Government of Canada, 2008). Species that are included on Schedule 1 as endangered or threatened are afforded protection of critical habitat on federal lands under the *Species at Risk Act* (SARA). On private or provincially-owned lands, only aquatic species listed as endangered, threatened or extirpated and migratory birds are protected under SARA, unless ordered by the Governor in Council.

2.2.2 *Endangered Species Act* (ESA)

Species at risk designations for species in Ontario are initially determined by the Committee on the Status of Species at Risk in Ontario (COSSARO), and if approved by the provincial Minister of Natural Resources, species are added to the provincial *Endangered Species Act* (ESA) which came into effect June 30, 2008 (Ontario 2007). The legislation prohibits the killing or harming of species identified as 'endangered' or 'threatened' in the various schedules to the Act. The ESA provides habitat protection to those species listed as endangered under the former *Endangered Species Act* (listed in Schedule 1 of the current legislation) and recently listed species (under separate regulations), but the ESA does not immediately provide general or species-specific habitat protection to endangered species and threatened species included in Schedules 3 and 4 of the ESA until regulations identifying species-specific habitat come into effect, or the 5th anniversary of the date the ESA (30 June 2013), whichever comes first. However, all endangered and threatened species listed in the ESA are afforded protection of significant habitat under the PPS.

2.3 City of Ottawa Official Plan

The City of Ottawa Official Plan (OP), officially adopted on May 2003, includes policies and sections written to protect natural heritage areas and features. The OP promotes, among other objectives, the maintenance of biodiversity and connectivity among features.

The Site and adjacent lands are subject to the following designations under the City of Ottawa By-Law No. 2003-203 (City of Ottawa 2003);

- On Schedule 'A' and Annex 14, the Site is designated as "Village," and;
- On Schedule 'K' the Site is designated as "Village."

Both Schedules indicate that there are watercourses on the Site. These watercourses are regulated by the South Nation Conservation Authority and are discussed below.

2.4 Conservation Authorities Act

Section 28 of the Conservation Authorities Act (R.S.O. 1990, Chapter C.27) enables Conservation Authorities (CAs) to regulate any works and site alterations that could affect the control of flooding and erosion, the conservation of land and the straightening, changing, diverting or interference with the existing channel of a watercourse. The Fill, Construction and Alteration to Waterways Regulation was recently replaced by The Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, (Ontario Regulation 97/04), also called the "Generic Regulation". This is not a new piece of legislation, but rather amends and broadens the mandate of the existing regulations to include formerly unregulated features such as wetlands. Conservation Authorities adopted the amended regulation on May 1, 2006.

The Conservation Authority also oversees the implementation of the federal Fisheries Act through an agreement with the Department of Fisheries and Oceans (DFO). Section 35 of the Fisheries Act outlines that: "No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat (HADD)". Only the Minister of Fisheries and Oceans (DFO) can authorize a HADD; however, many CAs have an agreement with the DFO whereby the CA reviews all development proposals in, on or near waters that

may contain or contribute to fish habitat to determine whether or not a HADD is likely to occur. If a HADD is not likely to occur, or if the impacts of the project on fish habitat can be mitigated such that a HADD is not likely to occur, the CA can issue a "letter of advice", subject to any other approval that may be required under provincial legislation and/or from the municipality.

2.4.1 South Nation Conservation Authority

The South Nation Conservation Authority (SNC) is the governing body which regulates flood potential and natural heritage features in the South Nation River watershed. The SNC maintains wetland mapping in conjunction with the City of Ottawa and the MNR. The SNC assigns Natural Heritage and Natural Hazard related boundaries as defined under the PPS. SNC also conducts fish habitat reviews under agreements with Fisheries and Oceans Canada (DFO). Development within regulated areas is governed by Regulation 170/06 *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* (Ontario Legislative Assembly 2006). Regulation 170/06 was derived under the authority of Ontario Regulation 97/04 (Ontario Legislative Assembly 2004) and is specific to the SNC.

Under Ontario Regulation 97/04 a regulation may:

a) Restrict and regulate the use of water in or from rivers, streams, inland lakes, ponds, wetlands and natural or artificially constructed depressions in rivers or streams;

b) Prohibit, regulate or required the permission of the authority to straighten, change, divert, or interfere in any way with the existing channel of a river, creek, stream or watercourse, or change or interfere in any way with a wetland; and,

c) Prohibit, regulate or require the permission of the authority for development if, in the opinion of the authority, the control of flooding, erosion, dynamic beaches, or pollution, or the conservation of land may be affected by the development.

Development is not necessarily restricted within the SNC regulated area; however, it designates an area which triggers the need for a permit and, in most cases, an accompanying EIS.

As a condition of the Draft Approval of the Cadieux Subdivision in Greely (Phase I) on the adjacent land, a fish community and habitat assessment was completed. Following this assessment, it was determined by the SNC that the ditches within the western portion of Lot 8, Concession 4, Geographic township of Osgoode, are fish habitat and as such require a fish compensation plan to accompany the development. That compensation plan remains a work in progress and will be supplemented with the results of this and future studies conducted on Lot 8, Concession 4.

In addition, as agent for the Department of Fisheries and Oceans, SNC has responsibility for reviewing developments to assess potential for impact to fish and fish habitat under the federal Fisheries Act.

3.0 METHODS

3.1 Background Review

Golder conducted a desktop study focused on the Site, as well as a 120 m radius surrounding the Site, using the resources of the Natural Heritage Information Centre (NHIC), maintained by the Ontario Ministry of Natural Resources, as well as information available from other sources such as the SNC and City of Ottawa. Background data review for this project included a number of specific sources. These included, but were not limited to:

- Ontario Ministry of Natural Resources (MNR) NHIC Biodiversity Explorer geographic, species and natural areas information queries (NHIC 2008);
- MNR fisheries data for the local area surrounding the Site;
- Information (including any watershed studies and wetland mapping) and mapping available through SNC for the Site and surrounding area;
- Screening of the Site for newly listed threatened or endangered species regulated under the Ontario Endangered Species Act, 2007 and a review of Species at Risk (SAR) mapping, including range mapping;
- The Atlas of Breeding Birds of Ontario (Cadman, *et al.* 2007);
- Atlas of the Mammals of Ontario (Dobbyn 1994);
- Ontario Herpetofaunal Summary Atlas (Oldham 2000);
- The City of Ottawa Official Plan (2003);
- Consult information contained in natural heritage related map layers from Ontario Base Map series, Natural Resource Values Information System (NRVIS) mapping and Land Information Ontario (LIO 2011); and,
- Existing aerial imagery.

The desktop study was used to identify significant species and/or habitats that occur, or could occur, on the Site, as well as to scope a Site investigation.

3.2 Preliminary Site Visit

On February 3, 2012, a full day site visit was conducted by terrestrial and aquatic biologists. During the site visit, information on plant community structure and composition was noted. Due to the heavy snow cover at the time of the site visit, classification of the plant communities using the Ecological land Classification (ELC) system for naturally occurring plant communities of southern Ontario (Lee *et al.* 1998) was not possible. Surface water features and conditions were documented and photographed. In addition, wildlife observed on, or around, the Site was also recorded at this time. Data collected during this visit was used supplementary to the detailed field program discussed below.

3.3 SAR Screening

An assessment was conducted to determine which species listed under the ESA and SARA have the potential to be located on the Site. The potential for SAR to occur on or within 120 metres of the Site was assessed based on species range information, as well as a comparison of the habitat observations recorded during the site visit, historical land use practices, and the preferred habitat requirements of these species (Appendix A). Species with ranges overlapping the Site, or recent occurrence records in the vicinity, were screened by comparing their habitat requirements to habitat conditions on the Site.

The potential for the species to occur was determined through a probability of occurrence. A ranking of low indicates no suitable habitat availability for that species on the Site and no specimens identified. Moderate probability indicates more potential for the species to occur, as suitable habitat appeared to be present on the Site, but no occurrence of the species recorded. High potential indicates a known species record on the Site (including during field surveys or background data review) and the presence of good quality habitat is present.

3.4 Terrestrial Surveys

3.4.1 Ecological Land Classification and Plant Community Surveys

Plant communities were be classified and delineated to the extent possible following the protocol of the Ontario Ecological Land Classification (ELC) system (Lee et al. 1998).

Ecological Land Classifications (ELC) generally follow the methodology and terminology developed by Lee et al. (1998) for naturally-occurring plant communities of southern Ontario. The first step involved the delineation of terrestrial plant community polygons on mapping based upon aerial imagery interpretation by skilled field staff. This preliminary ELC mapping was important to the initial screening of potential species and communities that might be present within the Site and was used to locate high priority areas to survey. However, detailed habitat and vegetation community parameters could not be obtained from aerial imagery interpretation alone. The second step involved field surveys using field maps derived from the preliminary ELC mapping. During field surveys, information on plant community structure and composition was noted in order to better define and refine the plant community polygons to the ELC community series as designated by Lee et al. (1998).

Qualified Golder staff evaluated the terrestrial communities on-site using the methods described above.

Three plant community surveys were conducted through late spring to late summer (June 10, 2012, July 9, 2012 and August 31, 2012) to cover the blooming season of various species (e.g., spring for forest flowering plants such as Trillium spp. and Viola spp. (violet species), mid-summer for Juncus spp. (rush species) and Carex spp (sedge species), late summer for Aster spp. and Solidago spp. (goldenrod species). Results from the vegetation surveys helped to determine whether or not additional taxa specific surveys, including species at risk (SAR), were required. Concurrent with these surveys, a plant inventory and rare plant survey was carried out involving a record of plant occurrences. In addition, habitats where plant SAR could occur were investigated and any rare, threatened, or endangered plants identified were recorded.

3.4.2 Breeding Bird Surveys

Two (2) Breeding Bird Surveys (BBS) were conducted on June 10 and July 9, 2012. Surveys consisted of point count stations distributed throughout and immediately adjacent to the Site (including species at risk habitat) (Figure 2). BBS began one-half hour before sunrise and were completed by 1000 h EST. Surveys were conducted when weather conditions (i.e., precipitation and wind) were within the parameters required by

monitoring programs such as the Canadian Wildlife Service (CWS) Breeding Bird Survey. BBS were ten minutes in duration and all species heard or seen were recorded. Other data collected included distance of birds from observer, notable behaviours, sex, and age (where possible). In addition to the point counts, an area search was used to search for raptors, active nests (e.g. SAR) and any other signs of bird activity to provide a full picture of the avian species that utilize the study area and allow for the development of mitigation measures.

3.4.3 Area Searches and Species At Risk

During all survey events in 2012, area searches were conducted to search for mammals, reptiles, amphibian, butterflies, and dragonflies, including SAR. Based on the initial desktop data review, a list of SAR species that could potentially occur within the Study Area was compiled (Appendix A). All SAR noted to have potential to occur within the study area were covered by the previously mentioned surveys.

3.5 Aquatic Surveys

3.5.1 Fish Habitat Assessment

Descriptions and mapping of aquatic habitats were conducted for the surface water features on the Site. However, during the field surveys in 2012, no water was observed within the drainage channels or marshes and thus no aquatic habitat characteristics could be evaluated, other than to note that any fish habitat on site is seasonal/ephemeral in nature. Information discussed below is a summary of previous studies conducted at the Site as part of the Lakeland Meadows Phase 1 development application and the Site visit conducted in February 2012.

3.6 Analysis of Significance and Sensitivity

An assessment was conducted to determine the significance and sensitive of species observed on-site or determine to have potential to exist on-site through the SAR screening. Species names were cross referenced with listed species under COSEWIC, ESA, SARA, NHIC rankings both provincially (SRANK) and federally (GRANK), as well as local rarity indices. If they were listed as either threatened or endangered under COSEWIC, ESA, or SARA, they were considered significant. If species were ranked as vulnerable, imperilled or critically imperilled through NHIC ranking, they were also considered significant.

4.0 EXISTING CONDITIONS

4.1 Surface Water Resources and Fish Habitat

There are several poorly defined drainage features on the Site including a number of ditches and a former municipal drain. All ditches appear to enter the former municipal drain which crosses the Site from northeast to southwest. These features were likely historically constructed ditches to provide drainage from adjacent fields. The only observable fish habitat was apparent in the former municipal drain where water and flow was evident on the February 2012 Site Visit. All surface water features were dry during summer 2012 field surveys, indicating that these features are seasonal/intermittent in nature.

These features are part of the Greys Creek municipal drain, an 835 ha, 4.6 km long drain that flows into the Middle Castor River. These drainage features were classified as warmwater streams in the Shields Creek Subwatershed Study (TSH 2004). Most of the streams in Grey's Creek have been straightened to agricultural drains. Many of the streams were 'ditch like' in nature and geomorphically stable. They were trapezoidal in shape, with no bed morphology and high banks.

Basic inventories of fish and invertebrate communities, and temperature monitoring were completed in lower Greys Creek as part of the Shields Creek Subwatershed. The stream is warm and is dominated by warmwater fish species including Creek Chub, Brook Stickleback, Common Shiner and Longnose Dace. As with Shields Creek, the fish community is typical of a warmwater system in the Ottawa area and contains no provincially significant or rare species.

Golder Associates Ltd. was commissioned in 2006 to conduct a fish community and habitat assessment of a number of the ditches on the Site and the former municipal drain as part of the proposed Cadieux subdivision development to the west of the Site. This assessment indicated that the habitat quality in all reaches is poor based on the warm water temperatures and low levels of dissolved oxygen. The network of ditches was characterized by a low abundance and diversity of fish (central mudminnow, brook stickleback, unknown larval cyprinid), poor water quality, limited amount of flow and ephemeral conditions. The ditches were classified as Type 3 habitat, which is defined as having a low productive capacity and limited contribution to fish production in the area (MNR, 1994). Although aquatic habitat functions were limited to periods of freshet flows and infrequent storms, the SNC deemed the ditches fish habitat and required the development of a fish habitat compensation plan to accompany the Cadieux subdivision development plan.

Discussions with SNC as part of the current Phase 2 investigation indicated that if the other ditches within the Site are deemed fish habitat, the SNC would require the inclusion of these ditches in the compensation plan developed for the Cadieux subdivision. The former municipal drain potentially provides fish habitat only during spring freshet.

4.1.1 Significant and Sensitive Species

No sensitive or significant aquatic species were identified on the Site through the desktop assessment or field surveys.

4.2 Vegetation

Overall the Local Study Area and Site is a mosaic of mixed meadow, deciduous thicket, deciduous and mixed forest, swamp, agricultural fields, and residential and active construction sites. Portions of the site have a recent disturbance history, include an active snowmobile trail. There is a former municipal drain and drainage ditches on the western half of the property. Soils appear to be primarily loams that range from moderate to poor drainage.

Appendix B summarizes the plant species observed on the site during all 2012 field surveys.

AGRC: Hay

This is a small active hay field at the eastern edge of the site (Figure 3). Graminoid hay such as smooth brome (Bromus inermis) and Timothy (Phleum pratense) is dominant. Forb species found, include red clover (Trifolium pratense) and common dandelion (Taraxacum officinale).

CUM 1-1: Mixed Meadow

This includes two old-field areas in the eastern half of the Site (Figure 1). These fields appear to be abandoned farm and residential land, and include decrepit buildings and paved areas. The plant community is primarily that of a mixed meadow (forbs and graminoids), with species dominance varying. Common species include smooth brome, Canada goldenrod (Solidago canadensis), and lamb's quarters (Chenopodium album). Scattered shrubs and trees such as red raspberry (Rubus idaeus), and white ash (Fraxinus americana), are found throughout.

CUM/CUT: Mixed Meadow/Deciduous Thicket Complex

This diverse community includes large old-field areas across much of the Site (Figure 1). It is a mixture of meadow, deciduous thickets, and scattered trees. Species dominance varies, but common plants include shrubs and immature trees such as willows (Salix sp.), glossy and common buckthorn (Rhamnus frangula, R. cathartica), and trembling aspen (Populus tremuloides), and meadow species that are similar to those found within the aforementioned Mixed Meadow communities. Within these areas, particularly in the western portion of the Site, are low-lying areas of poor drainage where water tolerant species such as red-osier dogwood (Cornus stolonifera), black bulrush (Scirpus atrovirens), and purple loosestrife (Lythrum salicaria) occur.

FOD 4-2: Dry-Fresh White Ash Deciduous Forest

This is a small woodlot in the south western corner of the Site (Figure 1). The primarily closed canopy is dominated by white ash, with associates such as trembling aspen and sugar maple (Acer saccharinum). The understory and ground cover ranges from sparse to moderate and includes species such as prickly gooseberry (Ribes cynosbati) and large-leaved aster (Eurybia macrophylla).

FOD 5-9: Dry – Fresh Sugar Maple – Red Maple Deciduous Forest

This semi-mature forest is in the north eastern corner of the Site (Figure 2). The canopy is closed to partially open, with a moderate understory and groundcover. Species dominance varies, with red maple (Acer rubrum), and sugar maple; and associates like white ash and ironwood (Ostrya virginiana). The understory and groundcover includes species such as enchanter's nightshade (Circaea lutetiana) and alternate-leaved dogwood (Cornus alternifolia). There are low-lying areas within this forest, where water appears to pool during periods of precipitation and snow melt.

FOD 8-1: Fresh – Moist Poplar Deciduous Forest

This early successional forest is found in the middle of the Site (Figure 1). It appears to be, in part, a late successional old-field with a disturbance history. Canopy is primarily open to partially closed with a moderate to dense understory. Species dominance varies throughout, but trembling aspen appears dominant with associates such as white ash, Manitoba maple (Acer negundo), and pin cherry (Prunus pensylvanica). Understory, ground cover, and thicket inclusions include species such as Staghorn sumac (Rhus typhina), riverbank grape (Vitis riparia), and rough goldenrod (Solidago rugosa).

FOM 4-2: Dry-Fresh White Cedar- Poplar Mixed Forest

This small area is at the north central edge of the Site (Figure 1), and is a part of the aforementioned Poplar deciduous forest, but it has a coniferous component. The canopy is partially open with a moderate understory. Dominant species include eastern white cedar (Thuja occidentalis) and trembling aspen, with associates such as red maple, and white ash.

SWD 3-1: Red Maple Mineral Deciduous Swamp

This low-lying forested area is near the north eastern corner of the site. The canopy ranges from closed to open where a small pond of open water occurs during periods of high water. The understory and ground cover ranges from open to moderate. Red maple appears dominant, with associates such as green ash (Fraxinus pennsylvanica) and white elm. Understory and ground cover includes species such as glossy buckthorn, dwarf raspberry (Rubus pubescens), and bladder sedge (Carex intumescens).

SWT 2-2 Willow Mineral Thicket Swamp

This basin wetland is within part of a cleared pipeline right-of-way in the north eastern corner of the Site (Figure 1). It is a patchwork of thickets and open marshy vegetation that appears to undergo periods of flooding and drying. Slender willow (Salix petiolaris) is dominant with other species such as reed canary grass (Phalaris arundinacea) and marsh fern (Thelypteris palustris). Significant and Sensitive Species

Through the SAR screening, it was determined that the federally and provincially threatened butternut (*Juglans cinerea*) has a moderate potential to occur on the Site. However this conspicuous species was searched for during 2012 field surveys and was not observed on the Site.

4.3 Wildlife

During the surveys conducted in 2012, a total of 38 bird species, nine mammal species, four herpetile species, and eighteen dragonfly and/or butterfly species were observed on or within 120 m of the Site (Appendix C).

4.3.1 Significant and Sensitive Species

Prior to field surveys, through the SAR screening two species that are designated special concern provincially and federally were identified as having low-moderate and moderate potential to occur on the Site. These included milksnake (*Lampropeltis triangulum*) and monarch butterfly (*Danaus plexippus*). One species designated as threatened federally (western chorus frog (*Pseudacris triseriata*) (not listed provincially) was identified having moderate potential to occur on the Site. Two provincially threatened birds were identified as having a moderate potential to occur on the Site: eastern meadowlark (*Strunella magna*) and barn swallow (*Hirundo rustica*).

A total of 22 species were identified as having a low potential to occur on the Site. The species screened as having a moderate or high potential of occurrence on the Site are discussed in greater detail in Sections 5.1 and 5.7.

Through the field surveys conducted following the desktop studies, one butterfly species, monarch, was observed on or within 120 m of the Site. No other SAR or significant species were identified during field surveys in 2012.

5.0 NATURAL HERITAGE SYSTEM COMPONENTS

5.1 Significant Habitat of Endangered or Threatened Species

The MNR designates “significant” or critical habitat that is necessary for the maintenance, survival, and/or recovery of naturally occurring or reintroduced populations of endangered and threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of their life cycles.

Three provincially threatened or endangered SAR were identified, through the desktop study, to potentially occur on or within the vicinity of the Site (barn swallow, eastern meadowlark, and butternut). The use of the Site by any of the identified SAR was not observed during the site visit. During the breeding bird surveys and other field surveys conducted on and within 120 m of the Site, no SAR was observed.

Barn Swallow

Barn swallow is listed as threatened under the Endangered Species Act and was observed on-Site during the species specific survey conducted (Appendix C). Barn swallow has both species and general habitat protection. Individual birds, nests and eggs are also protected under the Migratory Birds Convention Act.

Barn swallow historically nested in caves, holes, crevices and ledges in cliff faces. Since European colonization in Canada, they have shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. They require nest sites that include a vertical or horizontal substrate (often enclosed) underneath a type of roof or ceiling structure and thus protection of the structures used as nesting habitat is important. In addition, a source of mud is required to build the nest (e.g. near a body of water, mud flats, open wetlands, flooded areas, etc.). The nesting season ranges from early May to early August with the core breeding occurring in mid-May to late July. In Ontario, nest construction begins mid-May with the earliest nesting date of May15 and the late nesting date of September 1 (Peck and James 1987).

Barn swallows prefer open habitats for foraging, including grassy pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, wetlands, and subarctic tundra. Their breeding habitat usually contains open areas for foraging where they feed on aerial insects while flying between 1 m and 10 m above the ground.

No observations of barn swallow were made during the breeding bird surveys conducted, or during the nest searches of abandoned buildings on the Site. Some potential habitat exists within the project footprint however no evidence of presence or nesting was observed and thus barn swallow is not expected to be impacted by the proposed project. Thus, no further assessment of barn swallow is required and it was not carried forward to the impact analysis.

Eastern Meadowlark

Eastern meadowlark is listed as threatened under the Endangered Species Act. Eastern meadowlark has species and general habitat protection under the ESA. Individual birds, nests, and eggs are also protected under the Migratory Birds Convention Act.

Eastern meadowlark prefer grassland habitats like fields and meadow habitats including native prairies and savannahs, as well as non-native pastures, hayfields, weedy meadows, herbaceous fencerows and airfields. The favoured structure of eastern meadowlark within their breeding habitat includes moderately tall grasslands, abundant litter cover, high grass proportion (over forbs and shrubs), and moderate forb density (Hull 2002). They

are also found to breed in alfalfa and borders of roadsides as long as there is a high grass component (Lanyon 1995, Skinner 1975). Structurally, variation in cover height is important due to differing preferences in vegetation height of loafing, foraging and nesting (Hull 2002, Skinner 1975).

No observations of eastern meadowlark were made during the breeding bird surveys conducted. Some potential habitat exists within the project footprint however no evidence of presence or nesting was observed and thus eastern meadowlark is not expected to be impacted by the proposed project. Thus, no further assessment of meadowlark is required and it was not carried forward to the impact analysis.

Butternut

Butternut is listed as endangered under the provincial ESA and the federal SARA.

Butternut is mainly encountered as a minor component of deciduous stands, but large pure populations exist on certain flood plains. It is a shade intolerant species that grows best in rich, moist, and well-drained soils often found along streams. It is also found on well drained gravel sites, and dry, rocky and sterile soils. (COSEWIC 2003).

The most serious threat to butternut is butternut canker. The most obvious symptom of the disease is the formation of elongated sunken cankers. In spring, a black fluid seeps from the canker. In summer, the cankers produce very black, often white-bordered spots on the tree. In the United States, the butternut mortality rate due to this fungus reaches levels of up to 77 percent in some States. Butternut canker has spread northward and eastward, and is now encountered in the three Canadian provinces where the tree is present.

Suitable habitat for butternut exists within the study area. However, because no butternut were observed within the study during the field surveys, butternut was not carried forward to the impact analysis.

5.2 Significant Wetlands

The MNR is responsible for designating Provincially Significant Wetlands (PSWs) based on evaluation procedures established by the province (MMAH, 2005). There were no records of PSWs indicated by the NHIC database or the City of Ottawa Official Plan, on or within 120 m of the Site.

5.3 Fish Habitat

Fish habitat is considered under the Provincial Policy Statement (PPS) and any potential impacts from the proposed project must be assessed in an EIS. Potential seasonal fish habitat exists on the site. Thus, potential fish habitat associated with the former municipal drain in spring will be carried forward to the impact assessment.

Downstream of the development area, Greys Creek Municipal Drain is classed as a warmwater stream comprised of small-bodied fish, creek chub, brook stickleback, common shiner and longnose dace. There is potential for these species to access some of the drainage ditches on the site on a seasonal basis, and surface flows and water quality in these seasonal features may provide supporting fish habitat to habitats downstream of the site that support these species.

5.4 Significant Woodlands

The Natural Heritage Reference Manual (NHRM) (MNR 2010) contains general guidelines for determining the significance of existing woodlands but defers the designation of these features to local planning authorities. Criteria suggested by the NHRM for designating Significant Woodlands include woodland size, shape, proximity to other woodlands or natural features, linkages, species diversity, uncommon characteristics, and economic and social values. There are no Significant Woodlands on, or overlapping with, the Site according to the results of the desktop assessment.

5.5 Significant Valleylands

The PPS and NHRM contain general definitions for Significant Valleylands, but defer the designation of these features to local planning authorities. Recommended criteria for designating Significant Valleylands under the PPS include prominence as a distinctive landform, degree of naturalness, important ecological functions, restoration potential, and historical and cultural values (MNR, 2010). Municipal planning authorities are responsible for identifying Significant Valleylands and they are normally identified in their official plan. Where the official plan is silent on Significant Valleylands, the municipality should provide direction as to how to proceed in making the determination of significance.

According to the City of Ottawa Official Plan, there are no designated Significant Valleylands on, or overlapping with, the Site according to the results of the desktop assessment.

5.6 Significant Areas of Natural or Scientific Interest (ANSIs)

The MNR is responsible for designating ANSIs based on evaluation procedures established by the province (MMAH, 2005). ANSIs are ranked by the MNR as being of either provincial or regional significance. For the purposes of this report, significant ANSIs include only those ANSIs designated as provincially significant (MNR 2006). There are no provincially significant ANSIs on, or overlapping with, the Site according to the results of the desktop assessment.

5.7 Significant Wildlife Habitat

Significant wildlife habitat is one of the more complicated natural heritage features to identify and evaluate. The NHRM includes criteria and guidelines for designating significant wildlife habitat. There are two other documents, the Significant Wildlife Habitat Technical Guide (SWHTG) and the Significant Wildlife Habitat Decision Support System (SWHDSS) (MNR 2000a and 2000b), that can be used to help decide what areas and features should be considered significant wildlife habitat. These documents were used as reference material for this study. Significant wildlife habitat should be evaluated in the context of the entire planning authority's jurisdiction, and only the best examples are considered significant.

There are four general types of significant wildlife habitat: migration corridors, seasonal concentration areas, rare or specialized habitats, and species of conservation concern. All types of significant wildlife habitat are discussed below in relation to the Site.

5.7.1 Seasonal Concentration Areas

Seasonal concentration areas are those areas where large numbers of a species congregate at one particular time of the year. Examples include deer yards, amphibian breeding habitat, bird nesting colonies, bat hibernacula, raptor roosts, and passerine migration concentrations. If a species is at risk, or if a large proportion of the population may be lost if significant portions of the habitat are altered, all examples of certain seasonal concentration areas may be designated.

The SWHTG identifies the following 14 types of seasonal concentrations of animals that may be considered significant wildlife habitat:

- winter deer yards;
- moose late winter habitat;
- colonial bird nesting sites;
- waterfowl stopover and staging areas;
- waterfowl nesting areas;
- shorebird migratory stopover areas;
- landbird migratory stopover areas;
- raptor winter feeding and roosting areas;
- wild turkey winter range;
- turkey vulture summer roosting areas;
- reptile hibernacula;
- bat hibernacula;
- bullfrog concentration areas; and,
- migratory butterfly stopover areas.

No seasonal concentration areas were identified within the Site or within 120 m of the Site.

5.7.2 Migration Corridors

The SWHTG defines animal movement corridors as elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. This is generally in response to different seasonal habitat requirements. For example, trails used by deer to move to wintering areas or areas used by amphibians between breeding and summer habitat. To qualify as significant wildlife habitat, these corridors would be a critical link between habitats that are regularly used by wildlife.

No migration corridors were identified within the Site or within 120 m of the Site.

5.7.3 Specialized Habitats

Specialized habitats are microhabitats that provide a critical resource to some groups of wildlife. Examples include salt licks for ungulates and groundwater seeps for wild turkeys.

The SWHTG defines 14 specialized habitats that may be considered significant wildlife habitat. They are:

- habitat for area-sensitive species;
- forests providing a high diversity of habitats;
- old-growth or mature forest stands;
- foraging areas with abundant mast;
- amphibian woodland breeding ponds;
- turtle nesting habitat;
- specialized raptor nesting habitat;
- moose calving areas;
- moose aquatic feeding areas;
- mineral licks;
- mink, otter, marten, and fisher denning sites;
- highly diverse areas;
- cliffs; and,
- seeps and springs.

No specialized habitat was identified within the Site or within 120 m of the Site.

5.7.4 Rare Habitat

This category includes vegetation communities that are considered rare in the province. Generally, communities assigned an SRANK of S1 to S3 (extremely rare to rare-uncommon) by the Natural Heritage Information Centre (NHIC) could qualify. It is assumed that these habitats are at risk and that they are also more likely to support rare species and other features that are considered significant.

No rare habitat was identified within the Site or within 120 m of the Site.

5.7.5 Habitat for Species of Conservation Concern

Habitat for Species of Conservation Concern includes four types of species: those that are rare, those whose populations are significantly declining, those that have been identified as being at risk to certain common activities, and those with relatively large populations in Ontario compared to the rest of the world.

Rare species are considered at five levels: globally rare, nationally rare, provincially rare, regionally rare; and locally rare (in the municipality). This is also the order of priority that should be attached to the importance of

maintaining species. Some species have been identified as being susceptible to certain practices, and their presence may result in an area being designated significant wildlife habitat. Examples include species vulnerable to forest fragmentation and species such as woodland raptors that may be vulnerable to forest management or human disturbance. The final group of species of conservation concern includes species that have a high proportion of their global population in Ontario. Although they may be common in Ontario, they are found in low numbers in other jurisdictions.

Three species of conservation concern were identified, through the desktop study, to potentially occur on or within the vicinity of the Site (monarch, eastern milksnake, and western chorus frog).

Monarch

Monarch is listed as a species of special concern both federally and provincially under the ESA and SARA.

Monarchs breeding habitat is confined to sites where milkweed, the sole food of the caterpillars, grow. Different milkweed species grow in a variety of environments and are also planted in gardens (COSEWIC 2010). The limiting factors and threats affecting the monarch are forest degradation on their wintering grounds in Mexico. The various causes of this include conversion of forest to agriculture and pastures, excessive commercial logging and tree mortality due to bark beetle damage. In addition, herbicide and pesticide use across North America is a threat to milkweed. Milkweeds are still listed under the Noxious Weed acts of Manitoba, Ontario, Quebec and Nova Scotia (COSEWIC 2010).

There are areas of the Site that contain milkweed as well as wildflowers for nectaring, and monarch were observed during the field surveys (Figure 2). Milkweed occurs commonly within the study area and its existing distribution in the region provides ample opportunity for use by monarch. On this basis, milkweed occurring within the Site will not be considered significant habitat for monarch. Thus, no further assessment of monarch is required and it was not carried forward to the impact analysis.

Milksnake

Milksnake is listed as a species of special concern both federally and provincially under the ESA Act and SARA.

This species inhabits rural areas and is most frequently reported in and around buildings, especially old structures. However, it is also found in a wide variety of habitats ranging from prairies, pastures and hayfields to rocky hillsides and a wide variety of forest types. Milksnake has been found to occur along the border between Quebec and Ontario, south of the St. Lawrence River and east of the St. Francois River (COSEWIC 2002). Limiting factors and threats to the milksnake population in Ontario include habitat loss, death due to vehicular traffic or by agricultural machinery, and targeted attacks by humans due to their preference for houses, sheds and barns and for being mistaken for a rattlesnake due to their tendency to vibrate the tail when alarmed (COSEWIC 2002).

The mosaic of habitats on the Site may be used by milksnake however, no hibernacula or evidence of milksnake (skin sheds, etc.) were observed near the few building on the Site. The likelihood of milksnake occurring on-Site is considered moderate. The habitat found on the Site is not unique to the area and is not considered significant for the species. Thus, no further assessment of milksnake is required and it was not carried forward to the impact analysis.

Western Chorus Frog

The western chorus frog (Great Lakes/St. Lawrence – Canadian Shield population) is listed as federally threatened under the Species at Risk Act and assessed with an SRANK of S3 (vulnerable). The western chorus frogs required both terrestrial and aquatic habitats in close proximity. Terrestrial habitat consists mostly of humid prairie, most woods, or meadows. For reproduction and tadpole development, this species requires seasonally dry, temporary ponds that are devoid of predators such as fish (COSEWIC 2008). Limiting factors and threats to this species are due to habitat loss and fragmentation since most populations of western chorus frogs use land that is also deemed valuable for development (COSEWIC 2008).

On-site, the wetland and spring flooding areas provide the potential for suitable western chorus frog habitat in the spring. No western chorus frog was observed during the field surveys conducted in 2012 though it is acknowledged that the appropriate window for observing breeding western chorus frog had passed. Thus, the likelihood of western chorus frog occurring on-site is considered moderate. However, the habitat found on the Site is not unique to the area and is not considered significant for the species. Thus, no further assessment of western chorus frog is required and it was not carried forward to the impact analysis.

6.0 IMPACT ASSESSMENT

The Lakelands Phase 2 site is located near the upstream end of an urbanizing area in a surface catchment dominated by municipal drains. The fish habitat functions on the site are marginal and limited to intermittent flow conveyance in constructed ditches, with potential use by resilient forage fish species during infrequent periods of high flow. The drains on the site were dry throughout 2012. Species observed downstream in Greys Creek Municipal Drain include creek chub, common shiner, brook stickleback and longnose dace.

The surface drainage features in this catchment are being eliminated in order to accommodate several residential developments. In addition to the elimination of these features onsite, there are some small drainage areas (less than 5 ha) that will no longer be connected by open channels to Greys Creek Municipal Drain. Adjacent proposed development, located downstream of Lakelands Phase 2 will eliminate additional sections of these drainage ditches. Individual remnant swales and ditches will be removed on the site, but the local contribution of surface drainage and associated water quality from the site to downstream habitats will be maintained, along with contributions to area stormwater management and fish habitat maintenance at the catchment level. In total, approximately 800 m of supporting and seasonal fish habitat will be eliminated by the proposed development.

Based on the determination of fish habitat existing within the former municipal drain by SNC as part of the Lakeland Meadows Phase I assessment, new compensation plans, approvals, and permits may be required for the proposed works as it relates to the Fisheries Act. Requirements and details of compensation will be determined based upon the final scheduling of this project and with other phases of the Lakelands and Shadow Ridge developments and in consultation with SNC. Mitigation and/or compensation for Phase 2 fish habitat functions will be developed in relation to the development pattern throughout the catchment, with the net result being no loss of fish habitat functions on the Lakelands Phase 2 site. The final fish habitat compensation plan will be determined, based on future discussions with SNC, once all plans for development of the catchment area have been submitted.

Mitigation and Monitoring

In order to mitigate the potential impacts to fish and associated habitat within and downstream of the Site during construction, a number of measures are recommended:

- All work should adhere to applicable MNR timing windows. For warm water systems, the exclusion period for in-water works is between March 15 to June 30;
- Installation, use, and proper maintenance of sedimentation and erosion control measures including turbidity curtains, coffer dams with fish outs of each isolated section, etc. should be employed as necessary;
- Conduct construction during period of no or low flow in watercourses. Stop construction activities if conditions are not suitable, such as during and after heavy rain;
- Fish habitat mitigation or compensation plans will be developed as part of the approvals for the subdivision, in the context of other phases throughout the catchment, in consultation with SNC.

7.0 SUMMARY

This report identifies environmental features on the Site from the perspective of natural heritage, along with potential impacts and mitigation/compensation recommendations to meet the requirements of a scoped EIS. Of the eight types of natural heritage features to be considered in accordance with Policy 2.1 of the PPS, only fish habitat was identified during this study. Based on the determination of fish habitat existing within the former municipal drain by SNC as part of the Lakeland Meadows Phase I assessment, new compensation plans, approvals, and permits may be required for the proposed works as it relates to the Fisheries Act. Requirements and details of compensation will be determined based upon the final scheduling of this project and with other phases of the Lakelands and Shadow Ridge developments and in consultation with SNC.

8.0 LIMITATIONS AND USE OF THE REPORT

This report was prepared for the use of Mr. Glenn McInnes. The report, which specifically includes all tables, figures and appendices, is based on data and information collected by Golder and is based solely on the conditions at the Site at the time of the site visit, supplemented by historical information and data obtained by Golder as described in this report. No assurance is made regarding the accuracy and completeness of these data.

Parts of this report rely on third party information, which was assumed to be factual and accurate. Golder therefore accepts no responsibility for the accuracy of the information by third parties.

Golder has exercised reasonable skill, care and diligence to assess the information acquired during the preparation of this assessment, but makes no guarantees or warranties as to the accuracy or completeness of this information. This report is based upon and limited by circumstances and conditions acknowledged herein, and upon information available at the time of the site investigations.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

9.0 CLOSURE

We trust that this report meets your current needs. If you have any questions, or if we may be of further assistance, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

for

Jennifer Mathia (M.M.M., B.Sc. (Hons))
Project Biologist

Kevin Trimble (M.Sc.)
Principal, Senior Ecologist

JSM/KT/FN/BH/ca/kf
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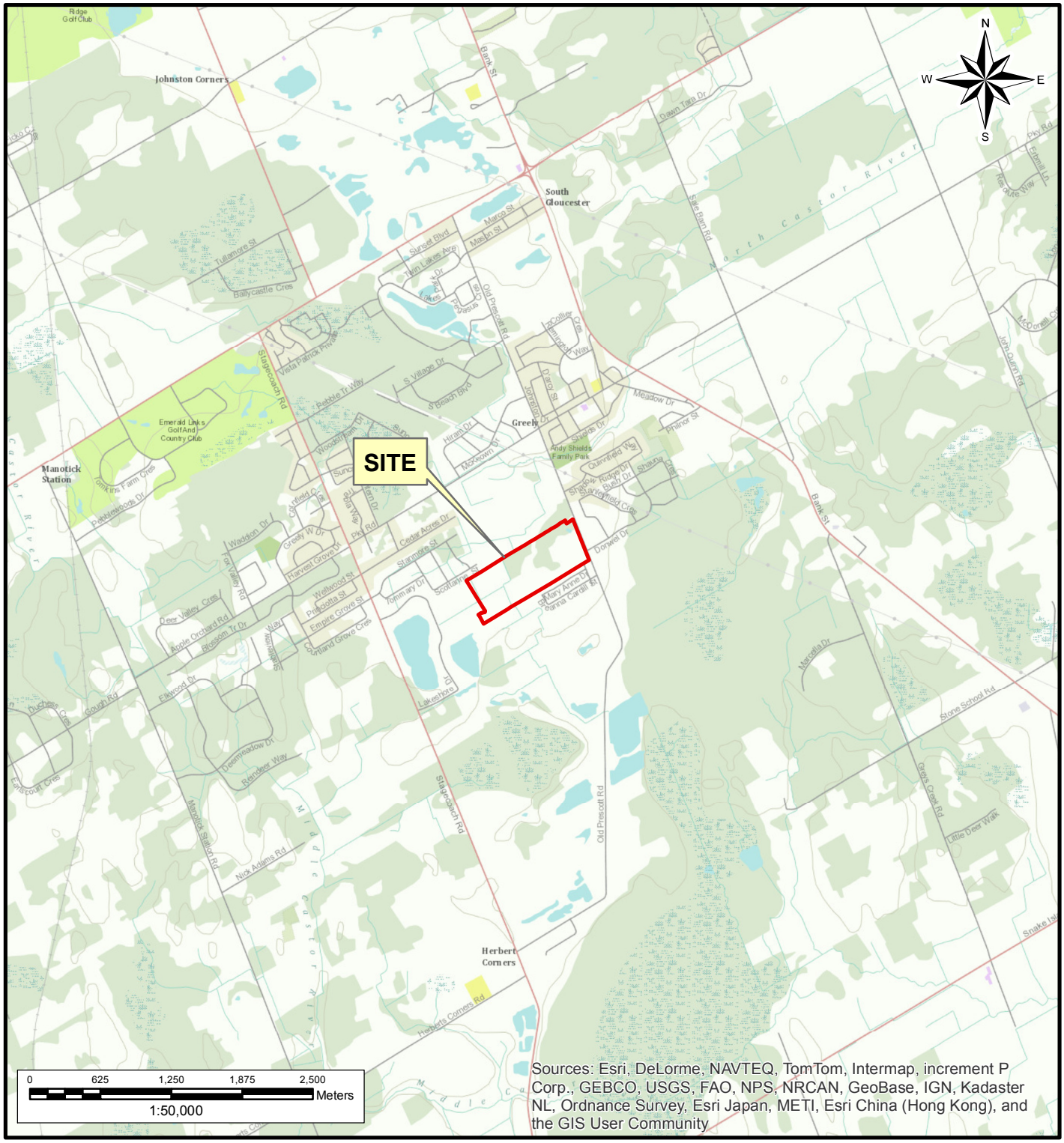

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT No. 10-1125-0034/9001

REFERENCE

DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18

Golder Associates Ottawa, Ontario	DATE 28 Feb. 2013	TITLE **KEY PLAN**	
	DESIGN FN		
	GIS JEM/BR		
PROJECT No. 10-1125-0034	CHECK BH	PROJECT LAKELAND MEADOWS LTD. LAKELAND MEADOWS SUBDIVISION - PHASE 2 OTTAWA, ONTARIO	**FIGURE 1**
SCALE AS SHOWN REV. 0	REVIEW KT		

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LEGEND

- APPROXIMATE SITE BOUNDARY
- LOCAL STUDY AREA

100 0 100

SCALE 1:6,000 METERS

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 10-1125-0034/9001.

REFERENCE

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PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT

LAKELAND MEADOWS PHASE 2 SUBDIVISION

TITLE

SITE PLAN

Golder Associates
Ottawa, Ontario

PROJECT NO. 10-1125-0034			SCALE AS SHOWN	REV. 0.0
DESIGN	FN	Nov. 2012		
GIS	BR/JEM	28 Feb. 2013		
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REVIEW	KT	28 Feb. 2013		

FIGURE 2

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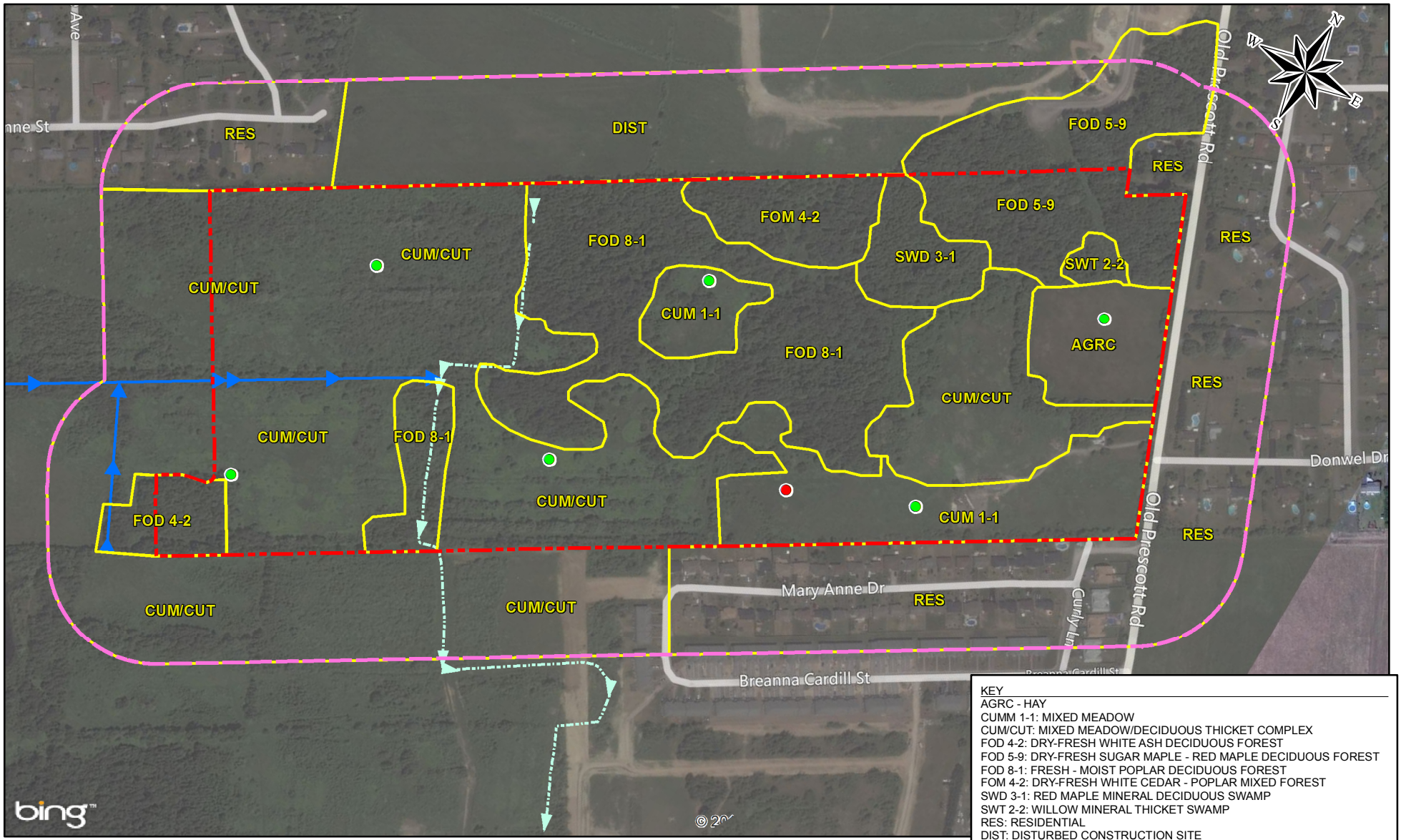

KEY
AGRC - HAY
CUMM 1-1: MIXED MEADOW
CUM/CUT: MIXED MEADOW/DECIDUOUS THICKET COMPLEX
FOD 4-2: DRY-FRESH WHITE ASH DECIDUOUS FOREST
FOD 5-9: DRY-FRESH SUGAR MAPLE - RED MAPLE DECIDUOUS FOREST
FOD 8-1: FRESH - MOIST POPLAR DECIDUOUS FOREST
FOM 4-2: DRY-FRESH WHITE CEDAR - POPLAR MIXED FOREST
SWD 3-1: RED MAPLE MINERAL DECIDUOUS SWAMP
SWT 2-2: WILLOW MINERAL THICKET SWAMP
RES: RESIDENTIAL
DIST: DISTURBED CONSTRUCTION SITE

LEGEND

- BREEDING BIRD POINT COUNT STATION
- MONARCH
- DRAINAGE DITCH
- FORMER MUNICIPAL DRAIN
- APPROXIMATE SITE BOUNDARY
- LOCAL STUDY AREA
- ECOLOGICAL LAND CLASSIFICATION

100 0 100
SCALE 1:6,000 METERS

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 10-1125-0034/9001.

REFERENCE

BING MAPS HYBRID IMAGERY PROVIDED BY (C) 2010 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS, THROUGH ARCGIS ONLINE, ESRI, 2012.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT
LAKELAND MEADOWS PHASE 2 SUBDIVISION

TITLE
ECOLOGICAL LAND CLASSIFICATION, SURVEY STATIONS, AND SPECIES AT RISK LOCATIONS

Golder Associates
Ottawa, Ontario

PROJECT NO. 10-1125-0034			SCALE AS SHOWN	REV. 0.0
DESIGN	FN	13 Nov. 2012		
GIS	BR/JEM	28 Feb. 2013		
CHECK	BH	28 Feb. 2013		
REVIEW	KT	28 Feb. 2013		

FIGURE 3

APPENDIX A

Species at Risk Desktop Screening

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
Amphibian	Jefferson X Blue-spotted salamander, Jefferson genome dominates	*Ambystoma hybrid pop. 1*	GNA	S2				This species prefers moist, well drained upland habitat, avoiding lowland areas prone to flooding. This species overwinters underground in mammal burrows and rock fissures, and moves to temporary pools in the spring to breed. Breeding ponds are typically located in or near to forested habitats, and contain submerged vegetation for egg attachment sites. The presence of this all-female hybrid population, in which the Jefferson genome dominates ("LJJ"), indicates the presence or at least recent historic presence of pure Jefferson salamander males.	Low	No suitable waterbodies on the property for spring breeding. However, species was recorded in Ontario Herpetile Summary Database square (18VR51) that contains the Site.
	Western chorus frog - Great Lakes St. Lawrence/Canadian Shield Pop'n	*Pseudacris triseriata*	G5TNR	S3	THR	THR		This species habitat is typically consists of marshes or wooded wetlands, particularly those with dense shrub layers and grasses as this species is a poor climber. They also use swales in meadows. Hibernates in terrestrial habitats under rocks, dead trees or leaves, in loose soil or in animal burrows. During hibernation, this species is tolerant of flooding.	Low-Moderate	Lowland areas on-site may flood in the spring and provide limited habitat for species. Furthermore, species was recorded in Ontario Herpetile Summary Database square (18VR51) that contains the Site.
Arthropod	Monarch	*Danaus plexippus*	G5	S2N, S4B	SC	SC	SC	Found in Ontario wherever there are milkweed plants for its caterpillars and wildflowers for a nectar source; often found on abandoned farmland and roadsides, but also in city gardens and parks.	High	Dormant milkweed present on site at time of winter site visit. Furthermore, species was observed during surveys.
Bird	Barn swallow	*Hirundo rustica*	G5	S4B	THR		THR	Open habitat, especially fields and agricultural land and around buildings near water.	Low	Buildings on the east side of the Site may provide nesting habitat for barn swallow, although no individuals or nests were observed during breeding bird surveys.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
Bird	Black tern	*Chlidonias niger*	G4	S3B	NAR		SC	Marshes, wet meadows, and ponds. Builds floating nests in loose colonies in shallow marshes, especially in cattails.	Low	No suitable waterbodies on the Site. Furthermore, species was not recorded in OBBA square (18VR51) that contains the Site.
	Bobolink	*Dolichonyx orizivorus*	G5	S4B	THR		THR	Prefers large, open expansive grasslands with dense ground cover; hayfields, meadows of fallow fields; marshes require tracks of grasslands >50 ha	Low	The meadows on the Site appear to have a great deal of shrub and herb component which does not provide preferable nesting habitat for bobolink. However, bobolink was recorded as confirmed in OBBA square (18VR51) that contains the Site.
	Canada warbler	*Wilsonia Canadensis*	G5	S4B	THR	THR	SC	Uses a wide range of deciduous, coniferous and mixed forests, with a well-developed shrub layer and a structurally complex forest floor. It is most abundant in moist, mixed forests. It also occurs in riparian shrub forest on slopes and in ravines, in stands regenerating after natural and anthropogenic disturbances and in old-growth forests with canopy openings and a well-developed shrub layer.	Low	No suitable forested areas on the Site or in the vicinity of the Site. Furthermore, species was not recorded in the OBBA square (18VR51) that contains the Site.
	Cerulean warbler	*Dendroica cerulea*	G4	S3B	END	SC	THR	Found in mature deciduous forests that feature large, tall trees and an open understorey. These forests may be in wet bottomland areas or on dry ridges in upland locations. In Ontario, this warbler also nests in older, second-growth deciduous forest, particularly in river valleys. Nests and forages high in the forest canopy.	Low	No suitable forested areas on the Site or in the vicinity of the Site. Furthermore, species was not recorded in the OBBA square (18VR51) that contains the Site.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
Bird	Chimney swift	*Chaetura pelagica*	G5	S4B, S4N	THR	THR	THR	Chimney swifts nest primarily in old chimneys and similar structures in buildings, and in large hollows of trees.	Low	No suitable structures exist on the Site or in the vicinity of the Site. Furthermore, species was not recorded n the OBBA square (18VR51) that contains the Site, nor was it recorded during field surveys.
	Common nighthawk	*Chordeiles minor*	G5	S4B	THR	THR	SC	These aerial forages require areas with large open habitat. This includes farmland, open woodlands, clearcuts, burns, rock outcrops, alvars, bog ferns, prairies, gravel pits and gravel rooftops in cities.	Low	Though some open areas exist on the Site and within the vicinity of the Site, areas not of adequate size or composition to be preferred by species. Furthermore, species was not recorded n the OBBA square (18VR51) that contains the Site, nor observed during field surveys.
	Eastern meadowlark	*Sturnella magna*	G5	S4B	THR		THR	The Eastern Meadowlark prefers native grasslands; it will nest in pastures and agricultural fields, especially those in alfalfa and hay. It also uses old fields and meadows, more often overgrown with shrubs, and prefers dry habitat to wet and tall grass to short. Occasionally it will use other areas such as golf courses or sand dunes. (Cadman et al 2007. Atlas of the Breeding Birds of Ontario, 2001-2005)	Low	Although some potential habitat exists on site, no observations were made during breeding bird surveys.
	Least bittern	*Ixobrychus exilis*	G5	S4B	THR	THR	THR	Nests in freshwater marshes, where dense tall aquatic vegetation is interspersed with clumps of woody vegetation and open water; are most regular in marshes exceeding 5 ha.	Low	No marshes exist on the Site with aquatic vegetation. Furthermore, the species was not recorded in the OBBA square (18VR51) that contains that Site.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
	Peregrine falcon	*Falco peregrinus anatum*	G4	S3B	SC	THR	THR	Nests are usually scrapes made on cliff ledges on steep cliffs, usually near wetlands - including artificial cliffs such as quarries and buildings; prefers to hunt in open habitats such as wetlands, tundra, savannah, sea coasts and mountain meadows, but will also hunt over open forest.	Low	No suitable nesting habitat on the Site or within the vicinity of the Site. Furthermore, the species was not recorded in the OBBA square (18VR51) that contains the Site, nor observed during field surveys.
	Red-headed woodpecker	*Melanerpes erythrocephalus*	G5	S4B	THR	THR	SC	The red-headed woodpecker nests in open deciduous forest where it requires dead standing snags for nest sites and feeding. This medium-size bird (20cm) lives in open woodland and woodland edges, especially in oak savannahs and riparian forest, which can often be found in parks, golf courses and cemeteries. These habitats contain a higher density of dead trees, which they commonly use for nesting and perching.	Low	Site does not provide a high density of dead trees. Furthermore, the species was not recorded in the OBBA square (18VR51) that contains the Site, not observed during field surveys.
	Short-eared owl	*Asio flammeus*	G5	S2N,S4B	SC		SC	Prefers extensive stretches of relatively open habitat; primarily a bird of grassland and graminoid wetlands, but also tundra.	Low	Though some open areas exist on the Site and within the vicinity of the Site, areas not of adequate size or composition to be preferred by species. Furthermore, species was not recorded n the OBBA square (18VR51) that contains the Site.
Bird	Eastern Whip-poor-will	*Caprimulgus vociferus*	G5	S4B	THR	THR	THR	dry, open, deciduous woodlands of small to medium trees; oak of beech with lots of clearings and shaded leaf litter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100ha forests; may require 500-1000 ha to maintain population. Found in a mix of open and forested areas, such as savannahs, open woodlands or openings in more mature, deciduous, coniferous and mixed forests (ROM web)	Low	Forested areas on Site and within vicinity of Site too small and wrong structure for use.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
Fish	American eel	*Anguilla rostrata*	G4	S1?	SC		END	American eels move freely into muddy, silty bottoms of lakes, lying buried in the daylight hours in summer. They apparently spend the winter buried in mud. Eels are primarily a nocturnal species. Very little is known of their reproductive needs other than the fact that they migrate to the sea to spawn in autumn and the young elvers retreat back to freshwater in the spring.	Low	No suitable waterbodies exist on the Site. Furthermore, the species was not recorded in NHIC square (18VR51) that contains the Site.
	Lake sturgeon - Great Lakes / upper St.Lawrence Pop'n	*Acipenser fulvescens*	G3G4TNR	S2	THR		THR	This species typically inhabits highly productive shoal areas of large lakes and rivers. They are bottom dwellers and prefer mud or gravel and mud bottoms. Small sturgeons are often found on gravelly shoals near the mouths of rivers. A recent study found that juvenile lake sturgeon are more abundant over silt/sand substrate in areas of low velocity which typically support benthic invertebrate communities; whereas adults prefer areas dominated by boulders with the remaining substrate being composed of silt/sand and cobble. They spawn in depths of 0.5 to 4.5 metres in areas of swift water or rapids. Where suitable spawning rivers are not available, such as in the lower Great Lakes, they are known to spawn in wave action over rocky ledges or around rocky islands.	Low	No suitable waterbodies exist on the Site. Furthermore, the species was not recorded in NHIC square (18VR51) that contains the Site.
Mammal	Eastern cougar	*Puma concolor couguar*	G5	SU	DD		END	This species historically inhabited extensive forested areas in Ontario.	Low	No historical or current record of eastern cougar on or near the Site
	Grey fox	*Urocyon cinereoargenteus*	G5	S1	THR	THR	THR	This species inhabits deciduous forests and marshes, and will den in a variety of features including rock outcroppings, hollow trees, burrows or brush piles, usually where dense brush provides cover and in close proximity to water	Low	The habitat on the Site and within the vicinity of the Site is suitable for grey fox. However, due to the given rarity of the species, their use of the Site is highly unlikely. Furthermore, species was not recorded in the NHIC square (18VR51) that contains the Site.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
	Blanding's turtle	*Emydoidea blandingii*	G4	S3	THR	THR	THR	This species will utilize a range of aquatic habitats, but favour those with shallow standing or slow-moving water, rich nutrient levels, organic substrates and abundant aquatic vegetation. They will use rivers but prefer the slow moving currents and are likely only transients in this type of habitat. This species is known to travel great distances over land in the spring in to order reach nesting sites, which can include dry conifer or mixed forests, partially vegetated fields, and roadsides. Suitable nesting substrates include organic soils, sands, gravel and cobble. They hibernate underwater and infrequently under debris close to waterbodies.	Low	No suitable waterbodies exist on the Site. Furthermore, the species was not recorded in NHIC square (18VR51) that contains the Site.
Reptile	Eastern ribbonsnake	*Thamnophis sauritius*	G5	S3	SC	SC	SC	This species is semi-aquatic, and is rarely found far from shallow ponds, marshes, bogs, streams or swamps bordered by dense vegetation. They prefer sunny locations and bask in low shrub branches. Hibernation occurs in mammal burrows, rock fissures or even ant mounds.	Low	Drainage ditches across Site may provide suitable habitat though vegetation bordering them may be insufficient cover. Furthermore, the species was not recorded in the Ontario Herpetile Summary Database square (18VR51) that contains the Site.
	Milksnake	*Lampropeltis triangulum*	G5	S3	SC	SC	SC	This species utilizes a wide range of habitats including prairies, pastures, hayfields, wetlands and various forest types, and is well-known in rural areas where it frequents older buildings. Proximity to water and cover enhances habitat suitability. Hibernation takes place in mammal burrows, hollow logs, gravel or soil banks, and old foundations	Low-Moderate	The mosaic of meadows, thickets, forest, and adjacent agricultural fields provides good potential habitat for milksnake. However, milksnake was not recorded in the Ontario Herpetile Summary Database square (18VR51) that contains the Site.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
	Northern map turtle	*Graptemys geographica*	G5	S3	SC	SC	SC	This species habitat is highly aquatic, rarely leaving the shoreline of permanent bodies of water with abundant shoreline cover (primarily flat rocks), and a healthy population of crayfish. They are fairly intolerant of silty substrates. The best sites have water temperatures that remain at or above 18◦C during the active season, have a swift to moderate current and woodland surroundings. Hibernation occurs in abutments of old bridges and bedrock outcroppings	Low	No suitable waterbodies exist on the Site. Furthermore, the species was not recorded in the Ontario Herpetile Summary Database square (18VR51) that contains the Site.
Reptile	Snapping turtle	*Chelydra serpentina*	G5	S3	SC	SC	SC	This species utilizes a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place in soft substrates under water. nesting sites which consist of sand or gravel banks along waterways.	Low	No suitable waterbodies exist on the Site. Furthermore, the species was not recorded in the Ontario Herpetile Summary Database square (18VR51) that contains the Site.
Vascular Plant	American ginseng	*Panax quinquefolius*	G3G4	S2	END	END	END	Found in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock; forest canopy is usually dominated by sugar maple, white ash, bitternut hickory, and basswood; colonies are often found near the bottom of gentle south-facing slopes, where the microhabitat is warm and well-drained.	Low	No suitable forested areas exist on the Site. Furthermore, the species was not recorded in the NHIC square (18VR51) that contains the Site, nor was it observed during field surveys.
	Butternut	*Juglans cinerea*	G4	S3?	END	END	END	Grows best on rich, moist, well-drained loams often found on stream bank sites but may be found on well-drained gravelly sites, especially those of limestone origin; common associates include basswood, black cherry, beech, black walnut, elm, hemlock, hickory, oak, red maple, sugar maple, white ash and yellow birch; may be an indicator /associate of ginseng.	Low	Potential habitat for butternut is present, however, this conspicuous tree species was not observed during field surveys.

Taxon	Common Name	Scientific Name	Global	Provincial	COSEWIC	SARA (Sch 1)	ESA Reg 230/08	Ontario Habitat Descriptions	Final Liklihood of Occurrence (post field surveys)	Rationale
	Eastern prairie fringed-orchid	*Platanthera leucophaea*	G2G3	S2	END	END	END	Grows in wet prairies, fens, bogs, and occasionally old fields. Can lay dormant in soil for several years until conditions become favourable. Grows in swamps and wet tall-grass prairies.	Low	No suitable habitat on site Furthermore, the species was not recorded in the NHIC square (18VR51) that contains the Site, nor was it observed during field surveys.

[1] Based on Global ranking definitions:
G1—cirically imperilled globally
G 2—imperilled globally
G3—vulnerable globally
G4—apparently secure globally
G5 – secure globally
G?—Not ranked yet
GNR—not ranked
GNA—not applicable
T#--infraspecific taxon (trinomial)

[2]Based on Provincial ranking definitions:
S1—cirically imperilled in Ontario
S 2—imperilled in Ontario
S3—vulnerable in Ontario
S4—apparently secure in Ontario
S5—secure in Ontario
S?—Not ranked yet
SU—status unknown
S#B—breeding
S#N—non-breeding
SH—possibly extirpated (historically)

[3]Only species listed in Schedule 1 and their habitats are protected the ESA.

[4] SARA - *Species at Risk Act* - Species listed under Schedule 1 and their habitats are protected under the ESA

[5] COSEWIC - Committee on the Status of Endangered Wildlife in Canada

APPENDIX B

Vascular Plant Species Identified During 2012 Field Surveys

Appendix B: Vascular Plant Species Identified During 2012 Field Surveys

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]	Location[e]
Acer negundo	Manitoba maple	(N)	G5	S5			1,2
Acer rubrum	Red maple	N	G5	S5			1,2,3
Acer saccharinum	Silver maple	N	G5	S5			2,3
Acer saccharum	Sugar maple	N	G5	S5			1,2
Achillea millefolium	Common yarrow	I	G5T5?	SNA			1
Ageratina altissima	White snakeroot	N	G5T5	S5			1,2,3
Alisma triviale	Small-flowered water plantain	N	G5	S5			1,3
Amaranthus retroflexus	Redroot pigweed	I	GNR	SNA			1
Ambrosia artemisiifolia	Ragweed	N	G5	S5			1
Apocynum androsaemifolium	Spreading dogbane	N	G5	S5			1,2
Aralia nudicaulis	Wild sarsasparilla	N	G5	S5			2
Arctium minus	Common burdock	N	GNR	SNA			1
Asclepias incarnata	Swamp milkweed	N	G5	S5			1,3
Asclepias syriaca	Common milkweed	N	G5	S5			1,2
Athyrium filix-femina	Lady fern	N	G5T5	S5			2
Berteroa incana	Hoary alyssum	I	GNR	SNA			1
Betula papyrifera	White birch	N	G5	S5			1,2
Betula pendula	European white birch	I	GNR	SNA			1
Bidens cernua	Nodding beggar-ticks	N	G5	S5			1,3
Bidens frondosa	Beggar-ticks	N	G5	S5			3
Brassica rapa	Rape seed	I	GNR	SNA			1
Bromus inermis	Smooth brome	I	GNR	SNA			1
Calamagrostis canadensis	Canada blue-joint	N	G5	S5			1,3
Carex bebbii	Bebb's sedge	N	G5	S5			1
Carex communis	Common sedge	N	G5	S5			1,2
Carex intumescens	Bladder sedge	N	G5	S5			2,3
Carex lupulina	Hop sedge	N	G5	S5			3
Carex pseudocyperus	Cyperus-like sedge	N	G5	S5			3
Carex spp.	Sedge species	N	?	?			1,2
Carex vulpinoidea	Fox sedge	N	G5	S5			1,3

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]	Location[e]
Centaurea stoebe	Spotted knapweed	I	GNR	SNA			1
Chenopodium album	Lamb's-quarters	I	G5T5	SNA			1
Cichorium intybus	Chickory	I	GNR	SNA			1
Cicuta bulbifera	Bulb-bearing water-hemlock	N	G5	S5			3
Circaea lutetiana	Enchanters nightshade	N	G5	S5			2
Cirsium vulgare	Bull thistle	I	GNR	SNA			1,2
Clematis virginiana	Virgin's-bower	N	G5	S5			1,2,3
Conyza canadensis	Horseweed	N	G5	S5			1
Cornus alternifolia	Alternate-leaved dogwood	N	G5	S5			1,2
Cornus foemina	Gray dogwood	N	G5	S5			1
Cornus stolonifera	Red osier dogwood	N	G5	S5			1,2,3
Crataegus sp.	Hawthorne	N	?	?			1
Dactylis glomerata	Orchard grass	I	GNR	SNA			1
Daucus carota	Wild carrot	I	GNR	SNA			1
Dryopteris carthusiana	Spinulose woodfern	N	G5	S5			2
Dulichium arundinaceum	Three-way sedge	N	G5	S5			3
Echinochloa crusgalli	Barnyard grass	I	GNR	SNA			1,3
Echinocystis lobata	Wild cucumber	N	G5	S5			1,2
Echium vulgare	Viper's bugloss	I	GNR	SNA			1
Elymus repens	Quack grass	I	GNR	SNA			1
Epipactis helleborine	Helleborine	I	GNR	SNA			2,3
Equisetum arvense	Field horsetail	N	G5	S5			1,2
Erigeron philadelphicus	Philadelphia fleabane	N	G5	S5			1
Eupatorium perfoliatum	Boneset	N	G5	S5			1,3
Eurybia macrophylla	Large-leaved aster	N	G5	S5			1,2
Euthamia graminifolia	Grass-leaved goldenrod	N	G5	S5			1
Eutrochium maculatum	Joe-pye weed	N	G5TNR	S5			1,3
Festuca sp.	Fescue species	I	?	?			1
Fragaria Virginiana	Common strawberry	N	G5	S5			1,2,3
Fraxinus americana	White ash	N	G5	S5			1,2,3
Fraxinus pensylvanicana	Green ash	N	G5	S5			2,3
Galium mollugo	White bedstraw	I	GNR	SNA			1

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]	Location[e]
Galium palustre	Marsh bedstraw	N	G5	S5			3
Galium triflorum	Sweet-scented bedstraw	N	G5	S5			2
Geranium robertianum	Herb robert	N	G5	SNA			1
Geum aleppicum	Yellow avens	N	G5	S5			1,2
Hypericum perforatum	Common St. John's-wort	I	GNR	SNA			1
Lactuca scariola	Prickly-lettuce	N	G5	SNA			1,2
Larix decidua	European larch	I	G5	SNA			1,2
Leonurus cardiaca	Common motherwort	I	GNR	SNA			1
Linaria vulgaris	Butter and eggs	I	GNR	SNA			1
Lonicera canadensis	Fly-honeysuckle	N	G5	S5			2
Lonicera tatarica	Tartarian honeysuckle	I	GNR	SNA			1,2
Lotus corniculatus	Bird's-foot trefoil	I	GNR	SNA			1
Lycopus uniflorus	Northern water-horehound	N	G5	S5			1,3
Lythrum salicaria	Purple loosetrife	N	G5	SNA			1,2,3
Malus pumila	Apple	I	G5	SNA			1,2
Matricaria discoidea	Pineapple weed	N	G5	SNA			1
Medicago sativa	Alfalfa	I	GNR	S5			1
Melilotus alba	White sweet clover	I	G5	SNA			1
Mentha arvensis	Field mint	N	G5	S5			1
Oenothera biennis	Common evening-primrose	N	G5	S5			1
Onoclea sensibilis	Sensitive fern	N	G5	S5			1,2,3
Osmorhiza claytonii	Sweet cicily	N	G5	S5			2
Ostrya virginiana	Ironwood	N	G5	S5			1,2
Panicum capillare	Witch grass	N	G5	S5			1
Parthenocissus inserta	Virginia creeper	N	G5	S5			1,2,3
Pastinaca sativa	Parsnip	I	GNR	SNA			1
Phalaris arundinacea	Reed canary grass	N	G5	S5			1,3
Phleum pratense	Timothy	I	GNR	SNA			1,2
Picea abies	Norway spruce	I	G5	SNA			2
Picea glauca	White spruce	N	G5	S5			2
Pinus sylvestris	Scots pine	I	GNR	SNA			1,2
Plantago lanceolata	Narrow-leaved plantain	I	G5	SNA			1

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]	Location[e]
Plantago major	Common plantain	I	G5	SNA			1
Poa compressa	Canada bluegrass	I	GNR	SNA			1,3
Poa pratensis	Kentucky bluegrass	I	G5T5?	SNA			1,2
Populus balsamifera	Balsam poplar	N	G5	S5			1,2,3
Populus tremuloides	Trembling aspen	N	G5	S5			1,2
Potentilla norvegica	Rough cinquefoil	I	G5	S5			1
Prunella vulgaris	Heal-all	N	G5T5	S5			1,2
Prunus nigra	Canada plum	N	G4G5	S4			1,2
Prunus pensylvanica	Pin cherry	N	G5	S5			1,2
Pyrola asarifolia	Pink pyrola	N	G5	S5			2
Quercus rubra	Red oak	N	G5	S5			1,2
Rhamnus cathartica	Common buckthorn	I	GNR	SNA			1
Rhamnus frangula	Glossy buckthorn	I	GNR	SNA			1,2,3
Rhus typhina	Staghorn sumac	N	G5	S5			1,2
Ribes cynosbati	Prickly gooseberry	N	G5	S5			1,2
Rubus idaeus	Red raspberry	N	G5T5	S5			1,2
Rudbeckia hirta	Black-eyed susan	N	G5	S5			1
Rumex crispus	Curly dock	N	GNR	SNA			1
Salix bebbiana	Beaked willow	N	G5	S5			1,2,3
Salix discolor	Pussy willow	N	G5	S5			1
Salix petiolaris	Slender willow	N	G5	S5			1,3
Salix x fragilis	Crack willow	I	GNR	SNA			1,2
Sambucus canadensis	American elderberry	N	G5	S5			1,2
Scirpus atrovirens	Black bulrush	N	G5?	S5			1,3
Scirpus cyperinus	Wool-grass	N	G5	S5			1,3
Setaria pumila	Yellow foxtail	I	GNR	SNA			1
Silene vulgaris	Bladder campion	I	GNR	SNA			1
Sisyrinchium montanum	Blue-eyed grass	N	G5	S5			1
Solanum dulcamara	Climbing nightshade	I	GNR	SNA			1,3
Solanum nigrum	Black nightshade	I	GNR	SNA			1
Solidago caesia	Blue-stemmed goldenrod	N	G5	S5			2,3
Solidago canadensis	Canada goldenrod	N	G5T5	S5			1,2
Solidago juncea	Early goldenrod	N	G5	S5			1

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]	Location[e]
Solidago rugosa	Rough goldenrod	N	G5	S5			1,2
Spiraea alba	Meadowsweet	N	G5	S5			1,3
Symphyotrichum lanceolatum	Panicled aster	N	G5T5	S5			1,2,3
Symphyotrichum novae-angliae	New England aster	N	G5	S5			1
Symphyotrichum puniceum	Purple-stemmed aster	N	G5	S5			3
Syringa vulgaris	Common lilac	I	G5	SNA			1
Taraxacum officinale	Common dandelion	I	G5	SNA			1
Thelypteris palustris	marsh fern	N	G5	S5			3
Thuja occidentalis	Eastern white cedar	N	G5	S5			1,2,3
Trifolium pratense	Red clover	I	GNR	SNA			1
Trillium grandiflorum	White trillium	N	G5	S5			1,2
Typha latifolia	Common cattail	N	G5	S5			1,3
Ulmus americana	White elm	N	G5?	S5			1,2,3
Urtica dioica	Stinging nettle	N	G5T?	S5			1,3
Verbascum thapsus	Common mullein	I	GNR	SNA			1
Verbena hastata	Blue vervain	N	G5	S5			1,3
Viburnum lentago	Nannyberry	N	G5	S5			1,3
Vicia cracca	Cow vetch	N	GNR	SNA			1
Viola sp.	Violet species	?	?	?			1,2
Vitis riparia	Riverbank grape	N	G5	S5			1,2,3

Design by: FN November 2012
Check by: JSM November 2012

Scientific names follow Morton & Venn (1990) and published volumes of the Flora of North America (1993-2010).

Common names and origin based upon Varga *et al*. (2000) and NHIC (2012).

[a] Origin: N = Native; (N) = Native but not in study area region; I = Introduced.

[b] Ranks based upon determinations made by the Ontario Natural Heritage Information Centre (2012).

G = Global; S = Provincial; Ranks 1-3 are considered imperiled or rare; Ranks 4 and 5 are considered secure.

SNA = Not applicable for Ontario Ranking (e.g. Exotic species)

[c] Canada *Species at Risk Act* (Schedule 1; checked September 2012)

[d] Ontario *Endangered Species Act* (O. Reg. 4/12 amending O.Reg.230/08; checked December 2012)

[e] Locations - 1: Meadows, fields, thickets and habitat edges 2: Forests 3: Wetlands

APPENDIX C

Wildlife Species Identified During 2012 Field Surveys

Appendix C: Wildlife Species Observed During 2012 Field Surveys

Common Name	Scientific Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Birds (38 Species)						
Alder flycatcher	Empidonax alnorum	N	G5	S5B	--	--
American crow	*Corvus brachyrhynchos*	N	G5	S5B	--	--
American goldfinch	*Spinus tristis*	N	G5	S5B	--	--
American robin	*Turdus migratorius*	N	G5	S5B	--	--
American woodcock	*Scolopax minor*	N	G5	S4B	--	--
Black-and-white warbler	*Mniotilta varia*	N	G5	S5B	--	--
Black-billed cuckoo	*Coccyzus erythropthalmus*	N	G5	S5B	--	--
Black-capped chickadee	*Poecile atricapillus*	N	G5	S5B	--	--
Blue jay	*Cyanocitta cristata*	N	G5	S5	--	--
Brown-headed cowbird	*Molothrus ater*	N	G5	S4B	--	--
Brown thrasher	*Toxostoma rufum*	N	G5	S4B	--	--
Cedar waxwing	*Bombycilla cedrorum*	N	G5	S5B	--	--
Chipping sparrow	*Spizella passerina*	N	G5	S5B	--	--
Chestnut-sided warbler	*Setophaga pensylvanica*	N	G5	S5B	--	--
Common grackle	*Quiscalus quiscula*	N	G5	S5B	--	--
Common raven	*Corvus corvax*	N	G5	S5	--	--
Common yellowthroat	*Geothlypis trichas*	N	G5	S5B	--	--
Downy woodpecker	*Picoides pubescens*	N	G5	S5	--	--
Eastern pheobe	*Sayornis phoebe*	N	G5	S5B	--	--
European starling	*Sturnus vulgaris*	I	G5	SNA	--	--
Great crested flycatcher	*Myiarchus crinitus*	N	G5	S4B	--	--
Grey catbird	*Dumetella carolinensis*	N	G5	S4B	--	--
Hairy woodpecker	*Picoides villosus*	N	G5	S5	--	--
House wren	*Troglodytes aedon*	N	G5	S5B	--	--
Mourning dove	*Zenaida macroura*	N	G5	S5	--	--
Northern flicker	*Colaptes auratus*	N	G5	S4B	--	--
Red-eyed vireo	*Vireo olivaceus*	N	G5	S5B	--	--
Red-winged blackbird	*Agelaius phoeniceus*	N	G5	S4	--	--
Rose-breasted grosbeak	*Pheucticus ludovicianus*	N	G5	S4B	--	--
Savannah sparrow	*Passerculus sandwichensis*	N	G5	S4B	--	--

Common Name	Scientific Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Song sparrow	*Melospiza melodia*	N	G5	S5B	--	--
Swamp sparrow	*Melospiza georgiana*	N	G5	S5B	--	--
Veery	*Catharus fuscescens*	N	G5	S4B	--	--
Warbling vireo	*Vireo gilvus*	N	G5	S5B	--	--
White-breasted nuthatch	*Sitta carolinensis*	N	G5	S5	--	--
White-throated sparrow	*Zonotrichia albicollis*	N	G5	S5B	--	--
Yellow-bellied sapsucker	*Sphyrapicus varius*	N	G5	S5B	--	--
Wild turkey	*Meleagris gallopava*	N	G5	S5	--	--
Herpetiles (4 Species)						
Eastern garter snake	*Thamnophis sirtalis*	N	G5T5	S5	--	--
Grey tree frog	*Hyla versicolor*	N	G5	S5	--	--
Northern red-bellied snake	*Storeria occipitomaculata*	N	G5T5	S5	--	--
Spring peeper	*Pseudacris crucifer*	N	G5	S5	--	--
Mammals (9 Species)						
Beaver	*Castor canadensis*	*N*	G5	S5	--	--
Coyote	*Canis latrans*	*N*	G5	S5	--	--
Eastern cottontail	*Sylvilagus floridanus*	N	G5	S5	--	--
Grey squirrel	*Sciurus carolinensis*	N	G5	S5	--	--
Raccoon	*Procyon lotor*	N	G5	S5	--	--
Red fox	*Vulpes vulpes*	N	G5	S5	--	--
Red squirrel	*Tamiasciurus hudsonicus*	N	G5	S5	--	--
Striped skunk	*Memphitis memphitis*	N	G5	S5	--	--
White-tailed deer	*Odocoileus virginianus*	N	G5	S5	--	--
Dragonfly and Butterfly (18 Species)						
American painted lady	*Vanessa virginiensis*	N	G5	S5	--	--
Black swallowtail	*Papilio polyxenes*	N	G5	S5	--	--
Cabbage white	*Pieris rapae*	I	G5	SNA	--	--
Clouded sulphur	*Colias philodice*	N	G5	S5	--	--
Common ringlet	*Coenonympha tullia*	N	G5	S5	--	--
Common wood-nymph	*Cercyonis pegala*	N	G5	S5	--	--
Eastern tailed blue	*Everes comyntas*	N	G5	S5	--	--
European skipper	*Thymelicus lineola*	I	G5	SNA	--	--

Common Name	Scientific Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Marsh bluet	*Enallagma ebrium*	N	G5	S5	--	--
Meadow fritillery	*Boloria bellona*	N	G5	S5	--	--
Monarch	***Danaus plexippus***	**N**	**G5**	**S2N,SB**	**SC**	**SC**
Mustard white	*Pieris oleracea*	N	G5	SNA	--	--
Northern crescent	*Phycoides pascoensis*	N	G5	S5	--	--
Prince baskettail	*Epitheca princeps*	N	G5	S5	--	--
Spread-wing species	*Lestes sp.*	N	?	?	--	--
Summer azure	*Celastrina neglecta*	N	G5	S5	--	--
Viceroy	*Limenitis archippus*	N	S5	G5	--	--
White-faced meadowhawk	*Sympetrum obtrusum*	N	S5	G5	--	--

Design by: FN November 2012

Checked by: JSM November 2012

[a] Origin: N = Native; (N) = Native but not in study area region; I = Introduced.

[b] Ranks based upon determinations made by the Ontario Natural Heritage Information Centre (2012).

G = Global; S = Provincial; Ranks 1-3 are considered imperiled or rare; Ranks 4 and 5 are considered secure.

SNA = Not applicable for Ontario Ranking (e.g. Exotic species)

[c] Canada *Species at Risk Act* (Schedule 1; checked September 2012); SC = Special Concern

[d] Ontario *Endangered Species Act* (O. Reg. 4/12 amending O.Reg.230/08; checked September 2012); SC = Special Concern

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