Invenergy

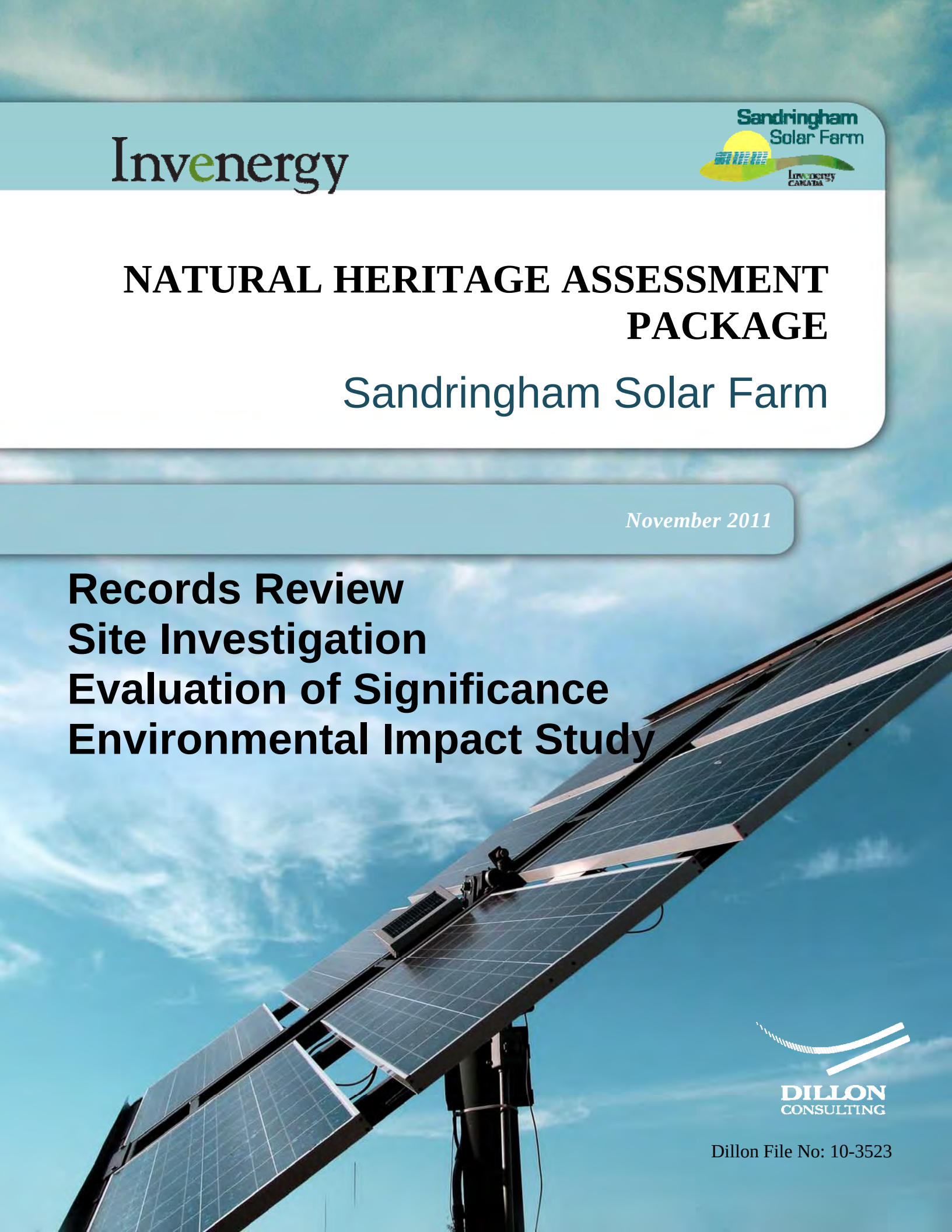
Sandringham Solar Farm

NATURAL HERITAGE ASSESSMENT PACKAGE

Sandringham Solar Farm

November 2011

Records Review
Site Investigation
Evaluation of Significance
Environmental Impact Study



DILLON CONSULTING

Dillon File No: 10-3523

Ministry of Natural Resources

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Ontario

June 29, 2011

Invenergy Solar Canada ULC
120 Front Street
Toronto ON
M5A 4L9

Attention: Mr. Ryan Ralph, Development Manager

Dear M. Ralph,

In accordance with the Ministry of the Environment's (MOE's) Renewable Energy Approvals regulation (O.Reg.359/09), applicants are required to prepare a natural heritage assessment and environmental impact study using evaluation criteria or procedures established or accepted by the Ministry of Natural Resources (MNR). The regulation requires MNR to confirm that the natural heritage assessment and environmental impact study, including mitigation measures, were prepared using established procedures acceptable to MNR. The MNR's confirmation letter, along with other required project documentation, must be submitted to MOE as part of an application for a Renewable Energy Approval for consideration by MOE in making their Renewable Energy Approval decision.

The Ministry of Natural Resources (MNR) has reviewed the natural heritage assessment and environmental impact study reports submitted June 21, 2011, for the Invenergy Solar Canada ULC Sandringham Solar Farm, located at 764 Sandringham Road, in the City of Kawartha Lakes.

In accordance with sections 28(2) and 38(2)(b) of the Renewable Energy Approvals regulation, MNR provides the following confirmations following review of the natural heritage assessment reports:

1. The MNR confirms that the determination of the existence of natural features and the boundaries of natural features was made using applicable evaluation criteria or procedures established or accepted by MNR.
2. The MNR confirms that the site investigation and records review were conducted using applicable evaluation criteria or procedures established or accepted by MNR.
3. The MNR confirms that the evaluation of the significance or provincial significance of the natural features was conducted using applicable evaluation criteria or procedures established or accepted by MNR.

4. The MNR confirms that the project location is not in a provincial park or conservation reserve.

5. The MNR confirms that the environmental impact study report has been prepared in accordance with procedures established by the MNR.

MNR is providing this confirmation letter based on the review of the information provided in your natural heritage assessment reports. Applicants should be aware of the transition provisions under section 62 of the amended Renewable Energy Approvals regulation and fulfill natural heritage assessment requirements accordingly.

Where specific commitments have been made by the applicant in the natural heritage assessment with respect to project design, construction, rehabilitation, operation, mitigation, or monitoring, MNR expects that these commitments will be considered in MOE's Renewable Energy Approval decision and, if approved, be implemented by the applicant.

This confirmation letter is valid for the project as proposed in the natural heritage assessment and environmental impact study, including those sections describing the environmental effects monitoring plan and construction plan report. Should any changes be made to the proposed project that would alter the natural heritage assessment, MNR may need to undertake additional review of the natural heritage assessment.

In accordance with section 12(1) of the Renewable Energy Approvals Regulation, this letter must be included as part of your application submitted to the MOE for a Renewable Energy Approval.

If you wish to discuss any part of the confirmation or additional comments provided, please contact Eric R. Prevost, Renewable Energy Planning Ecologist, at (705) 755-3134.

Sincerely,

Karen Bellamy
District Manager
Peterborough District, MNR

cc. Jim Beal, Renewable Energy Provincial Field Program Coordinator, Regional Operations Division, MNR
Narren Santos, Environmental Assessment and Approvals Branch, MOE
Don McKinnon, REA Project Manager, Dillon Consulting Limited

Natural Heritage Assessment Summary

The Sandringham Solar Farm ("Project") is being planned by Invenergy Solar Canada ULC ('Invenergy Canada'). The draft Natural Heritage Assessment package has been prepared under the requirements of the Renewable Energy Approvals (REA) process as outlined in *Ontario Regulation 359/09* and is being made available for agency, First Nation and public review and comment. As required by the REA regulations, an assessment of all natural features within 120 m of the project location has been conducted. The NHA report package consists of four reports: *Records Review, Site Investigation, Evaluation of Significance* and *Environmental Impact Study*. These reports fulfill the requirements outlined in Sections 24, 25, 26, 27 and 38 of the Regulation.

To complete this assessment, natural heritage records were obtained and reviewed, onsite field surveys were conducted and discussions held with applicable agencies (e.g. the MNR). Onsite existing natural feature conditions were based on a records review and onsite investigations. The results of this work are documented in this *Natural Heritage Assessment Package* as part of this REA submission. Much of the site is relatively dry upland sparse to dense thicket, with shallow soils over bedrock. There are no Significant Valleylands, Areas of Natural and Scientific Interest, provincial parks or conservation reserves within 120m of the project location.

Wetland areas are concentrated in the southwest and eastern sections of the project location. Wetland vegetation communities include five distinct Mixed Willow Mineral Deciduous Thicket Swamp wetland areas and a Poplar Mineral Deciduous Swamp. Wetland units are small are associated with overland drainage. One wetland approximately 90 metres from the project location has been assumed to be provincially significant based on MNR guidelines, and will be unaffected by the project. Project components have been located a minimum of 30 metres outside of all wetland areas to mitigate potential impacts.

There is one woodland unit within 120 m that has been evaluated as "significant" the basis of its probable linkage function, proximity to significant shrub/early successional bird breeding habitat and potential function as a headwater area.

Significant Wildlife Habitat (SWH) within 120 m of the project location includes Shrub/Early Successional Bird Breeding Habitat.

Significant adverse effects from construction activity, design and operations or decommissioning to the natural and social environment have been avoided through careful facility layout planning, the application of appropriate mitigation measures, and adherence to all regulatory requirements.

The MNR provided a letter of confirmation on June 29, 2011 for this project upon reviewing the draft Natural Heritage Assessment documents.

Invenergy

Sandringham Solar Farm

RECORDS REVIEW REPORT

Natural Heritage Assessment

May 2011

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1. Introduction

Invenergy Solar Canada ULC (Invenergy Canada) proposes to develop a solar farm with a maximum name plate capacity of 10 MW (AC), located near the Hamlet of Argyle in the City of Kawartha Lakes (**Figure 1**). The total capacity will be less than 15 MWp (DC). The renewable energy facility will be known as the Sandringham Solar Farm and will be rated as a Class 3 Solar Facility.

Invenergy Solar Canada ULC has received a contract from the Ontario Power Authority (OPA) for the purchase of electricity generated by photovoltaic solar panels from this solar farm through the Province's Feed-in-Tariff (FIT) program (enabled by the Green Energy and Green Economy Act). The project will require approval under Section 24 of Ontario Regulation 359/09 (O. Reg. 359/09) – Renewable Energy Approval (REA) under Section V.0.1 of the *Ontario Environmental Protection Act*. The REA process replaces previous requirements for several separate approvals under (among others) the Environmental Assessment Act, Planning Act and Environmental Protection Act.

Ontario Regulation 359/09 requires that all renewable energy projects conduct a records review of natural heritage features (REA Sections 25). This report was completed to address the regulatory requirements for the REA process. It is intended that the sections of this report pertaining to natural heritage features will be submitted to the Ministry of Natural Resources (MNR) for review and comment as required in Ontario Regulation 359/09. Species at risk, fish habitat and other information needs, as outlined in the MNR's Approval and Permitting Requirements Document for Renewable Energy (MNR 2009), are discussed in a separate report, under direction from the MNR and in compliance with the *REA* process.

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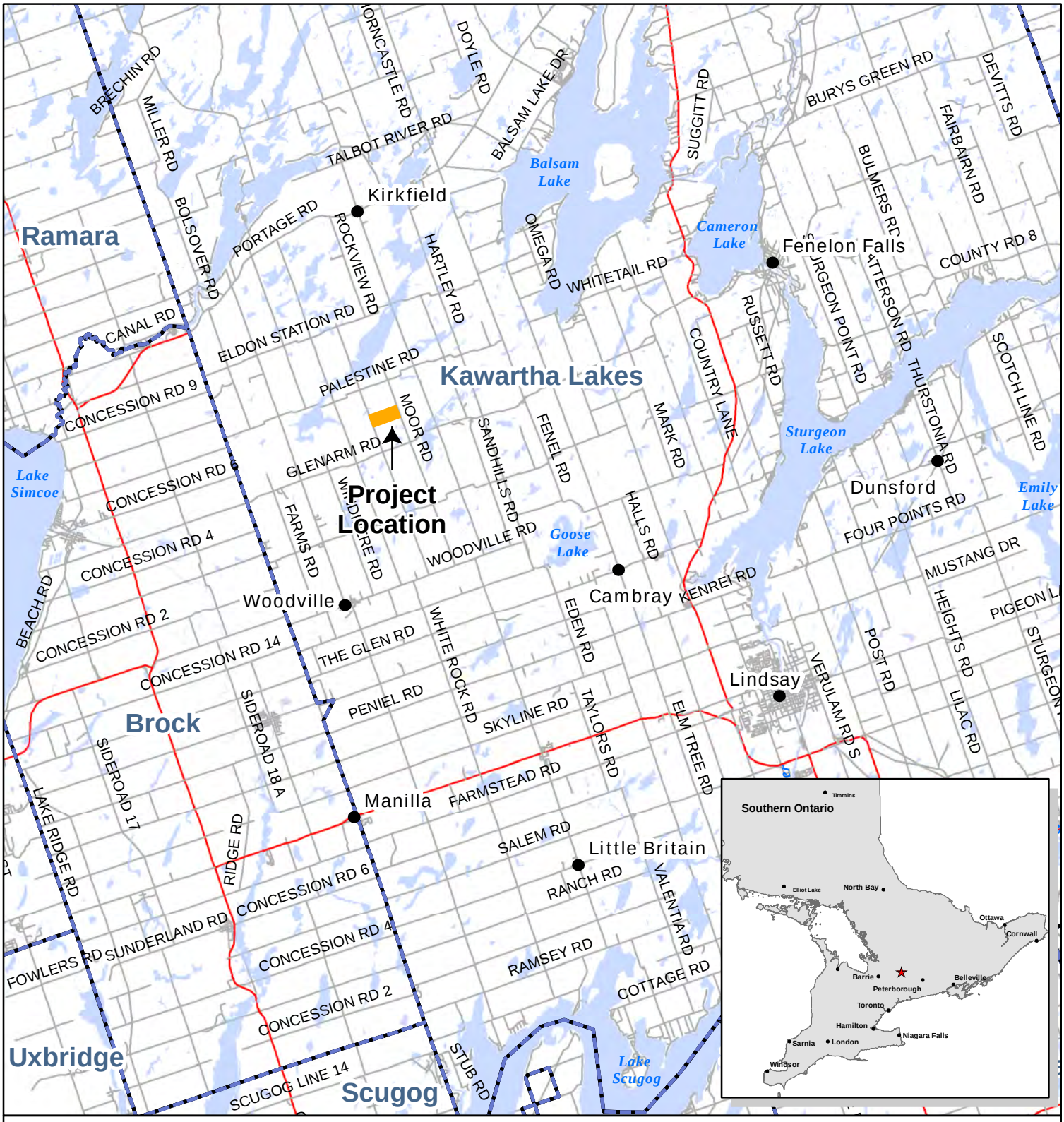

Invenergy Canada

Figure 1: Sandringham Solar Farm, General Location of the Sandringham Solar Farm in Ontario

Legend

- Roads
- Highway
- Project Location
- Water Body
- Municipal Boundaries

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File Path: I:\GIS\103523 - Simcoe Solar Energy Centre (Woodville)\Mapping\Records Review - Sandringham\Figure 1 General Site Location.mxd

2. The Proponent

Invenergy Canada is an experienced developer, owner and operator of power generation and energy delivery assets. Company activities include developing, building, owning and operating renewable energy facilities. In the course of developing renewable energy projects, Invenergy Canada satisfies various environmental approval requirements and obtains regulatory approvals that vary depending on the jurisdiction, project capacity and site location. In addition, Invenergy Canada builds long-term relationships with the communities that host its projects and is committed to the health and welfare of the Hamlet of Argyle and the City of Kawartha Lakes.

Contact information for Invenergy Canada is as follows:

Full Name of Company:	*Invenergy Solar Canada ULC*
Address:	*120 Front Street, Toronto, Ontario, M5A 4L9*
Telephone:	*(416) 901-9463*
Fax:	*(416) 546-9905*
Prime Contact:	*Ryan Ralph, Development Manager*
Email:	*RRalph@invenergyllc.com*

Dillon Consulting Limited is the prime contractor for the preparation of this *Records Review Report*. The Dillon contact is:

Full Name of Company:	*Dillon Consulting Limited*
Address:	*235 Yorkland Boulevard, Suite 800* *Toronto, Ontario, M2J 4Y8*
Telephone:	*Office: (416)-229-4646 ext 2355*
Prime Contact:	*Don McKinnon, REA Project Manager*
Email:	*DPMckinnon@dillon.ca*

3. Project Location

The proposed Class 3 solar facility is located at 764 Sandringham Road near the Hamlet of Argyle, in the City of Kawartha Lakes. **Figure 1** shows the general location of the project. The solar resource quality in this region is very good and the site was selected by considering daily average solar radiation, ease of access to the local electrical system and environmental considerations. **Figure 2** shows the project location, as defined in Ontario Regulation 359/09, which encompasses all project components and includes a 120 m setback for adjacent natural features. All project components, including solar modules and electrical facilities, such as inverters, transformers, substations and electrical lines, will be located on private land or municipal rights-of-way. The planned solar panel installation will occur primarily within lands currently designated as prime agriculture (City of Kawartha Lakes 2010; see **Appendix A1**).

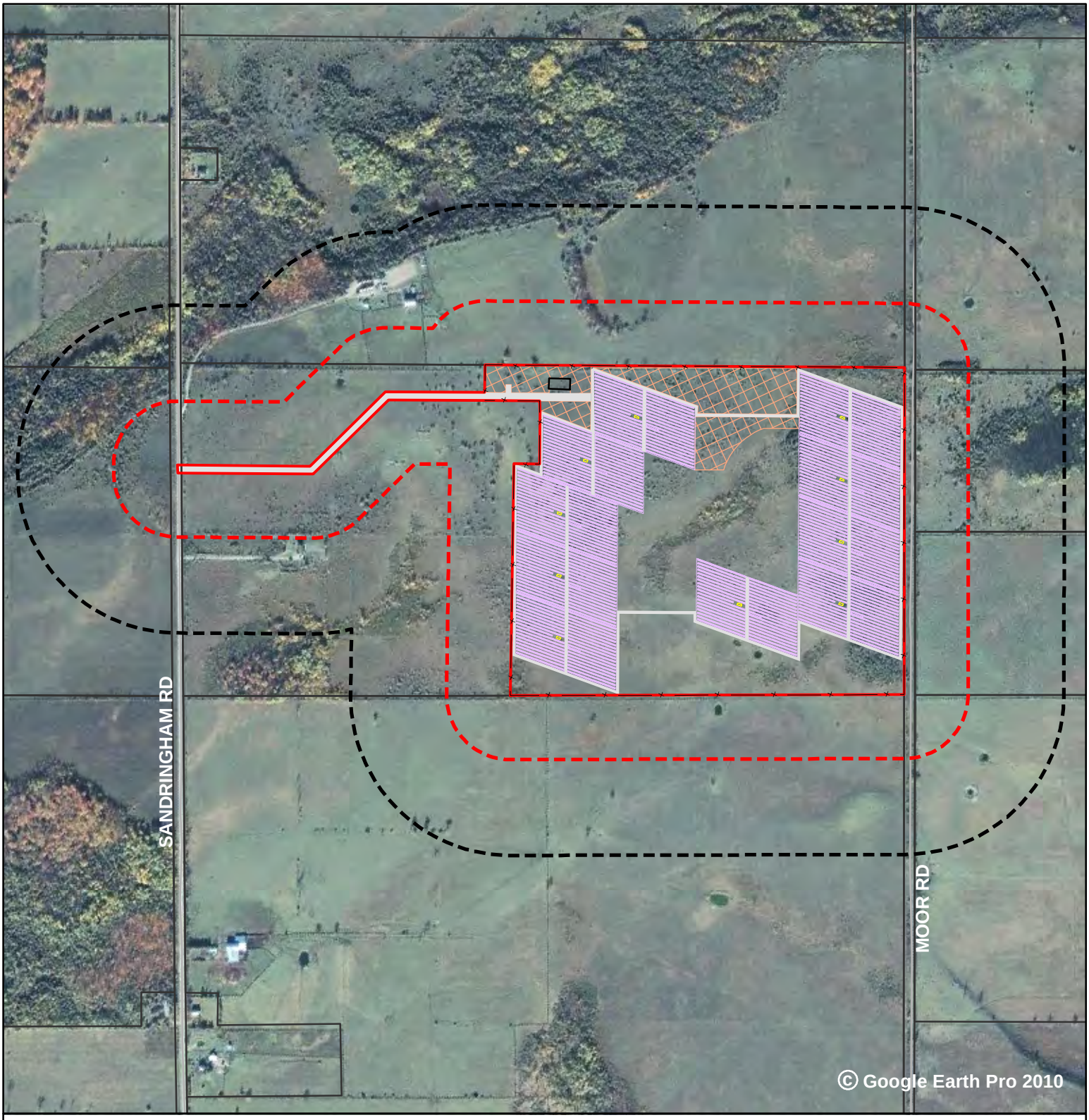

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Figure 2: Sandringham Solar Farm, Project Location

Legend

- Roads
- Project Location
- 120 m Project Location Setback
- 300m Project Location Setback
- Parcels

Project Components

- Solar Panel Layout
- Access/Gravel Roads
- Substation
- Inverters
- Construction Laydown Area
- Project Security Fence

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4. Methods – Natural Heritage Records Review

A records review was completed, consistent with Section 25 of Ontario Regulation 35/09, for the project location (see **Figure 2**) using secondary source information.

Section 25 of Ontario Regulation 359/09 states a natural heritage assessment for a renewable energy facility includes a records review to search for and determine whether the project location is:

1. In or within 120 m of a provincial park or conservation reserve;
2. In a natural feature, as defined to be:
    i. a wetland (coastal wetland, northern wetland or southern wetland);
    ii. a valleyland;
    iii. a wildlife habitat;
    iv. a woodland; or
    v. an area of natural and scientific interest (ANSI, life science).
3. Within 50 m of an ANSI (earth science); or
4. Within 120 m of a natural feature that is not an ANSI (earth science).

Table 1 outlines the secondary sources of information used to conduct the natural heritage features records review.

Table 1: Records and Resources Search and Analyzed During Records Review

DESCRIPTION	SOURCE
POLICIES, LEGISLATION & GUIDELINES	
Single Tier Official Plan – City of Kawartha Lakes Official Plan	City of Kawartha Lakes 2010.
Natural Heritage Reference Manual, Second Edition	Ontario Ministry of Natural Resources, March 2010.
Significant Wildlife Habitat Technical Guide	Ontario Ministry of Natural Resources, October 2000.
Significant Wildlife Habitat Ecoregion Criteria Schedules. Addendum to the Significant Wildlife Habitat Technical Guide. Working Draft.	Ontario Ministry of Natural Resources, January 2009.
REPORTS	
Great Lakes Conservation Blueprint for Terrestrial Biodiversity. Volume 2: Ecodistrict Summaries	Henson and Brodribb 2005. Produced by the Nature Conservancy of Canada.
Ontario Landbird Conservation Plan. Lower Great Lakes/St. Lawrence Plain. North American Bird Conservation Region 13	Ontario Partners in Flight 2008
CONSULTATION	
Contacted Kawartha Region Conservation Authority (KRCA) to request various natural heritage and fisheries information.	Leah Breivik, Planner, KRCA, July 2010, written correspondence.
Contacted Ministry of Natural Resources Peterborough District to introduce the project and request various natural heritage, fisheries and species at risk information as available.	Eric Prevost, REA Planning Ecologist/ Species at Risk Biologist, MNR Peterborough District, various dates throughout 2010, email and personal communication.
Contacted Canadian Wildlife Service (CWS). Information related to wildlife species and wildlife habitat requested. CWS has indicated they currently are working on a process to provide input but at this time have no information to provide.	Denise Fell, CWS Biologist, October 18, 2010, verbal communication. Follow-up email to Rob Dobos, CWS Biologist, November, 2010, email correspondence.
ONLINE RESOURCES	
Status of Species listed under the *Species at Risk Act* (*SARA*)	SARA Public Registry, accessed December 2010.
Status of Species listed under the *Endangered Species Act, 2007*	MNR Species at Risk in Ontario List, accessed December 2010.
Land Information Ontario (including NRVIS data)	Online data, last accessed December 2010

DESCRIPTION	SOURCE
MNR Natural Heritage Information Centre; data related to species, plant communities, invasive species, wildlife habitat, natural areas	Natural Heritage Information Centre database, accessed December 2010
Conservation Priorities for the Birds of Southern Ontario	Online data, last accessed December 2010
Ontario Breeding Birds Atlas (OBBA) – Square 17PK62	Online data, last accessed December 2010
Important Bird Area (IBA) – Carden Plain (ON 152)	Online data, last accessed December 2010
Ontario Herpetofaunal Summary Atlas (via NHIC)	Online data, last accessed December 2010
Ontario Odonata Atlas (via NHIC)	Online data, last accessed December 2010
Mammals of the Western Hemisphere v3.0	Accessed via NatureServe October 2010 from Patterson et al., 2007
RECORDS NOT APPLICABLE OR NOT EXISTING	
Local Planning Board Records; Local Roads Board Records; Local Services Board Records	Not applicable as boards/records do not exist
Christmas Bird Count (CBC)	No online data available for project location, accessed December 2010

5. Results - Records Review

Based on our review and analysis of the records and resources outlined in **Table 1**, and in accordance with Ontario Regulation 359/09, determinations were made whether the project location is in or within 120 m of a natural feature.

5.1 Natural Heritage Assessment

The project location falls within Ecodistrict 6E-8 (Peterborough) and was summarized as part of the Great Lakes Conservation Blueprint for Terrestrial Biodiversity (Henson and Brodribb 2005; see **Appendix A2**). The majority of land in this Ecodistrict is private and used for agriculture; approximately 40% of this land exists as natural cover. The majority of the natural cover is forest and wetlands consisting of swamp complexes and marshes. This Ecodistrict consists almost entirely of drumlinized till plain. Lands designated for conservation make up approximately 10% of the Ecodistrict. Approximately 38% of the occurrences of species and vegetation communities of conservation concern occur within these conservation lands.

Located outside the Hamlet of Argyle, the project location has been primarily used as agricultural land with sections designated as environmental protection, unevaluated wetland and shallow overburden according to the City of Kawartha Lakes (2010).

5.1.1 Natural Features

Based on our review and analysis of the records and resources outlined in **Table 1**, and in accordance with Ontario Regulation 359/09, the presence of natural features are documented below and determinations made as to whether the project location is in or within 120 m or 300 m of these features (**Figure 3**). The consideration of features 300 m from the project location is included to meet the requirements of the Construction Plan Report. The Construction Plan Report will be required as part of the REA Application.

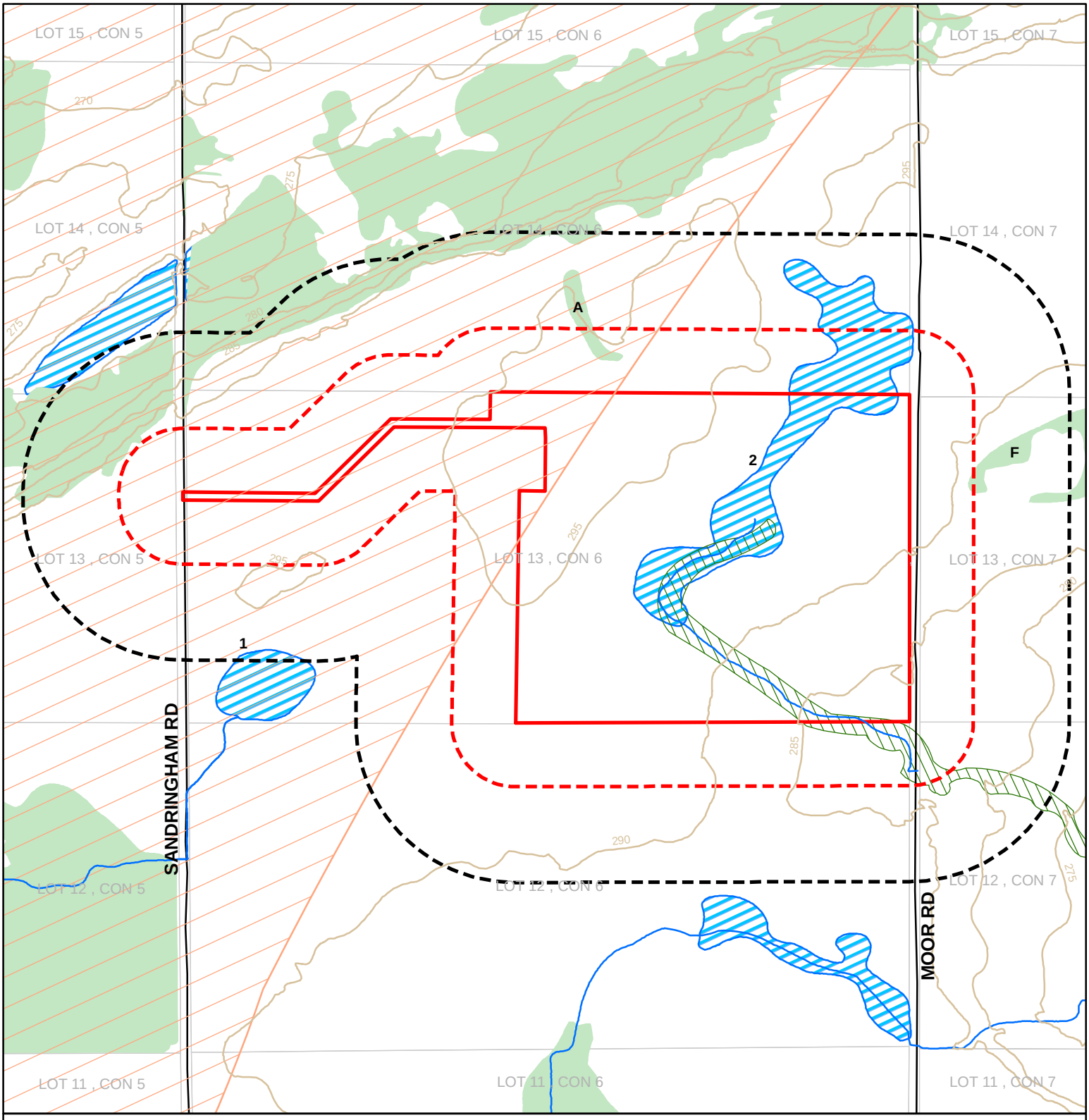

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Figure 3: Sandringham Solar Farm, Records Review Map

Legend

- Watercourse
- 5 m Contours
- Roads
- Project Location
- 120 m Project Location Setback
- 300m Project Location Setback
- Woodlands
- City of Kawartha Lakes Environmental Protection Area
- Unevaluated Wetlands
- Lots/Concessions
- Important Bird Area (ON 152)
- A Woodland ID
- 1 Wetland ID

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5.1.1.1 Provincial Parks and Conservation Reserves

A search and analysis of the records and resources outlined in **Table 1** did not identify any provincial parks or conservation reserves in the project location or within the surrounding 300 m.

5.1.1.2 ANSI, Life Science

A search and analysis of the records and resources outlined in **Table 1** did not identify any Life Science ANSIs in the project location or within the surrounding 300 m.

5.1.1.3 ANSI, Earth Science

A search and analysis of the records and resources outlined in **Table 1** did not identify any Earth Science ANSIs in the project location or within the surrounding 300 m.

5.1.1.4 Valleylands

A search and analysis of the records and resources outlined in **Table 1** did not identify any valleylands, as defined by Ontario Regulation 359/09, in the project location or within the surrounding 300 m.

5.1.1.5 Wetlands

Unevaluated wetlands have been identified along the central-east portion of the project location, which extends into the northeast 120 m and 300 m setback areas, within the 120 m and 300 m setback areas southwest of the project location and overlapping the 300 m setback area northwest of the project location (See **Figure 3**). No additional information was provided by the KRCA, LSRCA or MNR regarding these wetland features.

5.1.1.6 Woodlands

There are two woodland areas within 120 m of the project location (See **Figure 3**). One 0.56 ha woodland area (Woodland A) is located in the 120 m setback area north of the project location, and the other (Woodland F), is a 3.60 ha woodland that overlaps the east 120 m and 300 m setback areas. Woodland areas of 8.98 ha and 40.50 ha overlap the northwest 300 m setback area (west of Sandringham Road), and the north 300 m setback area (east of Sandringham Road), respectively (See **Figure 3**).

5.1.1.7 Wildlife Habitat

An overall review of potential wildlife habitat that may exist in the area of the project location was completed using information contained in the records and resources outlined in **Table 1**. This information was supplemented using the criteria outlined in the Significant Wildlife Habitat Technical Guide (MNR 2000) in combination with information contained in the Significant Wildlife Habitat Ecoregion Criteria Schedules (MNR 2009) for Ecoregion 6E. Based on this information, the potential for wildlife habitat and/or species to occur in the area surrounding the project location was determined. This complete review is available in **Appendix B** and should be read in conjunction with this report and the species lists available in **Appendix C1**. The wildlife habitat with potential to occur within and/or adjacent to the project location (within 300 m) is discussed below.

Waterfowl Stopover and Staging Areas (Terrestrial)

Waterfowl stopover and staging areas are fields with sheet water from spring melt and run-off which provide invertebrate foraging habitat for migrating waterfowl. American Black Duck (*Anas rubripes*) and Blue-winged Teal (*Anas discors*) were observed during OBBA surveys in the general area of the project location. Agricultural fields and an ephemeral watercourse within the project location may provide terrestrial stopover and staging areas for waterfowl species.

Waterfowl Stopover and Staging Areas (Aquatic)

Ponds, marshes, lakes, bays, coastal inlets, watercourses, sewage treatment ponds, storm water ponds and reservoirs used during migration are all potential aquatic waterfowl stopover and staging areas. Waterfowl species have been observed through OBBA surveys in the general area of the project location. Unevaluated wetlands have been identified within the central portion of the project location as well as in setback areas and may provide aquatic stopover and staging areas for waterfowl species.

Shorebird Migratory Stopover Area

Shorebird migratory stopover areas are characterized by shorelines of lakes, rivers and wetlands. Shorebirds have been observed through OBBA surveys in the general area of the project location. The shorelines of unevaluated wetlands have been identified in the central

portion of the project location as well as setback areas could function as shorebird stopover and staging area.

Deer Wintering Area

Deer wintering areas are characterized by coniferous woodland with a canopy cover greater than 60% surrounded by agriculture, mixed or deciduous forest. The range distribution for White-tailed Deer (*Odocoileus virginianus*) overlaps the project location. Woodlands mapped in the 120 m and 300 m setbacks to the project location could function as a deer wintering area.

Raptor Wintering Area

Raptor wintering areas are defined as a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor species have been observed through OBBA surveys in the general area of the project location. Woodlands in association with meadow and/or field habitat may provide wintering areas for raptor species in the project location and/or adjacent lands.

Colonial-Nesting Bird Breeding Habitat

Colonial-nesting bird breeding habitat is associated with tall standing trees within wetland habitat. Possible and probable breeding evidence was observed for Great Blue Heron (*Ardea herodias*) and Green Heron (*Butorides virescens*) in the general area of the project location. Unevaluated wetlands have been identified along the central portion of the project location and setback areas in proximity to woodlands and have the potential to provide habitat for colonial-nesting breeding birds.

Wild Turkey Winter Range

Winter range areas for Wild Turkey (*Meleagris gallopavo*) are defined by coniferous woodlands, typically in valleylands, with seeps where snow accumulation is minimized. Wild Turkey has been observed during OBBA surveys in the general area of the project location. Woodlands have been identified within the northern, southwest and eastern setback areas of the project location. Potential headwaters associated with seeps may be located within the project location or adjacent lands may provide winter habitat for Wild Turkey.

Amphibian Breeding Habitat (Woodland)

Amphibian breeding habitat is characterized by pools within wetlands and woodlands or found within short distance from forest habitat. Multiple amphibian species have range distributions that overlap the project location. Woodlands identified within project location as well as the 120 m and 300 m setback areas may provide amphibian woodland breeding habitat.

Amphibian Breeding Habitat (Wetland)

Amphibian wetland breeding habitat is characterized by wetlands and pools supporting high species diversity. Shrubs and logs provide habitat structure and increase the significance as breeding habitat. Numerous amphibian species have range distributions that overlap the project location. Unevaluated wetlands have been identified along the central portion of the project location as well as in setback areas and may provide wetland breeding habitat for amphibians.

Waterfowl Nesting Area

Waterfowl nesting areas are associated with wetlands and swamp woodlands adjacent to upland habitat. Confirmed or probable breeding evidence was observed for waterfowl species in the general area of the project location. Woodland and wetland habitats have been identified within the project location as well as the 120 m and 300 m setback areas and may provide waterfowl nesting habitat.

Woodland Raptor Nesting Habitat

Woodland raptor nesting habitat is defined as the tops or crotches of trees within undisturbed, intermediate-aged to mature conifer, deciduous, or mixed woodlands. Possible breeding evidence was observed for Sharp-shinned Hawk (*Accipiter striatus*) and Merlin (*Falco columbarius*) in the general area of the project location. Woodlands within setback areas of the project location may function as raptor nesting habitat.

Turtle Nesting and Overwintering Areas

Turtle nesting areas occur in sites with sandy and/or gravelly substrates for turtles to dig in, and often have a southern orientation. Overwintering areas consist of permanent water bodies or large wetlands with adequate dissolved oxygen. Midland Painted Turtle (*Chrysemys picta marginata*) and Snapping Turtle (*Chelydra serpentina*) have range distributions that overlap the project location. A wetland associated with a surface water feature located in the central

portion of the project location and other wetlands in the 120 m and 300 m setback areas may provide turtle nesting and/or overwintering habitat.

Mink and Otter Shoreline Foraging and Den Sites

Mink and Otter prefer undisturbed foraging and den sites along shorelines dominated by coniferous or mixed forest cover with abundant shrubs as well as stumps and deadfall. These sites may also be adjacent to wetlands. Mink (*Mustela vison*) generally den underground, but will use abandoned Muskrat (*Ondatra zibethicus*) lodges. Otters (*Lontra canadensis*) generally den in old Beaver (*Castor canadensis*) lodges but may also den in log jams or in jumbles of loose rock. The range distributions for Mink, Otter, Muskrat and Beaver overlap the project location. Wooded shorelines within a wetland features in the 300 m setback areas have limited potential to provide mink and/or otter foraging and den sites. This limited potential is based on the agricultural nature of the area and the lack of a large water body or river in proximity to the project location.

Seeps and Springs

Seeps and springs are associated with headwater areas within forested habitats. All indicator fauna species have been observed or have range distributions that overlap the project location. Headwaters for Staples Creek potentially occur in the project location within an unevaluated wetland and may contain seeps or springs.

Marsh Bird Breeding Habitat

Marsh bird breeding habitat is associated with wetlands containing shallow water with emergent aquatic vegetation. Based on Breeding Bird Atlas data, numerous species had confirmed or probable breeding evidence observed in the general area of the project location. Wetland habitat has been identified within the central portion of the project location as well as the setback areas and may provide marsh bird breeding habitat.

Area-Sensitive Bird Breeding Habitat

Area-sensitive bird breeding habitat is characterized by large woodlands consisting of mature forest stands greater than 30 ha containing interior habitat. Confirmed, probable and possible breeding evidence was observed for numerous area-sensitive species in the general area of the project location, based on Breeding Bird Atlas data. A 40.5 ha woodland providing interior

habitat was identified in the northern 300 m setback area and may provide area-sensitive bird breeding habitat.

Open Country Bird Breeding Habitat

Open country bird breeding habitat includes large areas of grassland or pastureland. Based on Breeding Bird Atlas data, confirmed and probable breeding evidence for indicator and common open country breeding birds was observed in the general area of the project location. The fields in the project location and within adjacent lands may provide open country habitat.

Shrub/Early Successional Bird Breeding Habitat

Shrub/early successional bird breeding habitat is defined as large older fields succeeding to shrub and thicket habitat and covering an area greater than 30 ha. Shrub/early successional indicator and common bird species in Ecoregion 6E have confirmed or probable breeding evidence observed in the general area of the project location, based on data obtained from the Breeding Bird Atlas. The fields in and adjacent to the project location may provide breeding habitat for shrub/early successional bird species.

Bullfrog Concentration Area

Bullfrog (*Rana catesbeiana*) concentration areas are associated with permanent water near the shorelines of lakes, large marshes and slow-moving rivers with extensive areas of emergent shoreline vegetation. Bullfrogs have a range distribution that overlaps the project location. There is limited potential for bullfrog habitat to occur within the wetland areas in the project location and 300 m setback area. This limited potential is the due to the absence of large open water areas in proximity to the project location.

Special Concern and S1-S3 Species and Communities

Wildlife species of conservation concern (SRank of S1-S3, *Special Concern* and Priority species) have been identified as having the potential to occur in or adjacent to the general area of the project location. There is potential for the habitat that supports some of these species to occur within the project location or surrounding 300 m.

Amphibian Movement Corridors

Amphibian movement corridors relate to mixes of wetland, woodland and water bodies specific to the significant breeding habitat of listed amphibian species. Range distributions for some of

the indicator amphibian species that typically utilize corridor habitat overlap the general area of the project location. There is potential for the woodland and/or riparian habitat along the mapped surface water features to function as an amphibian movement corridor.

Deer Movement Corridors

Deer movement corridors are associated with woodlands and riparian corridors of water bodies located between winter and summer ranges. The range distribution of White-tailed Deer (*Odocoileus virginianus*) overlaps the project location. Woodlands and riparian areas adjacent to the project location may provide deer corridor habitat.

5.1.2 Vascular Plant and Bryophyte Diversity

A search and analysis of the records and resources outlined in **Table 1** did not identify any vascular plants or bryophytes of conservation concern or at risk in the project location or within the surrounding 300 m. No records relating to vascular plant and bryophyte diversity in the general area of the project location have been received from the KRCA, the MNR and the Canadian Wildlife Service (CWS).

5.1.2.1 Vegetation Communities of Conservation Concern

A search and analysis of the records and resources outlined in **Table 1** did not identify any vegetation communities of conservation concern in the project location or within the surrounding 300 m. This search included sand barrens, savannahs, tallgrass prairies and alvars.

5.1.3 Wildlife Species Diversity

Using readily available secondary source databases and wildlife atlases outlined in **Table 1**, various wildlife species have been determined as potentially occurring in or adjacent to the project location. These species are discussed below and in **Appendix C1**. Each species has been assessed according to occurrence records and their regional, provincial and federal conservation status.

5.1.3.1 Birds

After reviewing records in the OBBA (Cadman *et al.*, 2005; OBBA Mapping Square 17PK62; see **Appendix A3**), 116 avian species have been identified in the general area of the project

location. These birds depend on a wide range of habitats from agricultural areas, woodlands and wetlands. The Carden Plain IBA was identified in the western portion of the project location encompassing the entire access road (see **Figure 3**). This IBA contains grassland and alvar habitats interspersed with agricultural land, woodlots and wetlands. The Carden plain is one of the few areas in eastern Canada that supports nesting populations of Loggerhead Shrike (*Lanius ludovicianus*), has breeding populations of several other SAR birds and supports significant breeding populations of several grassland bird species (BirdLife International 2010). IBAs are not regulated under Ontario Regulation 359/09; therefore there is no formal legal protection for IBAs and they do not receive REA setbacks. Further, the project location does not fall within or near a Migratory Bird Sanctuary or National Wildlife Refuge.

Of the 116 species found in the area of the project location, 69 are Municipal Priority Species (Couturier 1999) and 44 are Bird Conservation Region 13 Priority Species (Ontario Partners in Flight 2008). A list of avian species that have the potential to occur in proximity to the project location is available in **Appendix C1**.

5.1.3.2 Mammals

Digital data from the Mammals of the Western Hemisphere (Patterson *et al*, 2007) was used to determine possible mammalian species occurring within or adjacent to the project location. The range of 45 species overlaps the project location, representing 16 different mammalian family types. The majority of the province's mammalian species that have the potential to occur in the general area of the project location are considered *Secure* (SRank of S5) or *Apparently Secure* in Ontario (Srank of S4). A complete list of species is available in **Appendix C1**.

Three bat species, the Eastern Small-Footed Bat (*Myotis leibii*), the Northern Long-eared Bat (*Myotis septentrionalis*) and the Eastern Pipistrelle (*Pipistrellus subflavus*) are species of conservation concern that could potentially occur in proximity to the project location. As outlined in **Appendix B**, it is unlikely that bat hibernaculum exists in the project location or within 120 m.

5.1.3.3 Herpetozoa

The Ontario Herpetofaunal Atlas (Oldham and Weller, 2000) was used to determine possible species occurring within or adjacent to the project location. Thirteen herpetozoa species were identified with occurrence records in the general area of the project location. These include 2 salamanders, 7 frog, 1 toad, 2 turtle and 1 snake species.

5.1.3.4 Invertebrates

The Ontario Odonata Atlas (2005) was reviewed to determine the potential for dragonflies and damselflies to occur in the general area of the project location. No species had range distributions that overlap the project location.

One species, Lilypad Clubtail (*Arigomphus furcifer*) was identified by MNR's NHIC database as having the potential to occur within the general area of the project location. This is a species of conservation concern considered *Vulnerable* (SRank of S3) in Ontario.

5.2 Provincial Plan Areas

Under Ontario Regulation 359/09, if any part of the project location falls within a provincial plan area, the project location may be subject to different criterion to evaluate the applicable natural features. In addition, should development occur within the prescribed setback area of a natural feature, it may be subject to a different set of prohibitions under Ontario Regulation 359/09. **Table 2** outlines the provincial plan areas that should be considered when planning a renewable energy project and identifies which, if any, are applicable to the project location.

Table 2: Summary of Provincial Plan Areas and Applicability to the Project Location

Provincial Plan Area	Applicable to Project
Oak Ridges Moraine Conservation Plan Area	No
Niagara Escarpment Plan Area	No
Greenbelt - Natural Heritage System	No
Greenbelt – Protected Countryside	No

5.2 Species at Risk

Species at risk listed under the federal *Species at Risk Act* and provincial *Endangered Species Act, 2007*, with the potential to interact with the project location and/or adjacent lands, are being considered in consultation with the appropriate agency. Reporting related to the protection of these species at risk is being provided to the appropriate agency under separate cover (e.g., Approval and Permitting Requirements Document (APRD)). This reporting format meets the Natural Heritage requirements, as set out in *Ontario Regulation 359/09*, and is consistent with the direction provided by the MNR.

5.3 Other Required Approvals and Permitting

In addition to the natural features included in this natural heritage assessment records review, the MNR is or may be responsible for administering approvals and permits related to the following resources and land uses:

- Mineral Aggregate Resources;
- Harvesting Crown-owned Forest Resources;
- Natural Hazard Lands;
- Furbearing Mammals
- Fish and Fish Habitat
- Areas under Forest Resource License or Sustainable Forest License;
- Petroleum Resources;
- Far North Applicability;
- Forest Resource Processing Facility Licensing; and,
- Wildfire Prevention and Preparedness Requirements.

The applicability of these resources and land uses within the project location and adjacent areas will be outlined in a separate Approval and Permitting Requirements Document (APRD) report being submitted to the MNR for parallel consideration with this Natural Heritage Assessment.

6. Conclusions

This Records Review Report was completed in partial fulfillment of the regulatory requirements for the *REA* process. Additional details regarding the natural features, their significance, potential impacts and mitigation measures required to protect these features will be provided in separate reports, including the Site Investigation, Evaluation of Significance and Environmental Impact Study Reports, where applicable. These reports will be submitted to the Ministry of Natural Resources (MNR) for review and comment, as required in *Ontario Regulation 359/09 and* will provide for the protection of natural features within and adjacent to the project location.

The determinations made in this records review will form the baseline knowledge for the project location. Fieldwork completed to date, in addition to consultation with the MNR, will be used to determine the accuracy of this records review during the site investigation. Records and resources reviewed as part of this report identified the following natural features (**Table 3**). All applicable natural features within the project location and surrounding 300 m are outlined on **Figure 3**.

The determinations made as a result of this records review have been used to outline the appropriate scope for applicable site investigations, as required by Section 26 of Ontario Regulation 359/06. Where possible, this has been done in consultation with the MNR. The following surveys will be the focus of site investigations:

- Ecological Land Classification (ELC) of the project location and 120 m setback area;
- An assessment of the woodlands and wetlands for attributes, composition function and indicators of significance, as applicable;
- An assessment of potential wildlife habitat for presence and indicators of significance, as applicable;
- Bird surveys to determine the extent the project location and setback area is used as habitat by species at risk, species of conservation concern and open country, raptor and shrub/early successional breeding bird indicator species; and,

- An assessment of amphibian breeding habitat to determine the extent the project location and setback area is used as habitat by amphibian indicator species, species at risk and species of conservation concern.

Table 3: Identified Natural Features

Natural Area/Feature Type	Location Relative to Project Location
WOODLANDS	**See Section 5.1.1.6 for details**
Unevaluated woodlands	• In the project location • In the 120 m setback area to the north of the project location • In the 300 m setback to the west, north and east of the project location
WETLANDS	**See Section 5.1.1.5 for details**
Unevaluated wetlands	• In the project location • In the 120 m and 300 m setback to the west and north of the project location
POTENTIAL WILDLIFE HABITAT in the GENERAL AREA OF THE PROJECT LOCATION	**See Section 5.1.1.7 for details**
Waterfowl Stopover and Staging Areas (Terrestrial and Aquatic)	• Associated with meadow/thickets, lakes/watercourses • Potential within project location/120 m/300 m
Shorebird Migratory Stopover Areas	• Associated with shorelines of wetlands and rivers • Potential within project location/120 m/300 m
Deer Wintering Area	• Associated with woodland surrounded by agriculture, mixed or deciduous forest • Potential within project location/120 m/300 m
Raptor Wintering Area	• Associated with fields and woodlands • Potential within 300 m setback area
Colonial-Nesting Bird Breeding Habitat (Tree/Shrub)	• Associated with tall standing trees in wetlands • Potential within project location/120 m/300 m
Wild Turkey Winter Range	• Associated with coniferous woodland with seeps • Potential within project location and 300 m setback
Amphibian Breeding Habitat (Woodland and Wetland)	• Associated with breeding pools within woodland, wetland or a short distance from forest habitat • Potential within project location/120 m/300 m
Waterfowl Nesting Areas	• Associated with wetlands and woodlands • Potential within project location/120 m/300 m
Woodland Raptor Nesting Habitat	• Associated with fields and woodlands • Potential within 120 m and 300 m
Turtle Nesting and Overwintering Areas	• Associated with wetlands and riparian area of water bodies • Potential within project location/120 m/300 m

Natural Area/Feature Type	Location Relative to Project Location
Mink and Otter Shoreline Foraging and Den Sites	• Associated with woodlands adjacent to water bodies or wetland shoreline • Potential within 300 m setback area
Seeps and Springs	• Associated with headwater areas within forested habitat • Potential within project location/120 m/ 300 m
Marsh Bird Breeding Habitat	• Associated with wetlands • Potential within project location/120 m/300 m
Area-Sensitive Bird Breeding Habitat	• Associated with large woodland with interior habitat • Potential within project 300 m setback area
Open Country Bird Breeding Habitat	• Associated with fields • Potential within project location/ 120 m/ 300 m
Shrub/Early Successional Bird Breeding Habitat	• Associated with fields • Potential within project location/ 120 m/ 300 m
Bullfrog Concentration Area	• Associated with permanent water near the shoreline of lakes, marshes and rivers • Potential within project location and 300 m setback
Special Concern and S1-S3 Species and Communities	• Associated with various habitats • Potential within project location/ 120 m/ 300 m
Amphibian Movement Corridors	• Associated with riparian corridors and watercourses • Potential within project location/ 120 m/ 300 m
Deer Movement Corridors	• Associated with woodland and riparian corridors of water bodies • Potential within 300 m setback area

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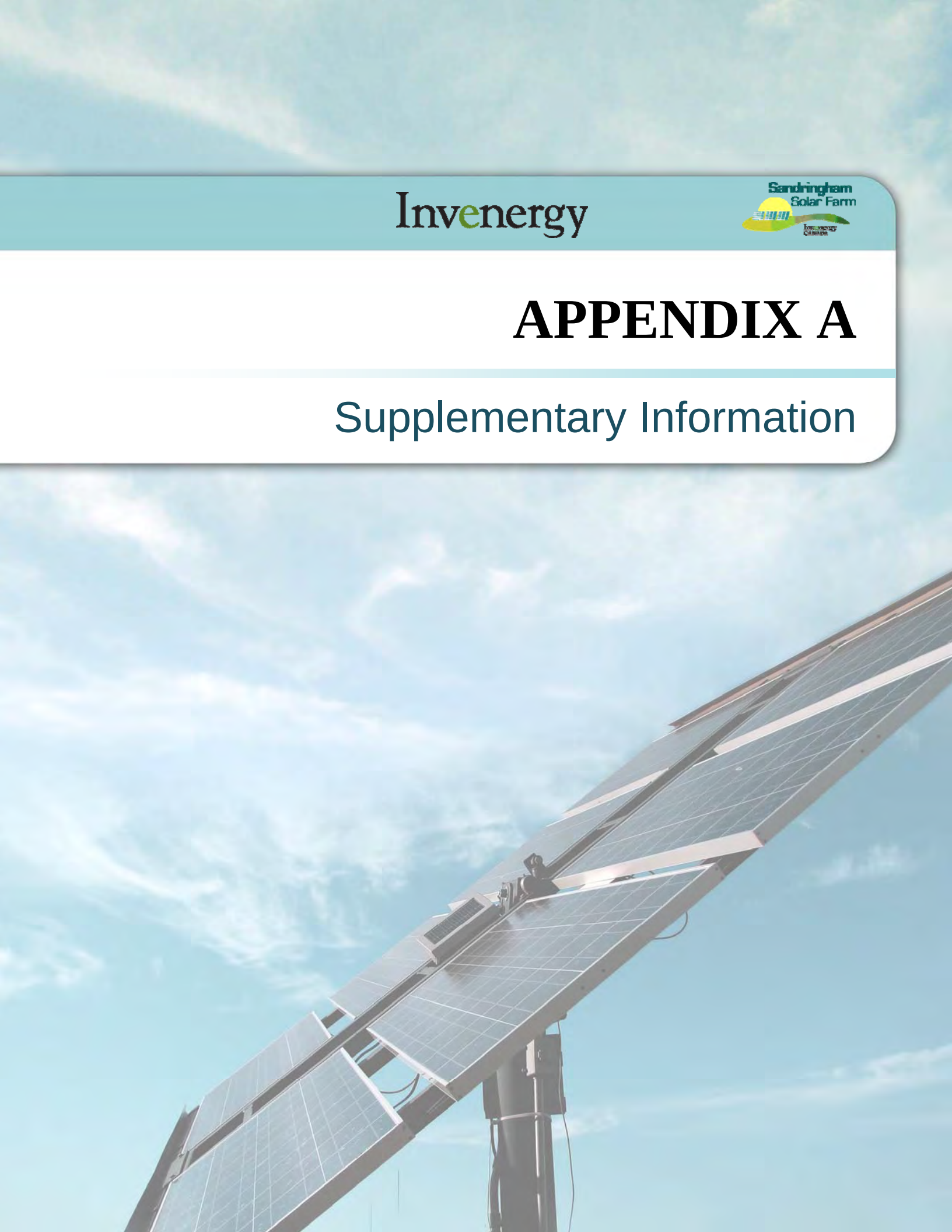
Invenergy

Sandringham Solar Farm

APPENDIX A

Supplementary Information

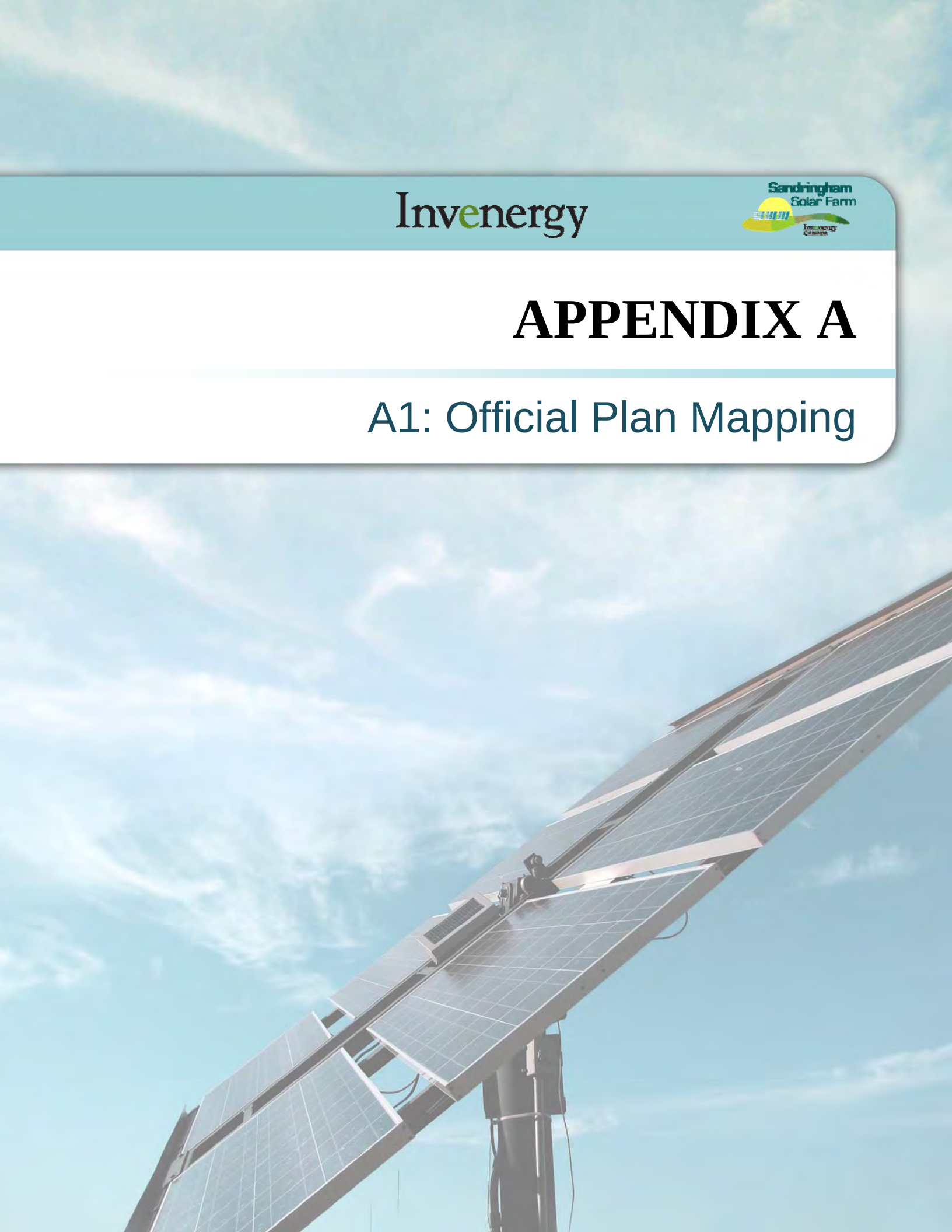


Invenergy

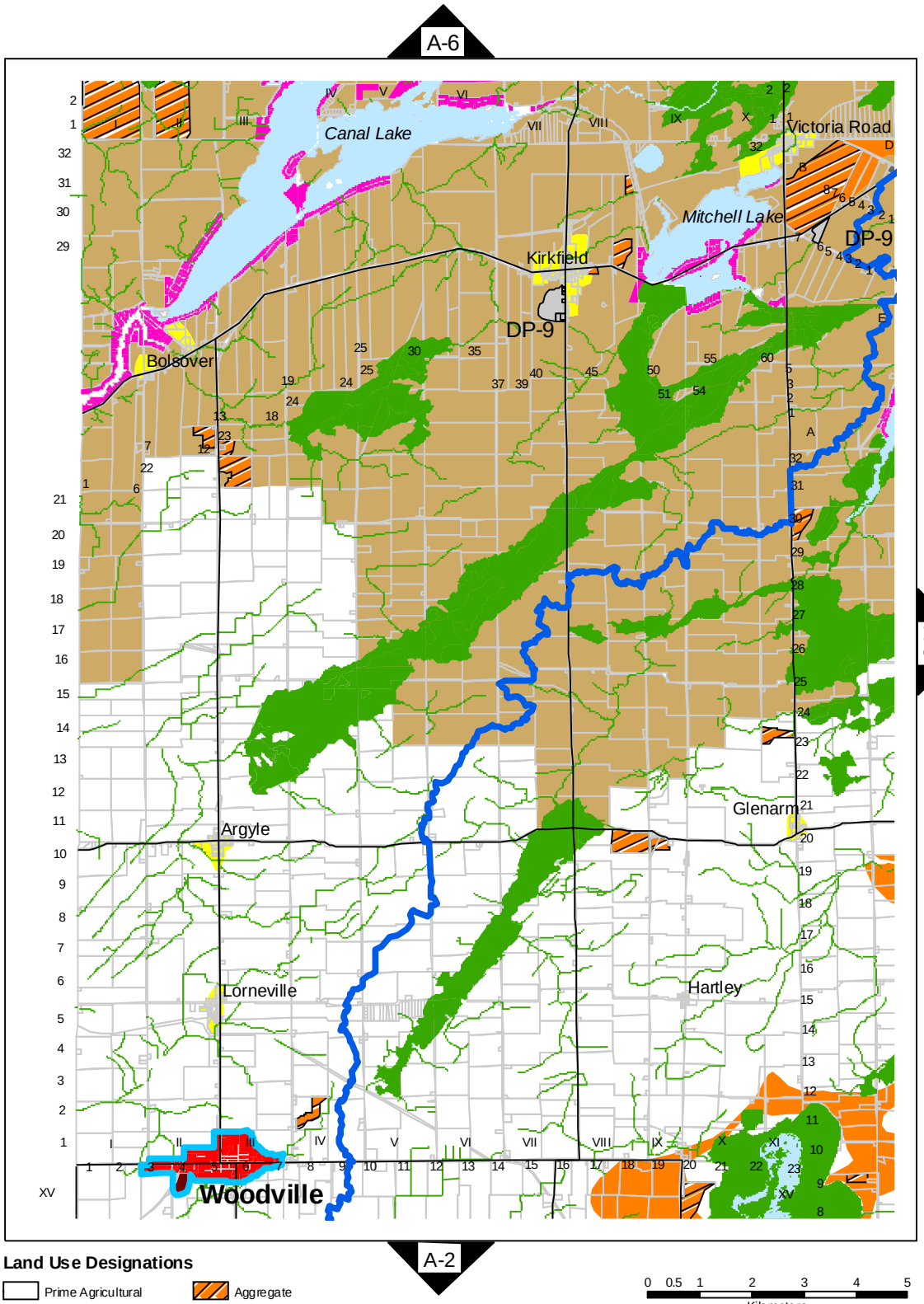
Sandringham Solar Farm

APPENDIX A

A1: Official Plan Mapping



City of Kawartha Lakes Official Plan
Schedule A-4
(Geographic Township of Eldon)



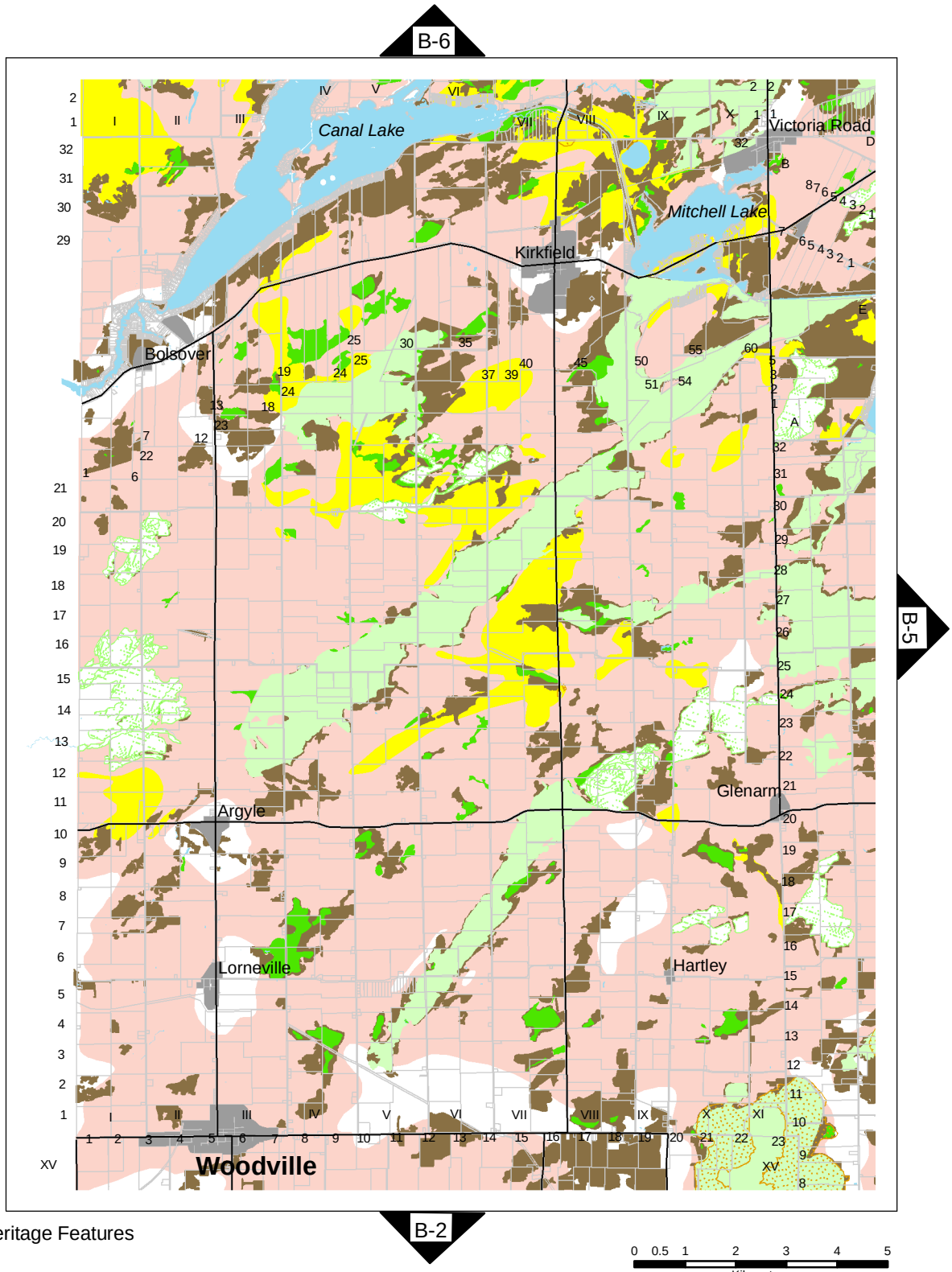
Land Use Designations

- Prime Agricultural
- Rural
- Environmental Protection
- Urban Settlement Area
- Hamlet Settlement Area
- Waterfront
- Highway Commercial
- Industrial
- Aggregate
- Resource Reserve
- Development Plan Area
- Urban Settlement Area
- Lake Simcoe Source Water Protection Boundary

0 0.5 1 2 3 4 5
Kilometers

City of Kawartha Lakes

City of Kawartha Lakes Official Plan
Schedule B-4
(Geographic Township of Eldon)



Natural Heritage Features
- ANSI
- Locally Significant Wetlands
- Provincially Significant Wetlands
- Unevaluated Wetlands
- Waterbodies
- Wooded Area

Bedrock Overburden
- less than 1m
- 1 to 8m

0 0.5 1 2 3 4 5
Kilometers

City of Kawartha Lakes
Catch the Kawartha spirit

Invenergy

Sandringham Solar Farm

APPENDIX A

A2: Ecodistrict 6E-8

Peterborough

Ecodistrict 6E-8

Great Lakes Conservation Blueprint for Terrestrial Biodiversity

Area: 532,069 hectares (1,314,771 acres)

Land Ownership: 99% private, 0.5% public, 0.4% First Nations lands

Planning Authority: 30% Kawartha Lakes, 24% Peterborough County, 19% Durham Region, 14% Northumberland County, 12% Hastings County, 1% York Region

Physiography:
Ecodistrict 6E-8 consists almost entirely of drumlinized till plain, primarily the Peterborough Drumlin Field. Its southern portion also contains scattered sand plains and the Schomberg Clay Plains as they transition to the Oak Ridges Moraine in 6E-7. The eastern boundary includes a minor drumlinized portion of bevelled till plain with the predominantly undrumlinized portion of this bevelled till plain (Napanee Plain) being in 6E-15. This area of the ecodistrict also includes a portion of the Iroquois Plain, the dominant landform of adjacent 6E-13.

Remaining Natural Cover:
Nearly 40% of the ecodistrict remains as natural cover, primarily forest. Till plain deciduous (17%), mixed (9%) and coniferous (8%) forest complexes comprise one-third of this remaining cover. Thirty-one percent of the remaining natural cover is swamp complex and 6% is marsh. There are also approximately 1,000 hectares of alvars mapped in 6E-8, in the broad sense; of which none are considered to be true alvars. There are also 98 hectares of prairies and savannahs in Ecodistrict 6E-8.

Land Use:
Forty-three percent of 6E-8 has been converted to developed agricultural lands (228,146 ha), and an additional 84,306 hectares are pastures and abandoned fields. Lands associated with agriculture represent nearly 60% of the ecodistrict. Almost 5,000 hectares are gravel pits and quarries, and over 5,700 hectares are devoted to settlement and other associated developed lands.

Protection and Conservation:
Conservation lands occupy almost 10% of Ecodistrict 6E-8 (51,340 ha). Over 49,000 hectares are provincially significant wetlands, representing 96% of all the identified conservation lands in the ecodistrict. Over 10,000 hectares are provincially significant life science ANSIs, of which 40 hectares coincide with provincial parks. Thirty-eight percent of all occurrences of species and vegetation community targets coincide with these conservation lands, primarily provincially significant wetlands.

Species Targets:
Half of the 12 targeted species occurring in 6E-8 are birds. Ten are species at risk including the Endangered Butternut (*Juglans cinerea*) and Loggerhead Shrike (*Lanius ludovicianus).*

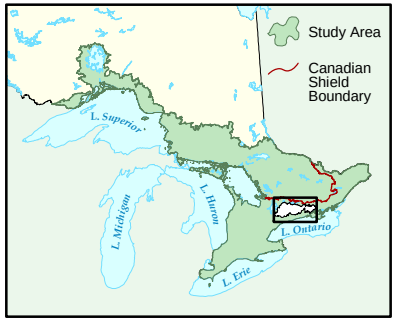
Vegetation Community Targets:
Two of the 17 significant vegetation communities identified within 6E-8 are globally rare, seven are provincially rare, and another 10 are considered to be high-quality representative communities that are important to conservation.

Conservation Blueprint:
The Conservation Blueprint portfolio in Ecodistrict 6E-8 includes approximately 30% of all remaining natural cover, and nearly 68% of all occurrences of species and vegetation community targets.

Great Lakes Conservation Blueprint for Biodiversity

PETERBOROUGH ECODISTRICT 6E-8

5 0 5 10 15 20 km



Ecological Systems

- Alvars, Prairies & Savannahs
- Forest
- Wetland
- Other
- Water

Other Information

- Ecodistrict Boundary
- Main Road

Nature Conservancy Canada

Natural Heritage Information Centre

Ontario

Our goal is to identify a network of sites on the landscape that, if conserved, would sustain all elements of terrestrial biodiversity in the Great Lakes region.

For further information contact the Nature Conservancy of Canada at 1-877-343-3532 or the Natural Heritage Information Centre at 1-705-755-2159.

Published December 2004

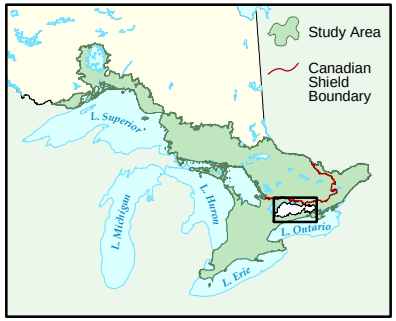
Projection: Lambert Conformal Conic (North American Datum 1983)

5E-8
5E-11
6E-9
6E-6
6E-7
6E-13
6E-15
7E-4
Lakefield
Lindsay
Peterborough
Campbellford
Stirling
Trenton
Mount Albert
Uxbridge

Great Lakes Conservation Blueprint for Biodiversity

PETERBOROUGH ECODISTRICT 6E-8

5 0 5 10 15 20 km



Terrestrial Conservation Blueprint

- Parks and Protected Areas
- Additional Designated Natural Heritage Lands
- Other Priority Stewardship Lands

Other Information

- Ecodistrict Boundary
- Main Road
- Urban Area
- Big Picture 2002 Areas Outside of the Conservation Blueprint

Nature Conservancy Canada

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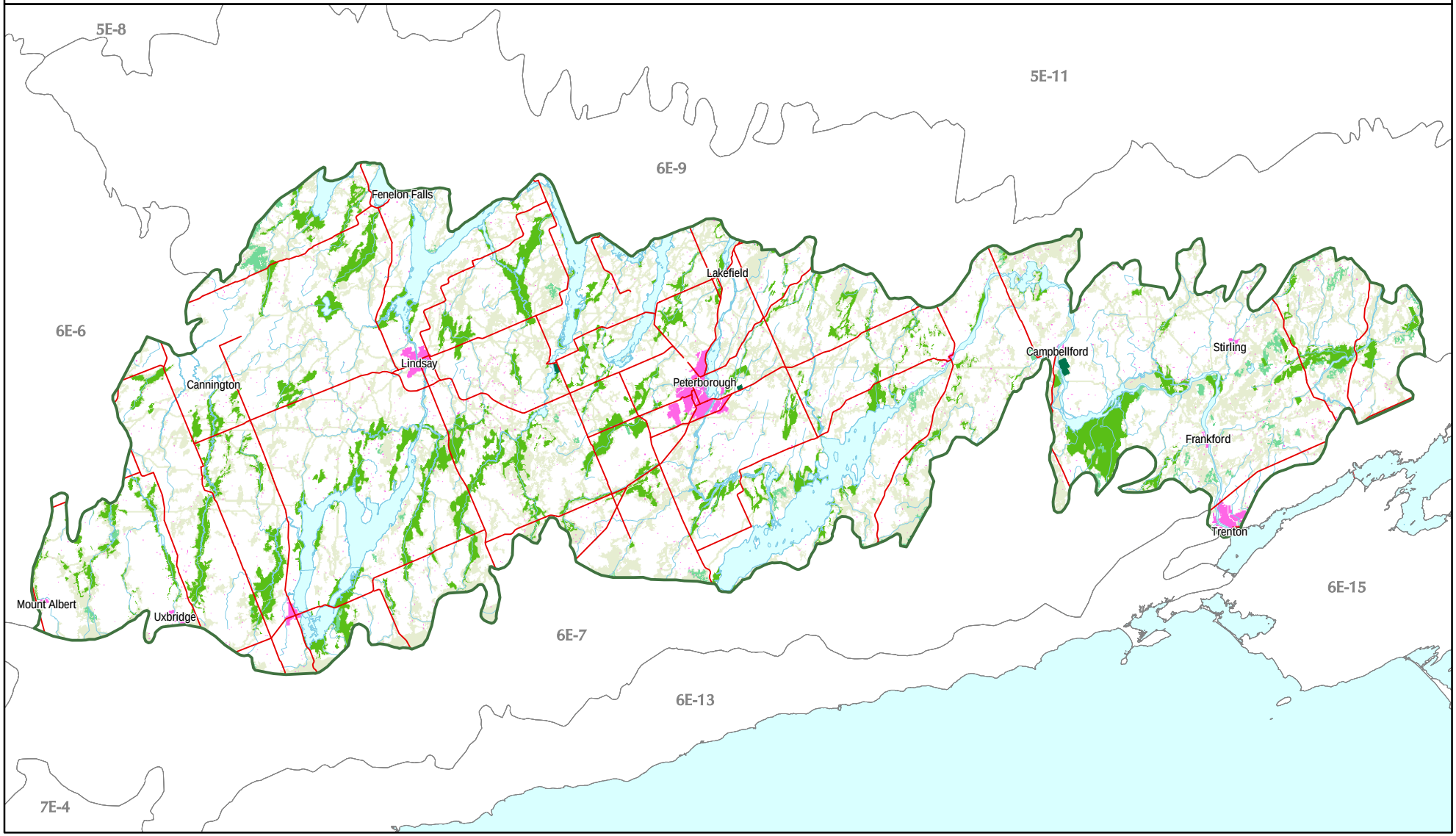


Documented extant vegetation community and species targets in Ecodistrict 6E-8

Number of pops in 6E-8	Scientific Name	Common Name	GRank	SRank	COSEWIC	OMNR	Justification	% of pops in federally protected areas	% of pops in provincially protected areas	% of pops in PS LS-ANSIs	% of pops in CAs	% of pops in all conservation lands	# of pops in the portfolio	% of pops in the portfolio	Goal
Vascular Plants															
1	*Carex schweinitzii*	Schweinitz's Sedge	G3	S3			GRank	0	0	0	0	0	1	100	2
1	*Celtis tenuifolia*	Dwarf Hackberry	G5	S2	THR	THR	SAR	0	0	0	0	0	1	100	3
1	*Festuca occidentalis*	Western Fescue	G5	S4?			Disjunct	0	0	100	0	100	1	100	3
2	*Juglans cinerea*	Butternut	G3G4	S3?	END	END	GRank SAR declining	0	0	0	0	50	2	100	2
Birds															
8	*Chlidonias niger*	Black Tern	G4	S3B,SZN	NAR	SC	SAR	0	0	25	0	75	6	75	secondary
1	*Dendroica cerulea*	Cerulean Warbler	G4	S3B,SZN	SC	SC	SAR	0	0	0	0	0	1	100	secondary
1	*Haliaeetus leucocephalus*	Bald Eagle	G4	S4B,SZN	NAR	END-R	SAR	0	0	0	0	0	0	0	secondary
17	*Ixobrychus exilis*	Least Bittern	G5	S3B,SZN	THR	THR	SAR	0	0	12	12	59	10	59	secondary
9	*Lanius ludovicianus*	Loggerhead Shrike	G4	S2B,SZN	END	END-R	SAR	0	0	0	11	11	1	11	secondary
1	*Rallus elegans*	King Rail	G4G5	S2B,SZN	END	END-R	SAR	0	0	100	0	100	1	100	secondary
Reptiles															
1	*Eumeces fasciatus*	Common Five-lined Skink	G5	S3	SC	SC	SAR	0	0	0	100	100	1	100	secondary
1	*Heterodon platirhinos*	Eastern Hog-nosed Snake	G5	S3	THR	THR	SAR	0	0	0	0	0	0	0	secondary
Communities															
1	Black Spruce Treed Bog Type		G5	S5			high quality	0	0	100	0	100	1	100	secondary
2	Dry - Fresh Hickory Deciduous Forest Type		G4?	S3S4			SRank	0	0	0	0	0	2	100	3
1	Dry - Fresh Oak - Sugar Maple Deciduous Forest Type		G?	S5			high quality	0	0	0	0	0	0	0	secondary
3	Dry - Fresh Sugar Maple - Oak Deciduous Forest Type		G?	S5			high quality	0	0	0	0	0	0	0	secondary
1	Dry - Fresh White Pine - Red Maple Mixed Forest Type		G4G5	S5			high quality	0	0	0	100	100	1	100	secondary
2	Dry Black Oak - White Oak Tallgrass Woodland Type		G?	S1			SRank	0	0	0	0	0	2	100	3
3	Dry Black Oak-Pine Tallgrass Savannah Type		G?	S1			SRank	0	0	0	0	0	3	100	3
2	Dry Bur Oak - Shagbark Hickory Tallgrass Woodland Type		G?	S1			SRank	0	0	0	0	0	2	100	3
6	Dry Tallgrass Prairie Type		G3	S1			GRank	0	0	0	0	0	6	100	all viable
1	Fresh Sugar Maple - Beech Deciduous Forest Type		G5?	S5			high quality	0	0	0	0	0	0	0	secondary
1	Fresh Sugar Maple Deciduous Forest Type		G5?	S5			high quality	0	100	0	0	100	1	100	secondary
1	Leatherleaf Shrub Bog Type		G5	S5			high quality	0	0	100	0	100	1	100	secondary
1	Red Cedar - Early Buttercup Treed Alvar Grassland Type		G2?	S2			GRank	0	0	0	0	0	1	100	all viable
2	Slender Sedge Graminoid Fen Type		G4G5	S5			high quality	0	0	100	0	100	2	100	secondary
1	Sweet Gale Shrub Fen Type		G?	S5			high quality	0	0	100	0	100	1	100	secondary
1	White Cedar - Hemlock Coniferous Organic Swamp Type		G?	S3S4			SRank	0	0	0	0	0	1	100	3
1	White Cedar - Yellow Birch Mixed Organic Swamp Type		G4?	S5			high quality	0	0	0	0	0	1	100	secondary

Parks and Protected Areas include **federally protected areas** (National Parks, National Wildlife Areas, Migratory Bird Sanctuaries) and **provincially protected areas** (Provincial Parks and Conservation Reserves).
All Conservation Lands are parks and protected areas (defined above) and additional designated natural heritage lands which includes provincially significant life science Areas of Natural and Scientific Interest, Conservation Authority lands, provincially significant wetlands and Nature Conservancy of Canada lands.
Other Priority Stewardship Lands are **portfolio sites** (all remaining Great Lakes Conservation Blueprint portfolio sites that are not regulated protected areas or designated natural heritage or conservation lands).
Note: The map legend refers to areas identified in the "Big Picture 2002" project at http://nhic.mnr.gov.on.ca/MNR/nhic/documents/projects.cfm

The summaries of species and vegetation community targets are based on extant Element Occurrence data and other digital data from the Natural Heritage Information Centre (NHIC) databases in the spring of 2004. Some of the population data may have been incomplete at this time, and EO data continues to be updated. These ranks and status designations are current as of spring 2005, and are updated periodically. See NHIC webpage for current designations.

Ecological systems summary for Ecodistrict 6E-8

Ecological System	# of Patches in 6E-8	Total Area (ha) in 6E-8	% of Total Area of 6E-8	% Natural Cover in 6E-8	# Patches in Parks & PAs	Total Area (ha) in Parks & PAs	% of System in Parks & PAs	# Patches in ANSIs	Total Area (ha) of ANSIs	% of System in ANSIs	# Patches in CA Lands	Total Area (ha) of CA Lands	% of System in CA Lands	# Patches in all Conservation Lands	Total Area (ha) of all Conservation Lands	% of System in all Conservation Lands	# Patches in the Blueprint	Total Area (ha) in the Blueprint	% of System in the Blueprint
Target Forests	43,280	99,734.69	18.74	47.76	76	175.13	0.18	643	676.38	0.68	508	747.88	0.75	1,290	1,652.94	1.66	1,395	4,811.00	4.82
Alvars	39	997.94	0.19	0.48													5	724.44	72.59
Prairies and savannahs	22	98.13	0.02	0.05													4	44.94	45.80
Wetlands	7,598	78,288.19	14.71	37.49	27	47.50	0.06	322	8,768.31	11.20	309	1,845.31	2.36	2,255	48,301.75	61.70	2,256	48,796.50	62.33
All ecological systems	83827	532068.31	100.00	100.00	162	343.19		1596	10053.19	1.89	1204	3096.44	0.58	4718	51339.88	9.65	4843	55800.94	10.49

Ecological systems details for Ecodistrict 6E-8

Ecological System	# of Patches in 6E-8	Total Area (ha) in 6E-8	% of Total Area of 6E-8	% Natural Cover in 6E-8	# Patches in Parks & PAs	Total Area (ha) in Parks & PAs	% of System in Parks & PAs	# Patches in ANSIs	Total Area (ha) of ANSIs	% of System in ANSIs	# Patches in CA Lands	Total Area (ha) of CA Lands	% of System in CA Lands	# Patches in all Conservation Lands	Total Area (ha) of all Conservation Lands	% of System in all Conservation Lands	# Patches in the Blueprint	Total Area (ha) in the Blueprint	% of System in the Blueprint
Target Natural Ecological Systems																			
Forests																			
Beach and Shorecliff Coniferous Forest Complex	8	11.88	0.00	0.01				2	0.50	4.21				2	0.50	4.21	4	5.00	42.11
Beach and Shorecliff Mixed Forest Complex	7	9.88	0.00	0.00				2	0.63	6.33				2	0.63	6.33	2	2.31	23.42
Beach and Shorecliff Deciduous Forest Complex	4	1.44	0.00	0.00				4	0.50	34.78				4	0.50	34.78	5	1.38	95.65
Clay Plain Coniferous Forest Complex	420	777.81	0.15	0.37				1	0.19	0.02				1	0.19	0.02	8	59.50	7.65
Clay Plain Mixed Forest Complex	1,150	2,339.94	0.44	1.12				4	0.94	0.04	4	5.94	0.25	9	6.94	0.30	16	100.44	4.29
Clay Plain Deciduous Forest Complex	1,863	4,854.06	0.91	2.32				7	6.63	0.14	3	11.63	0.24	10	18.25	0.38	17	244.13	5.03
Coniferous Forest Complex on Peat and Muck	872	1,634.50	0.31	0.78				48	36.19	2.21	38	24.25	1.48	88	60.56	3.71	93	174.50	10.68
Mixed Forest Complex on Peat and Muck	837	1,203.56	0.23	0.58				49	51.94	4.32	46	25.56	2.12	98	79.00	6.56	100	159.31	13.24
Deciduous Forest Complex on Peat and Muck	1,166	1,453.00	0.27	0.70				78	105.75	7.28	58	37.75	2.60	147	152.63	10.50	149	195.94	13.49
Kame Moraine Coniferous Forest Complex	162	293.38	0.06	0.14				5	1.19	0.40				5	1.19	0.40	7	44.31	15.10
Kame Moraine Mixed Forest Complex	178	198.38	0.04	0.09				5	0.75	0.38	3	0.38	0.19	8	1.13	0.57	12	17.63	8.88
Kame Moraine Deciduous Forest Complex	271	625.94	0.12	0.30							1	1.25	0.20	1	1.25	0.20	7	48.13	7.69
Limestone Plain Coniferous Forest Complex	92	136.00	0.03	0.07	1	1.25	0.92	1	1.38	1.01	1	0.06	0.05	5	8.13	5.97	7	26.56	19.53
Limestone Plain Mixed Forest Complex	304	553.50	0.10	0.27	12	9.63	1.74	5	4.63	0.84	8	37.44	6.76	27	52.94	9.56	28	78.75	14.23
Limestone Plain Deciduous Forest Complex	317	1,077.13	0.20	0.52	6	6.56	0.61	16	75.81	7.04	8	16.13	1.50	32	98.69	9.16	34	284.75	26.44
Sand Plain Coniferous Forest Complex	1,019	2,859.25	0.54	1.37				99	169.75	5.94	22	48.56	1.70	122	218.38	7.64	112	394.19	13.79
Sand Plain Mixed Forest Complex	1,740	3,742.44	0.70	1.79				54	28.81	0.77	41	60.88	1.63	98	89.88	2.40	104	368.13	9.84
Sand Plain Deciduous Forest Complex	2,074	5,749.56	1.08	2.75				67	35.94	0.63	16	65.81	1.14	83	101.75	1.77	96	500.19	8.70
Till Moraine Coniferous Forest Complex	460	791.94	0.15	0.38							11	26.75	3.38	11	26.75	3.38	15	44.44	5.61
Till Moraine Mixed Forest Complex	496	956.94	0.18	0.46							10	8.75	0.91	11	8.81	0.92	21	115.75	12.10
Till Moraine Deciduous Forest Complex	602	1,210.69	0.23	0.58				1	2.56	0.21	10	20.38	1.68	11	22.94	1.89	14	55.38	4.57
Till Plain Coniferous Forest Complex	6,710	15,894.06	2.99	7.61	9	10.94	0.07	69	71.31	0.45	66	128.25	0.81	148	222.00	1.40	157	527.38	3.32
Till Plain Mixed Forest Complex	9,097	18,573.63	3.49	8.89	20	34.81	0.19	52	31.75	0.17	84	98.88	0.53	167	172.94	0.93	177	539.50	2.90
Till Plain Deciduous Forest Complex	13,431	34,785.81	6.54	16.66	28	111.94	0.32	74	49.25	0.14	78	129.25	0.37	200	307.00	0.88	210	823.44	2.37
Alvar	39	997.94	0.19	0.48													5	724.44	72.59
Prairies and Savannahs	22	98.13	0.02	0.05													4	44.94	45.80
Wetlands																			
Bog Complex	14	181.00	0.03	0.09				2	56.63	31.28	4	12.63	6.98	11	146.75	81.08	11	146.75	81.08
Fen Complex	207	291.94	0.05	0.14				58	151.44	51.87	18	7.13	2.44	80	183.13	62.73	82	190.94	65.40
Marsh Complex	1,286	12,323.88	2.32	5.90	3	24.38	0.20	60	4,720.44	38.30	96	243.25	1.97	754	10,400.63	84.39	755	10,450.44	84.80
Swamp Complex	6,091	65,491.38	12.31	31.36	24	23.13	0.04	202	3,839.81	5.86	191	1,582.31	2.42	1,410	37,571.25	57.37	1,408	38,008.38	58.04

Ecological System	# of Patches in 6E-8	Total Area (ha) in 6E-8	% of Total Area of 6E-8	% Natural Cover in 6E-8	# Patches in Parks & PAs	Total Area (ha) in Parks & PAs	% of System in Parks & PAs	# Patches in ANSIs	Total Area (ha) of ANSIs	% of System in ANSIs	# Patches in CA Lands	Total Area (ha) of CA Lands	% of System in CA Lands	# Patches in all Conservation Lands	Total Area (ha) of all Conservation Lands	% of System in all Conservation Lands	# Patches in the Blueprint	Total Area (ha) in the Blueprint	% of System in the Blueprint
Non-Target Natural Ecological Systems																			
Coniferous Plantation Forest	9	56.31	0.01														4	36.13	64.15
Other Landcover																			
Bedrock Outcrop	87	102.69	0.02	0.05							4	0.81	0.79	4	0.81	0.79	7	3.38	3.29
Pasture and Abandoned Fields	22,224	84,305.69	15.84		24	32.44	0.04	200	59.56	0.07	140	128.06	0.15	396	259.56	0.31	397	259.63	0.31
Unclassified (cloud & shadow)	5	0.94	0.00					5	0.94	100.00				5	0.94	100.00	5	0.94	100.00
Water	681	29,602.61	5.56	14.18	6	21.38	0.07	75	400.69	1.35	43	22.38	0.08	148	467.88	1.58	149	467.94	1.58
Anthropogenic Land Types																			
Settlement and Developed Land	19	5,753.56	1.08					1	0.25	0.00				1	0.25	0.00	1	0.25	0.00
Cropland	9,253	228,146.13	42.88		29	66.75	0.03	348	146.81	0.06	196	326.88	0.14	611	630.25	0.28	612	630.31	0.28
NRVIS Pit or Quarry	610	4,958.81	0.93					2	0.25	0.01	4	25.13	0.51	8	25.50	0.51	8	25.50	0.51

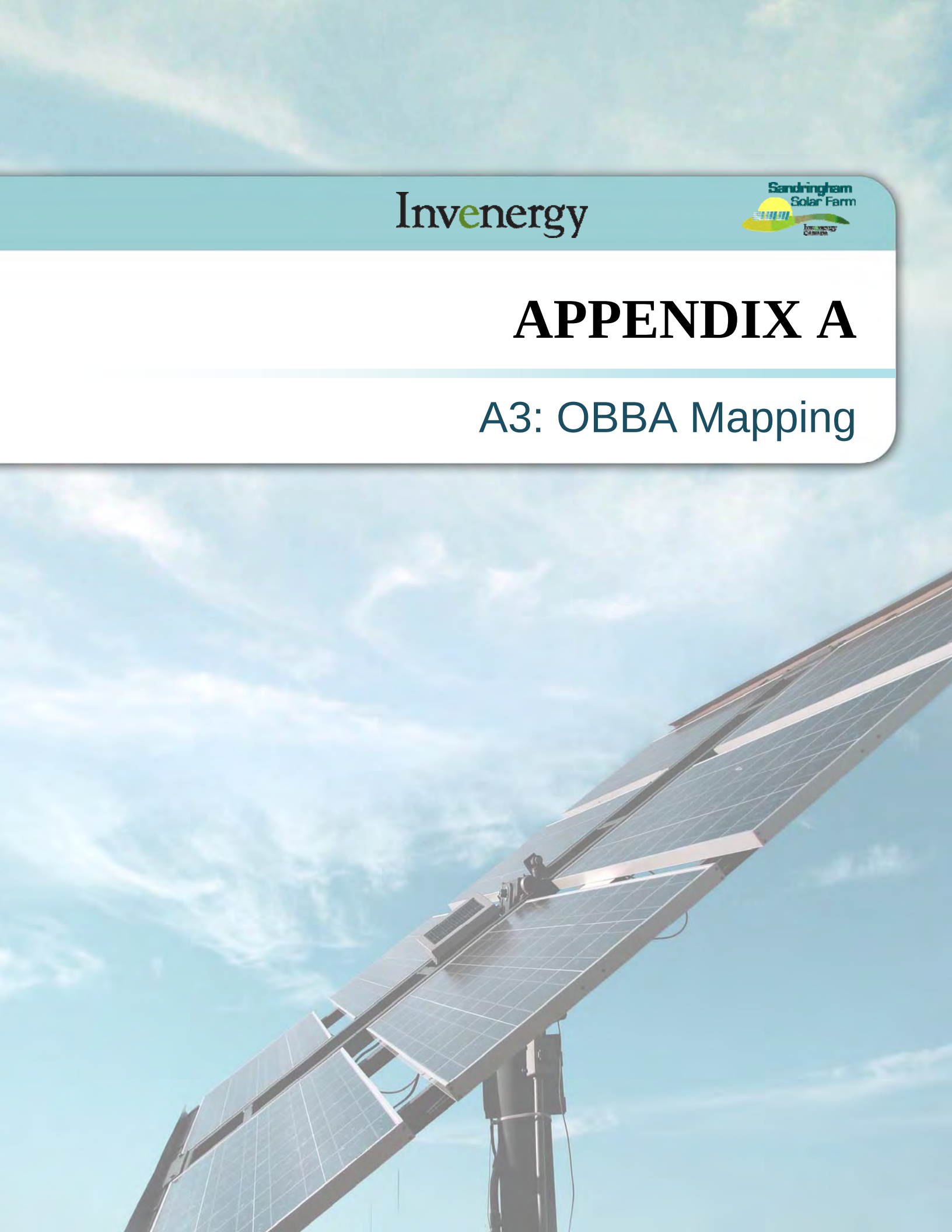
Parks and Protected Areas include **federally protected areas** (National Parks, National Wildlife Areas, Migratory Bird Sanctuaries) and **provincially protected areas** (Provincial Parks and Conservation Reserves).
All Conservation Lands are parks and protected areas (defined above) and additional designated natural heritage lands which includes provincially significant life science Areas of Natural and Scientific Interest, Conservation Authority lands, provincially significant wetlands and Nature Conservancy of Canada lands.
Other Priority Stewardship Lands are **portfolio sites** (all remaining Great Lakes Conservation Blueprint portfolio sites that are not regulated protected areas or designated natural heritage or conservation lands).
Note: The map legend refers to areas identified in the "Big Picture 2002" project at http://nhic.mnr.gov.on.ca/MNR/nhic/documents/projects.cfm

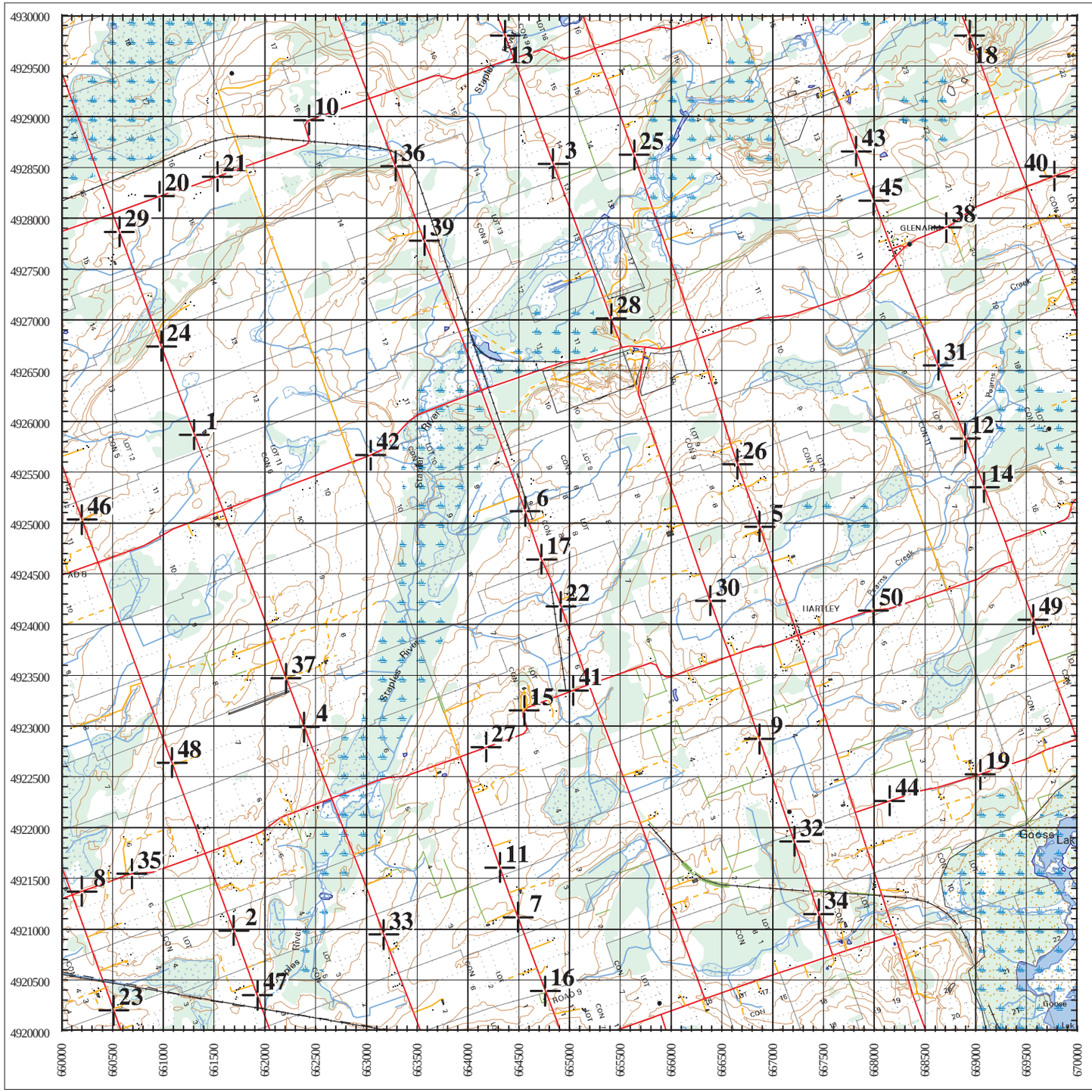
Invenergy

Sandringham Solar Farm

APPENDIX A

A3: OBBA Mapping





Ontario Breeding Bird Atlas 2001 - 2005

Roadside Point Count Coordinates

No.	Easting	Northing
01	661306	4925870
02	661694	4920986
03	664839	4928537
04	662388	4922991
05	666872	4924962
06	664563	4925114
07	664493	4921118
08	660200	4921371
09	666870	4922872
10	662434	4928966
11	664315	4921607
12	668897	4925833
13	664367	4929800
14	669083	4925350
15	664556	4923152
16	664762	4920389
17	664725	4924640
18	668939	4929800
19	669043	4922523
20	660962	4928218
21	661534	4928409
22	664915	4924177
23	660513	4920200
24	660982	4926739
25	665638	4928625
26	666655	4925579
27	664179	4922792
28	665410	4927012
29	660568	4927867
30	666386	4924234
31	668632	4926552
32	667216	4921864
33	663171	4920947
34	667454	4921149
35	660691	4921544
36	663288	4928513
37	662209	4923471
38	668711	4927910
39	663572	4927779
40	669776	4928414
41	665038	4923350
42	663042	4925667
43	667823	4928659
44	668151	4922262
45	667994	4928175
46	660200	4925034
47	661927	4920350
48	661087	4922639
49	669566	4924048
50	667992	4924138

Legend

- Wooded Areas
- Water Bodies Water Area
- Water Bodies Wetland Area
- Wetlands
- ANSI
- Pits and Quarries
- Parks and Reserves
- Public Road
- Private Road
- Track
- Trail
- Railway
- Contour Lines
- Lots
- Roadside Point Count Locations
- Fences
- Wall
- Hedge
- Feature Outline
- Race Track
- Building Points
- Building Polygons
- Airports
- Petroleum Tank
- Water Tank
- Survey Monuments
- Smoke Stack
- Towers
- Named Places
- Pipelines
- Transmission Line

North American Datum 1983
Universal Transverse Mercator (6 degrees) projection
Zone 17, Central Meridian 81 degrees W.
Grid Interval 1000 meters
Contour Interval 10 meters
Some features on the Breeding Bird Atlas field maps may not have been updated since the early 1980's.

Atlas Square: 17PK62
Region: 14

(NAD27 - 17PV62)

0km 1km 2km
0mi 1mi

Ontario Breeding Bird Atlas

Ontario

Invenergy

Sandringham Solar Farm

APPENDIX B

Wildlife Habitat

Table B1: Wildlife Habitat Review for the Project Location and Setback Areas

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
Seasonal Concentration Areas					
Waterfowl Stopover and Staging Areas (Terrestrial)	American Black Duck Northern Pintail Gadwall Blue-winged Teal American Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	Meadow/ Thicket	• Fields with sheet water during Spring (mid-March to May). • Fields flooded during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Only American Black Duck and Blue-Winged Teal have been observed in the general area of the project location. • Prime agricultural fields located in and adjacent to project location may provide suitable habitat.		√
Waterfowl Stopover and Staging Areas (Aquatic)	American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall American Green-winged Teal Blue-winged Teal Wood Duck Hooded Merganser	Wetlands	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as SWH, but a reservoir managed as large wetland or pond/lake does. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water).		√

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
	Common Merganser Red-breasted Merganser Lesser Scaup Greater Scaup Ring-necked Duck Common Goldeneye Bufflehead Long-tailed Duck Canvasback Redhead Ruddy Duck Brant Surf Scoter White-winged Scoter Black Scoter		• Some species have been observed in the general area of the project location during OBBA. • Unevaluated wetlands have been identified within central area of the project location as well as multiple setback areas.		
Colonial-Nesting Bird Breeding Habitat	Bank Swallow Cliff Swallow	Eroding banks, sandy hills, pits, steep slopes, rock faces or piles	• Any exposed soil banks, undisturbed or naturally eroding for 10 years or more. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, or soil or aggregate stockpiles. • Does not include an active Mineral Aggregate Operations.	√	
			• Both species have confirmed breeding observed in the general area of the project location. • Habitat as described was not identified in or adjacent to the project location.		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
Shorebird Migratory Stopover Area	Wilson's Snipe Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover Am. Golden Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Western Sandpiper Buff-breasted Sandpiper Least Sandpiper Purple Sandpiper Semipalmated Sandpiper Long-billed Dowitcher Short-billed Dowitcher Wilson's Phalarope Red Phalorope Red-necked	Lakes, large streams, wetlands	• Shorelines of lakes, rivers, and wetlands, including beach areas, bars, and seasonally flooded shoreline, usually muddy and unvegetated. Rock groins and other forms of armour rock lakeshore can be utilized. • Great Lakes coastal shorelines are extremely important for migratory shorebirds from May to mid-June and early July to October. • Sod Farms and other intensive agricultural fields not included within these habitat criteria.		√
			• Three species have been observed in the general area of the project location during OBBA surveys • Unevaluated wetlands have been identified in the project location as well as western setback areas. • An ephemeral watercourse is located within the wetland within the project location.		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
	Phalorope Whimbrel Ruddy Turnstone Killdeer Red Knot Sanderling Dunlin				
Songbird Migratory Stopover Areas	All migratory songbirds.	Woodlands	• Woodlots located on peninsulas or points or oriented in north to south direction along the shore and located within 5 km of Lake Ontario • Project location is >5 km from any major body of water, including Lake Ontario	√	
Turkey Vulture Summer Roosting Areas	Turkey Vulture	Cliff	• Secluded areas of cliff faces act as roost sites • Preferred sites are relatively free of vegetation • Manmade cliffs such as quarries and gravel pits may provide habitat • Will also roost in trees at the tops of hills or cliffs • Possible breeding evidence for Turkey Vultures has been recorded in the general area of the project location • No cliff habitat is expected to occur in the project location	√	

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
			• No pits or quarries occur within the project location		
Raptor Wintering Area	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl <u>Special Concern</u> Short-eared Owl	Woodland and meadow/field habitat	• The habitat provides a combination of fields and woodlands that provide roosting, foraging, and resting habitats for wintering raptors. • Three species were observed during OBBA surveys in the general area of the project location which may indicate winter presence • Woodlands with adjacent fields/meadows present within project location setback areas.		√
Bat Hibernacula (Winter Roost and Maternal Colonies)	Big Brown Bat Little Brown Myotis Eastern Pipistrelle Northern Long-eared Myotis Eastern Small-footed Myotis Silver-haired Bat	All caves, abandoned mine shafts, underground foundations, and tree cavities.	• The locations and site characteristics of bat hibernacula and maternal colonies are relatively poorly known. Identified hibernation sites are critical to the survival of local bat populations. • The range of the majority of species listed overlaps with the project location • No known bat hibernacula has been identified in the project location or adjacent lands • No caves, abandoned mine shafts or other form of habitat is anticipated to occur in the project location or adjacent lands	√	
Butterfly Migratory Route/Stopover Areas	Painted Lady White Admiral <u>Special Concern</u> Monarch Butterfly	Combination of meadow/field and	• Butterfly stopover areas are rare habitats located within 5 km of Lake Ontario. The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south.	√	

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
		woodland	• Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes • The project location is >5 km from Lake Ontario		
Snake Hibernaculum	Eastern Garter Snake Northern Brown Snake Smooth Green Snake Northern Ring-necked Snake Northern Water Snake Northern Red-bellied Snake <u>Special Concern</u> Eastern Milk Snake Northern Ribbon Snake	The known existence of rock piles or slopes, stone fences, and crumbling foundations would identify Candidate SWH	• Hibernation takes place in sites located below frost line in burrows, rock crevices, and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Other features such as old wells, rock and log piles, old building foundations, retaining walls, ground hog burrows and crayfish burrows are examples of hibernation sites • Only the Eastern Garter Snake has occurrence records in the general area of the project location • Habitat associated with hibernacula is not expected to occur in the project location or adjacent lands	√	
Colonial-Nesting Bird Breeding Habitat (Tree/Shrub)	Great Blue Heron Black-crowned Night-Heron Great Egret	Wetlands with tall standing trees	• Nests in live or dead standing trees in wetlands, lakes, islands, and on peninsulas • Most nests in trees are 11-15 m from ground, near the tops of the trees.		√

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
	Green Heron		• Possible and probable breeding evidence has been recorded for the Great Blue Heron and Green Heron during OBBA surveys in the general area of the project location • Unevaluated wetlands have been identified within the southwest and northeast areas of the project location and its setback areas which may provide suitable breeding habitat		
Colonial-Nesting Bird Breeding Habitat (Ground)	Herring Gull Great Black-backed Gull Common Tern Caspian Tern Little Gull	Any (rocky) island or peninsula (natural or artificial) within a lake or large river	• Nesting colonies are on islands or peninsulas associated with open water. • No species were observed through OBBA surveys in the general area of the project location • No open water areas with islands or peninsulas occur within the project location or adjacent lands to support colonial nesting birds	√	
Deer Wintering Areas	White-tailed Deer	Woodland	• Core wintering areas of mainly coniferous trees (pines, hemlock, cedar, spruce) with • Conifer canopy cover of more than 60%; may also include areas of deciduous forest. • Land surrounding the core area is usually agriculture, or mixed or deciduous forest. However, a core deer yarding area is predominantly woodland habitat with minor components of cultural lands traditionally used by deer • Absence of barriers to migration to and from the yard itself; barriers cut off access to the yard and will impair use of the yard by deer during winter.	√	

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
			• Suitable areas of cover, food and adjacent natural lands • OMNR determines deer yards		
			• White-tailed Deer have a range distribution that overlaps the project location • Woodland areas are located adjacent to the project location • No deer wintering areas were identified by MNR/ MNR mapping		
Wild Turkey Winter Range	Wild Turkey	Woodlands with seeps	• Coniferous woodlands with seeps where snow accumulation is minimized due to a closed canopy • Conifer stands are usually located in valleylands on the valley floor or lower slopes • May be adjacent to agricultural fields (seeds may form a food source) • Mature conifers such as hemlock and pine are most significant		√
			• Wild Turkey has been observed in the general area of the project location during OBBA surveys; their winter presence is unknown • Woodlands occur within the setback areas of the project location • Potential headwaters for Staples Creek may be located within the		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
			project location which area associated with seeps		
Amphibian Breeding Habitat (Woodland).	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Chorus Frog Wood Frog	Breeding pools within the woodland or the shortest distance from forest habitat	• The woodland and the wetland, lake, or pond; some small wetlands may not be mapped and may be important breeding pools for amphibians. • The wetland breeding pools may be permanent, seasonal, ephemeral, large or small in size, and could be located within or adjacent to the woodland. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat		√
			• Four frog species have range distributions that overlap the project location • Woodland areas in the120 m and 300 m setback areas may contain breeding pools		
Amphibian Breeding Habitat (Wetland)	Eastern Newt Blue-spotted Salamander Spotted Salamander American Toad Gray Treefrog Spring Peeper Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog	Wetlands and pools	• Wetlands and pools supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats • Presence of shrubs and logs increases significance of pond for some amphibian species because of available structure for calling, foraging, escape, and concealment from predators.		√
			• Seven species have range distributions that overlap the project location • Unevaluated wetlands have been identified in the central portion of the project location as well as the southwest setback area which may have breeding pools and shrub/log presence		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
	American Bullfrog				
Rare Vegetative Communities and Specialized Wildlife Habitat					
Rare Vegetative Communities	Alvar Cliff and Talus Slopes Savannah Tallgrass Prairie Sand Barren Old Growth Forest	----------	• An alvar will be level mostly unfractured limestone, a patchy mosaic of bare rock pavement, or shallow substrate over limestone bedrock. The site will vary between being seasonally dry or inundated with water. Vegetation cover varies from patchy to barren with <60% tree cover • In Ontario, alvars occur in a series of clusters just south of the contact line with the granitic uplands of the Canadian Shield and in a few small isolated areas to the south. In Ecoregion 6E, alvars can be found in higher concentrations on the Bruce Peninsula, the Carden Plain and the Napanee Plain • Most cliff and talus slopes occur along the Niagara Escarpment • A savannah is a tallgrass prairie habitat that has tree cover between 25-60%. • A tallgrass prairie has ground cover dominated by prairie grasses; an open tall grass prairie habitat has <25% tree cover. • Tallgrass Prairie (TGP) and savannah were historically common in the near-shore areas of the Great Lakes. • In ecoregion 6E, known TGP and savannah remnants are found east of the Niagara Escarpment, south of Georgian Bay, near Lake Simcoe, Rice	√	

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
			Lake and north of the Lake Ontario shoreline • Sand Barrens typically are exposed sand habitats, generally sparsely vegetated and caused by lack of moisture, periodic fires, and erosion. They have little or no soil, and the underlying rock protrudes through the surface. Usually located within other types of natural habitat, such as forest or savanna. • Old-growth forests tend to be relatively undisturbed, structurally complex, and contain a wide variety of trees and shrubs in various age classes. These habitats usually support a high diversity of wildlife species.		
			• No rare vegetation communities have been identified during the records review in or adjacent to the project location.		
Waterfowl Nesting Area	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal American Green-winged Teal Wood Duck Hooded Merganser Mallard	Wetlands and woodlands	• A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a cluster of 3 or more small (<0.5 ha) wetlands within 150 m of each other where waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests.		√
			• Breeding evidence for American Black Duck, Blue-winged Teal, Wood Duck and Mallard was confirmed or probable in the general area of the project location • Wetlands have been identified in the project location and adjacent lands • Woodlands have been identified in the 120 m and 300 m setback areas of the project location		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
Osprey Nesting, Foraging and Perching Habitat	Osprey	Woodlands adjacent to wetlands and water bodies	• Nests are associated with lakes, ponds, rivers, or wetlands. • Osprey nests are along forested shorelines, on islands or on structures over water within dead trees; nests are usually at the top of the tree	√	
			• Woodlands adjacent to water bodies and wetlands have been identified in the eastern and western portions of the project location however Osprey have not been identified during OBBA surveys in the general area of the project location		
Woodland Raptor Nesting Habitat	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Northern Saw-whet Owl Barred Owl Long-eared Owl Merlin Broad-winged Hawk	Woodland	• Nests typically in intermediate-aged to mature conifer, deciduous, or mixed woodlands within tops or crotches of trees. • In undisturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.		√
			• Possible breeding evidence was observed for Sharp-shinned hawk and Merlin in the general area of the project location • Woodlands in the project location as well as the 120 m and 300 m setbacks may provide some nesting habitat		
Turtle Nesting and Over-wintering Areas	Midland Painted Turtle Snapping Turtle Special Concern Species	Wetlands, Riparian area of water bodies	• For an area to function as a turtle-nesting area, it must provide sand and/or gravel that turtles are able to dig in. These sites are often south to south west facing and have maximum exposure to sunlight. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.		√

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
	Northern Map Turtle		• Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen		
			• Midland Painted Turtle and Snapping Turtle have a range distribution that overlaps the project location • Wetlands and water bodies have been identified within the project location and setback areas		
Mink and Otter Shoreline Foraging and Den Sites	Mink River Otter	Woodlands adjacent to water body or wetland shoreline	• Undisturbed shoreline habitat are preferred for denning • Mink generally den underground, but will use abandoned muskrat lodges • Otters generally den in old beaver lodges but may also den in log jams or in jumbles of loose rock • Prefer shoreline dominated by coniferous or mixed forest cover with abundant shrubs as well as stumps and deadfall; may be adjacent to wetlands		√
			• The range distribution for Mink and River overlaps the project location • Beaver and Muskrat also have range distributions that overlap the project location; their lodges may be utilized • Woodlands adjacent to water bodies or within wetlands have been identified within the project location and setback areas		
Seeps and	Wild Turkey	Headwater	• Often they are found within headwater areas within forested habitats		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
Springs	Ruffed Grouse White-tailed Deer	areas in woodlands	• Headwaters for Staples Creek may fall within the eastern portion of the project location within woodland areas • All species have been observed or have range distributions that overlap the project location		√
Habitat for Species of Conservation Concern					
Marsh Bird Breeding Habitat	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron **Special Concern:** Black Tern Yellow Rail	Wetland	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present • Six species have had confirmed or probable breeding evidence in the general area of the project location. • Wetland habitat has been identified within and adjacent to the project location.		√

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
Area-Sensitive Bird Breeding Habitat	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Canada Warbler <u>Special Concern:</u> Cerulean Warbler	Large Woodland with interior habitat	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha • Interior forest habitat is at least 100 m from forest edge habitat.		√
			• Confirmed, probable, and possible breeding evidence was observed for nine area-sensitive bird species in the general area of the project location • Woodlands of sufficient size and containing interior habitat have been identified within the 300 m setback area of the project location.		
Open Country Bird Breeding Habitat	<u>Indicator Spp</u>: Bobolink Grasshopper Sparrow Vesper Sparrow Upland Sandpiper <u>Common Spp:</u>	Grassland/ Pastureland	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields, or pasturelands that are at least 5 years old. • The Indicator bird species are area sensitive, requiring larger grassland areas than the common grassland species.		√

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
	Eastern Kingbird Eastern Meadowlark Northern Harrier American Kestrel		• Confirmed breeding evidence has been observed for all indicator and common species in the general area of the project location. • Habitat may exist within the project location and adjacent lands in the open agricultural fields.		
Shrub/Early Successional Bird Breeding Habitat	<u>Indicator Spp</u>: Brown Thrasher Clay-coloured Sparrow <u>Common Spp.</u> Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	Field/ Meadow/ Thicket	• Large older field areas succeeding to shrub and thicket habitats. • Large shrub thicket habitats (>30 ha) are most likely to support and sustain a diversity of these species		√
			• Confirmed and probable breeding evidence was observed for indicator and common species in the general area of the project location. • Habitat may exist within the project location and adjacent lands in the open agricultural areas.		
Bullfrog Concentration Area	Bullfrog	Permanent water bodies, large wetlands	• Permanent water near the shoreline of lakes, large marshes and slow-moving rivers • Extensive areas of emergent shoreline vegetation required		√
			• The range distribution for Bullfrogs overlaps the project location. • Wetlands have been identified within and adjacent to the project		

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information Rationale for Potential to Occur Determination	Potential to Occur Unlikely	 Possible
			location as well as watercourses which may provide suitable habitat		
Special Concern and S1-S3 Species and Communities	All Special Concern and rare (S1-S3, SH) plant and animal species or communities.	As applicable to species	• Natural Heritage Information Centre has the special concern and rare (S1-S3, SH) species lists and element occurrences for these species • Various S1-S3 species have been observed in the general area of the project location. • Habitat may exist in the project location and/or adjacent lands for some of these species.		√
Animal Movement Corridors					
Amphibian Movement Corridors	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Chorus Frog Wood Frog	Specific to species, mix of wetland, woodland, water body	• Corridors will be determined based on identifying the significant breeding habitat for these species • Movement corridors between breeding habitat and summer habitat • Four frog species have range distributions that overlap the project location • There is potential for movement corridors to occur within the project location as well as the setback areas to the north of the project location near the mapped water bodies.		√
Deer Movement Corridors	White-tailed Deer	Woodlands, riparian corridors of water bodies	• Movement corridor between summer and winter range. • Corridors that lead to a deer wintering yard should be unbroken by roads and residential areas. • Corridors typically follow riparian areas, woodlands, and /or areas of physical geography (ravines or ridges)		√

Wildlife Habitat	Species/ Community	Associated Natural Feature	Habitat Characteristics and Information	Potential to Occur	
			Rationale for Potential to Occur Determination	Unlikely	Possible
			• The range distribution of White-tailed Deer overlaps the project location • Based on the proximity to roads and the embankment elevations, there is limited potential that the project location would function as a high quality deer movement corridor		
Bat Migration Corridors	Hoary Bat Eastern Red Bat Silver-haired Bat	Not specific	• No specific habitat types. However, sites directly on the shores of large lakes or on areas of high elevation (escarpment, cliff, large hills) should be identified as possible corridors.	√	
			• All bat species listed have ranges distributions that overlap the project location • The project location is not near the shore of a large lake or at a high elevation		

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APPENDIX C

Species

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APPENDIX C

C1: Species Lists

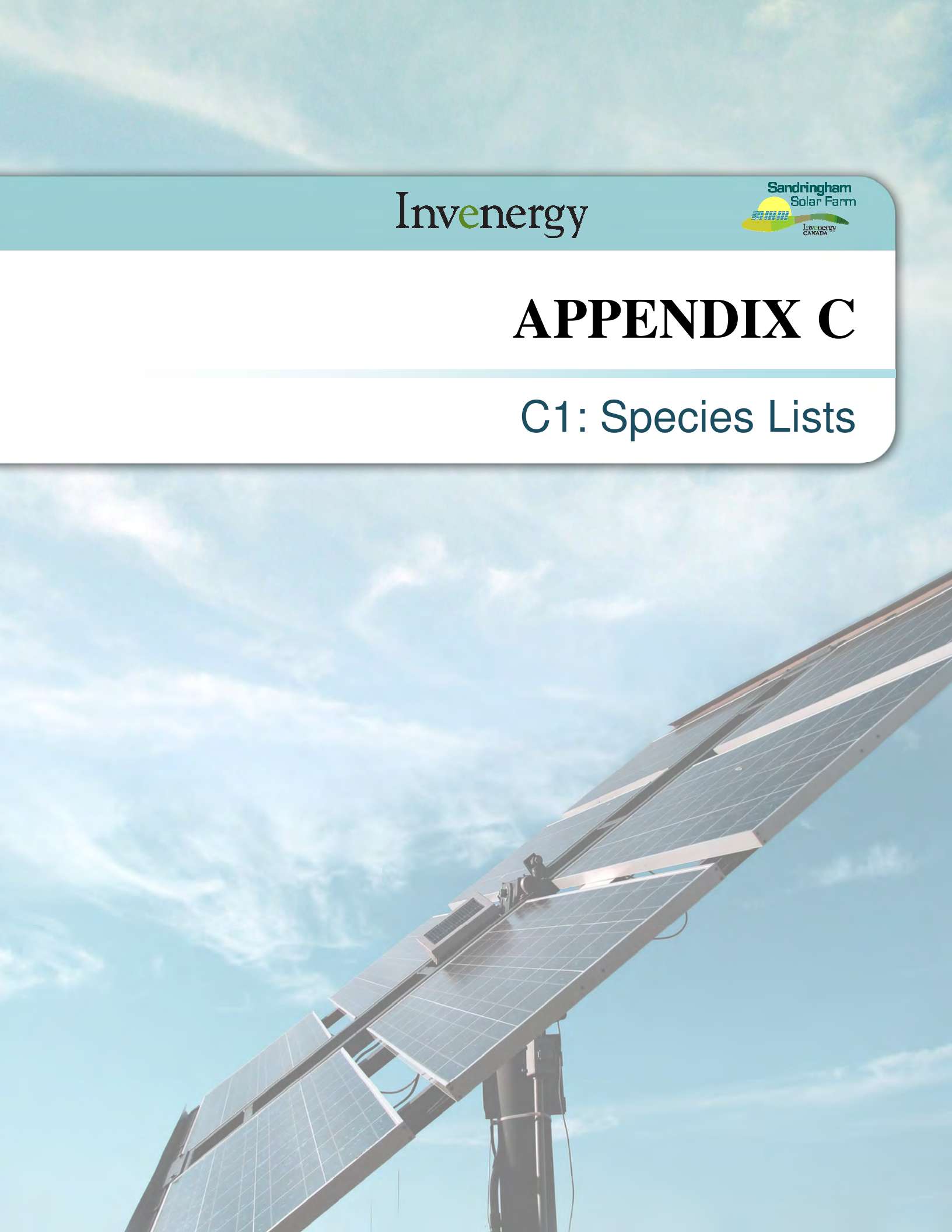


Table C1: Wildlife Species Identified as Potentially Occurring in the General Area of the Project Location

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
BIRDS												
Empidonax alnorum	Alder Flycatcher	---	---	S5B, SZN	---	Yes			●			
Botaurus lentiginosus	American Bittern	---	---	S4B, SZN	Yes	Yes			●			
Anas rubripes	American Black Duck	---	---	S5B, SZN	Yes	Yes			●			
Corvus brachyrhynchos	American Crow	---	---	S5B, SZN	---	---			●			
Carduelis tristis	American Goldfinch	---	---	S5B, SZN	---	Yes			●			
Falco sparverius	American Kestrel	---	---	S5B, SZN	Yes	Yes			●			
Setophaga ruticilla	American Redstart	---	---	S5B, SZN	---	Yes			●			
Turdus migratorius	American Robin	---	---	S5B, SZN	---	---			●			
Scolopax minor	American Woodcock	---	---	S5B, SZN	Yes	Yes			●			
Icterus galbula	Baltimore Oriole	---	---	S5B, SZN	Yes	---			●			
Riparia riparia	Bank Swallow	---	---	S5B, SZN	Yes	Yes			●			
Hirundo rustica	Barn Swallow	---	---	S5B, SZN	---	Yes			●			
Ceryle alcyon	Belted Kingfisher	---	---	S5B, SZN	Yes	---			●			
Mniotilta varia	Black-and-white Warbler	---	---	S5B, SZN	---	Yes			●			
Coccyzus erythropthalmus	Black-billed Cuckoo	---	---	S4B, SZN	Yes	Yes			●			
Poecile atricapillus	Black-capped Chickadee	---	---	S5	---	Yes			●			
Dendroica caerulescens	Black-throated Blue Warbler	---	---	S5B, SZN	Yes	Yes			●			

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Dendroica virens	Black-throated Green Warbler	---	---	S5B, SZN	---	Yes			●			
Cyanocitta cristata	Blue Jay	---	---	S5	---	---			●			
Anas discors	Blue-winged Teal	---	---	S5B, SZN	Yes	Yes			●			
Dolichonyx oryzivorus	Bobolink	---	THR	S4B, SZN	Yes	Yes			●			
Certhia americana	Brown Creeper	---	---	S5B, SZN	---	Yes			●			
Toxostoma rufum	Brown Thrasher	---	---	S5B, SZN	Yes	Yes			●			
Molothrus ater	Brown-headed Cowbird	---	---	S5B, SZN	---	---			●			
Branta canadensis	Canada Goose	---	---	S5B, SZN	Yes	---			●			
Wilsonia canadensis	Canada Warbler	THR	SC	S5B, SZN	Yes	Yes			●			
Bombycilla cedrorum	Cedar Waxwing	---	---	S5B, SZN	---	---			●			
Dendroica pensylvanica	Chestnut-sided Warbler	---	---	S5B, SZN	---	Yes			●			
Spizella passerina	Chipping Sparrow	---	---	S5B, SZN	---	---			●			
Spizella pallida	Clay-coloured Sparrow	---	---	S4B, SZN	---	Yes			●			
Petrochelidon pyrrhonota	Cliff Swallow	---	---	S5B, SZN	---	Yes			●			
Quiscalus quiscula	Common Grackle	---	---	S5B, SZN	---	---			●			
Chordeiles minor	Common Nighthawk	THR	SC	S4B, SZN	Yes	Yes			●			
Corvus corax	Common Raven	---	---	S5	---	---			●			
Geothlypis trichas	Common Yellowthroat	---	---	S5B, SZN	---	---			●			
Picoides pubescens	Downy Woodpecker	---	---	S5	---	---			●			

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Sialia sialis	Eastern Bluebird	---	---	S4S5B, SZN	---	Yes			●			
Tyrannus tyrannus	Eastern Kingbird	---	---	S5B, SZN	Yes	Yes			●			
Sturnella magna	Eastern Meadowlark	---	---	S5B, SZN	Yes	Yes			●			
Sayornis phoebe	Eastern Phoebe	---	---	S5B, SZN	---	Yes			●			
Otus asio	Eastern Screech-owl	---	---	S5	---	---			●			
Pipilo erythrophthalmus	Eastern Towhee	---	---	S4B, SZN	Yes	Yes			●			
Contopus virens	Eastern Wood-pewee	---	---	S5B, SZN	Yes	---			●			
Sturnus vulgaris	European Starling	---	---	SE	---	---			●			
Spizella pusilla	Field Sparrow	---	---	S5B, SZN	Yes	Yes			●			
Ammodramus savannarum	Grasshopper Sparrow	---	---	S4B, SZN	Yes	Yes			●			
Dumetella carolinensis	Gray Catbird	---	---	S5B, SZN	---	---			●			
Ardea herodias	Great Blue Heron	---	---	S5B, SZN	Yes	---			●			
Myiarchus crinitus	Great Crested Flycatcher	---	---	S5B, SZN	---	---			●			
Tringa melanoleuca	Greater Yellowlegs	---	---	S4B, SZN	Yes	---			●			
Butorides virescens	Green Heron	---	---	S4B, SZN	Yes	---			●			
Picoides villosus	Hairy Woodpecker	---	---	S5	---	---			●			
Catharus guttatus	Hermit Thrush	---	---	S5B, SZN	---	Yes			●			
Eremophila alpestris	Horned Lark	---	---	S5B, SZN	---	Yes			●			
Carpodacus mexicanus	House Finch	---	---	SE	---	---			●			
Passer domesticus	House Sparrow	---	---	SE	---	---			●			

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Troglodytes aedon	House Wren	---	---	S5B, SZN	---	---			●			
Passerina cyanea	Indigo Bunting	---	---	S5B, SZN	---	---			●			
Charadrius vociferus	Killdeer	---	---	S5B, SZN	---	---			●			
Rallus elegans	King Rail	END	END	S2B, SZN	Yes	---						●
Ixobrychus exilis	Least Bittern	THR	THR	S3B, SZN	Yes	Yes						●
Empidonax minimus	Least Flycatcher	---	---	S5B, SZN	---	Yes			●			
Lanius ludovicianus	Loggerhead Shrike	END	END	S2B, SZN	Yes	Yes	●		●			
Anas platyrhynchos	Mallard	---	---	S5B, SZN	Yes	---			●			
Falco columbarius	Merlin	---	---	S4B, SZN	---	---			●			
Zenaida macroura	Mourning Dove	---	---	S5B, SZN	---	---			●			
Oporornis philadelphia	Mourning Warbler	---	---	S5B, SZN	---	Yes			●			
Vermivora ruficapilla	Nashville Warbler	---	---	S5B, SZN	---	Yes			●			
Cardinalis cardinalis	Northern Cardinal	---	---	S5	---	---			●			
Colaptes auratus	Northern Flicker	---	---	S5B, SZN	Yes	---			●			
Circus cyaneus	Northern Harrier	---	---	S4B, SZN	Yes	Yes			●			
Stelgidopteryx serripennis	Northern Rough-winged Swallow	---	---	S5B, SZN	---	Yes			●			
Seiurus noveboracensis	Northern Waterthrush	---	---	S5B, SZN	---	Yes			●			
Contopus cooperi	Olive-sided Flycatcher	THR	SC	S5B, SZN	---	Yes			●			
Seiurus aurocapillus	Ovenbird	---	---	S5B, SZN	---	Yes			●			
Podilymbus podiceps	Pied-billed Grebe	---	---	S4B, SZN	Yes	Yes			●			
Dryocopus pileatus	Pileated Woodpecker	---	---	S4S5	---	Yes			●			

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Carpodacus purpureus	Purple Finch	---	---	S5B, SZN	---	Yes			●			
Progne subis	Purple Martin	---	---	S4B, SZN	---	Yes			●			
Sitta canadensis	Red-breasted Nuthatch	---	---	S5B, SZN	---	Yes			●			
Vireo olivaceus	Red-eyed Vireo	---	---	S5B, SZN	---	---			●			
Melanerpes erythrocephalus	Red-headed Woodpecker	THR	SC	S3B, SZN	Yes	Yes			●			
Buteo jamaicensis	Red-tailed Hawk	---	---	S5B, SZN	---	---			●			
Agelaius phoeniceus	Red-winged Blackbird	---	---	S5B, SZN	---	---			●			
Columba livia	Rock Dove	---	---	SE	---	---			●			
Pheucticus ludovicianus	Rose-breasted Grosbeak	---	---	S5B, SZN	Yes	---			●			
Archilochus colubris	Ruby-throated Hummingbird	---	---	S5B, SZN	---	Yes			●			
Bonasa umbellus	Ruffed Grouse	---	---	S5	---	Yes			●			
Grus canadensis	Sandhill Crane	---	---	S4B, SZN	Yes	---			●			
Passerculus sandwichensis	Savannah Sparrow	---	---	S5B, SZN	Yes	Yes			●			
Piranga olivacea	Scarlet Tanager	---	---	S5B, SZN	---	Yes			●			
Accipiter striatus	Sharp-shinned Hawk	---	---	S5B, SZN	---	Yes			●			
Melospiza melodia	Song Sparrow	---	---	S5B, SZN	---	---			●			
Porzana carolina	Sora	---	---	S4B, SZN	Yes	Yes			●			
Actitis macularia	Spotted Sandpiper	---	---	S5B, SZN	---	Yes			●			

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Catharus ustulatus	Swainson's Thrush	---	---	S5B, SZN	---	Yes			●			
Melospiza georgiana	Swamp Sparrow	---	---	S5B, SZN	---	Yes			●			
Tachycineta bicolor	Tree Swallow	---	---	S5B, SZN	---	---			●			
Cathartes aura	Turkey Vulture	---	---	S4B, SZN	---	Yes			●			
Bartramia longicauda	Upland Sandpiper	---	---	S4B, SZN	Yes	Yes			●			
Catharus fuscenscens	Veery	---	---	S4B, SZN	---	Yes			●			
Pooecetes gramineus	Vesper Sparrow	---	---	S4B, SZN	Yes	Yes			●			
Rallus limicola	Virginia Rail	---	---	S4B, SZN	Yes	Yes			●			
Vireo gilvus	Warbling Vireo	---	---	S5B, SZN	---	---			●			
Caprimulgus vociferus	Whip-poor-will	---	THR	S4B, SZN	Yes	Yes						●
Sitta carolinensis	White-breasted Nuthatch	---	---	S5	---	---			●			
Zonotrichia albicollis	White-throated Sparrow	---	---	S5B, SZN	---	Yes			●			
Meleagris gallopavo	Wild Turkey	---	---	S4	---	---			●			
Empidonax traillii	Willow Flycatcher	---	---	S5B, SZN	Yes	---			●			
Gallinago gallinago	Wilson's Snipe	---	---	S5B, SZN	---	Yes			●			
Troglodytes troglodytes	Winter Wren	---	---	S5B, SZN	---	Yes			●			
Aix sponsa	Wood Duck	---	---	S5B, SZN	Yes	Yes			●			
Hylocichla mustelina	Wood Thrush	---	---	S5B, SZN	Yes	---			●			
Dendroica petechia	Yellow Warbler	---	---	S5B, SZN	---	---			●			
Sphyrapicus varius	Yellow-bellied	---	---	S5B, SZN	Yes	Yes			●			

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
	Sapsucker											
Dendroica coronata	Yellow-rumped Warbler	---	---	S5B, SZN	---	Yes			●			
MAMMALS												
Sorex cinereus	Common Shrew	---	---	S5							●	
Sorex fumeus	Smoky Shrew	---	---	S5							●	
Sorex hoyi	Pygmy Shrew	---	---	S4							●	
Blarina brevicauda	Northern Short-tailed Shrew	---	---	S5							●	
Parascalops breweri	Hairy-tailed Mole	---	---	S4							●	
Condylura cristata	Star-nosed Mole	---	---	S5							●	
Myotis leibii	Eastern Small-footed Bat	---	---	S2S3							●	
Myotis lucifugus	Little Brown Bat	---	---	S5							●	
Myotis septentrionalis	Northern Long-eared Bat	---	---	S3							●	
Lasionycteris noctivagans	Silver Haired Bat	---	---	S4							●	
Pipistrellus subflavus	Eastern Pipistrelle	---	---	S3?							●	
Eptesicus fuscus	Big Brown Bat	---	---	S5							●	
Lasiurus borealis	Eastern Red Bat	---	---	S4							●	
Lasiurus cinereus	Hoary Bat	---	---	S4							●	
Sylvilagus floridanus	Eastern Cottontail	---	---	S5							●	

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Lepus americanus	Snowshoe Hare	---	---	S5							●	
Tamias striatus	Eastern Chipmunk	---	---	S5							●	
Marmota monax	Woodchuck	---	---	S5							●	
Sciurus carolinensis	Gray Squirrel	---	---	S5							●	
Tamiasciurus hudsonicus	Red Squirrel	---	---	S5							●	
Glaucomys volans	Southern Flying Squirrel	---	---	S4							●	
Castor canadensis	Beaver	---	---	S5							●	
Peromyscus leucopus	White –footed Mouse	---	---	S5							●	
Peromyscus maniculatus	Deer Mouse	---	---	S5							●	
Clethrionomys gapperi	Southern Red-backed Vole	---	---	S5							●	
Microtus pennsylvanicus	Meadow Vole	---	---	S5							●	
Ondatra zibethicus	Muskrat	---	---	S5							●	
Zapus hudsonius	Meadow Jumping Mouse	---	---	S5							●	
Napaeozapus insignis	Woodland Jumping Mouse	---	---	S5							●	
Erethizon dorsatum	Porcupine	---	---	S5							●	
Mephitis mephitis	Striped Skunk	---	---	S5							●	

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Mustela vison	Mink	---	---	S5							●	
Martes pennanti	Fisher	---	---	S5							●	
Mustela erminea	Ermine	---	---	S5							●	
Mustela frenata	Long-tailed Weasel	---	---	S4							●	
Mustela nivalis	Least Weasel	---	---	SU							●	
Lontra canadensis	River Otter	---	---	S5							●	
Lynx canadensis	Canada Lynx	---	---	S5							●	
Lynx rufus	Bobcat	---	---	S4							●	
Canis latrans	Coyote	---	---	S5							●	
Vulpes vulpes	Red Fox	---	---	S5							●	
Ursus americanus	Black Bear	---	---	S5							●	
Procyon lotor	Raccoon	---	---	S5							●	
Odocoileus virginianus	White-tailed Deer	---	---	S5							●	
Alces americanus	Moose	---	---	S5							●	
HERPETOZOA												
Bufo americanus	American Toad	---	---	S5				●				
Emydoidea blandingii	Blanding's turtle	THR	THR	S3								●
Rana catesbeiana	Bullfrog	---	---	S4				●				
Chelydra serpentina	Common Snapping Turtle	SC	SC	S4				●				
Thamnophis sirtalis sirtalis	Eastern Garter Snake	---	---	S5				●				
Hyla versicolor	Gray Treefrog	---	---	S5				●				

Scientific Name	Common Name	Conservation Status					Information Source					
		National	Provincial		Regional							
		SARA[1]	*ESA, 2007*[2]	SRank[3]	BCR 13[4]	Municipal[5]	NHIC[6]	Herpetofaunal Atlas[7]	OBBA[8] Square # 17PK62	CBC[9]	Mammals[10]	MNR[11]
Rana clamitans	Green Frog	---	---	S5				●				
Ambystoma jeffersonianum-laterale "complex	Jefferson / Blue-spotted Salamander Complex	---	---	S2				●				
Chrysemys picta marginata	Midland Painted Turtle	---	---	S5				●				
Rana pipiens	Northern Leopard Frog	---	---	S5				●				
Notophthalmus viridescens viridescens	Red-spotted Newt	---	---	S5				●				
Pseudacris crucifer	Spring Peeper	---	---	S5				●				
Pseudacris triseriata	Western Chorus Frog **(Great Lakes-St.Lawrence Population)**	THR	---	S3				●				
Rana sylvatica	Wood Frog	---	---	S5				●				
ODONATA												
Arigomphus furcifer	Lilypad Clubtail	---	---	S3			●					

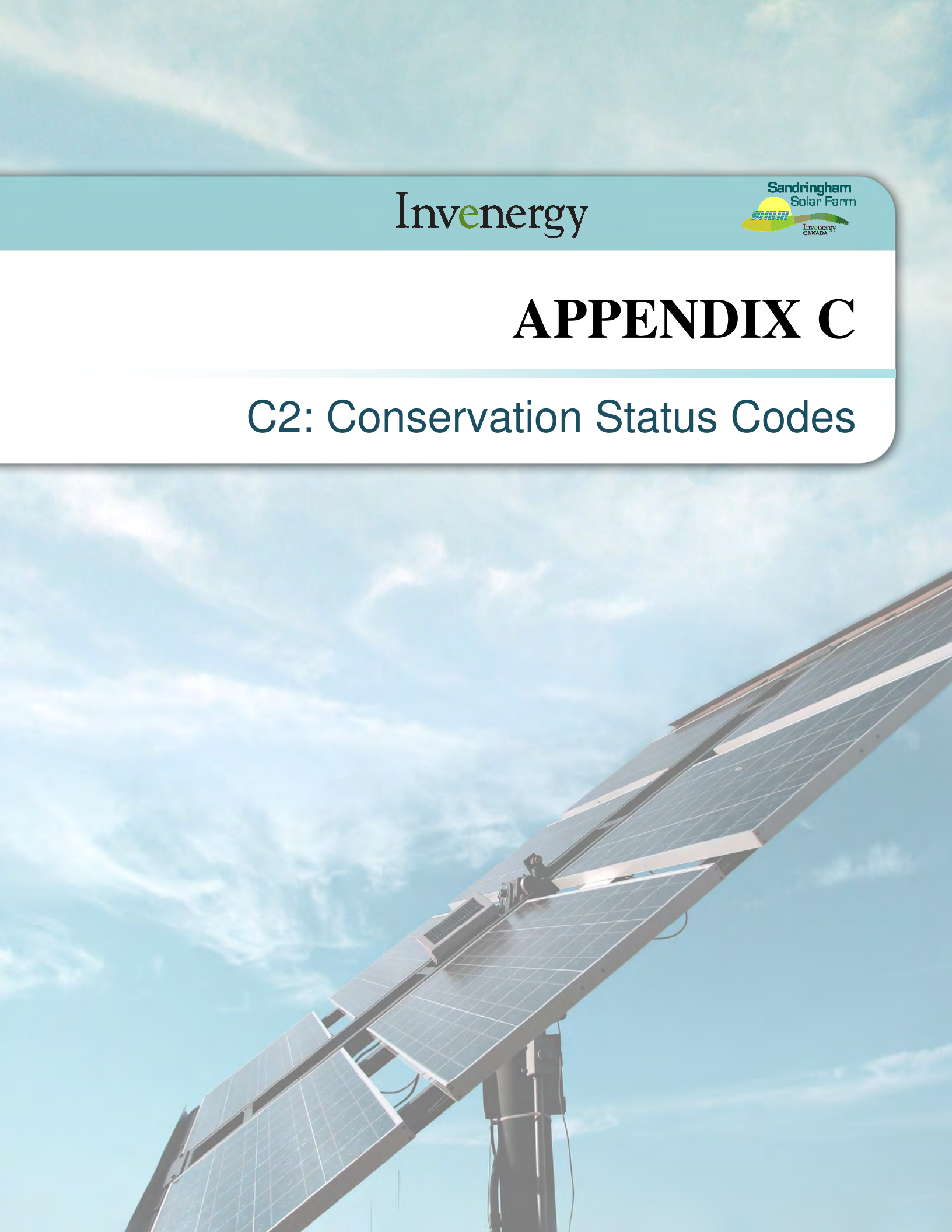
[1]Species at Risk Act; [2]Endangered Species Act; [3]SRank Code (see below); [4]Partners in Flight (2008);[5]Municipal Priority Species; [6]MNR NHIC Database; [7]Oldham and Weller(2000);.
[8]Ontario Breeding Bird Atlas; [9]Christmas Bird Count; [10]Patterson et al. (2007); [11]MNR Personal Communication (2010). For all codes, please see **Appendix C2**.
● denotes occurrence record and/or project location includes species range; --- denotes no information, no status or not applicable

Invenergy

Sandringham Solar Farm

APPENDIX C

C2: Conservation Status Codes



Overview of Codes for the Conservation Status of Species

Federal Conservation Status

Federal Status: Status assigned by the Committee on the Status of Endangered Wildlife in Canada. (COSEWIC, 2007) and listed under the *Species at Risk Act*

EXT Extinct. A wildlife species that no longer exists.

EXP Extirpated. A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.

END Endangered. A wildlife species facing imminent extirpation or extinction.

THR Threatened. A wildlife species likely to become endangered if limiting factors are not reversed.

SC Special Concern. A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

DD Data Deficient - A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.

NAR Not At Risk. A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Provincial Conservation Status

Provincial Status: Status assigned by the Ontario Ministry of Natural Resources (OMNR, 2006) under the *Endangered Species Act, 2007*

EXT Extinct. A species that no longer exists anywhere.

EXP Extirpated. A species that no longer exists in the wild in Ontario but still occurs elsewhere.

END Endangered. A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

THR Threatened. A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special Concern. A species with characteristics that make it sensitive to human activities or natural events.

DD Data Deficient. A species for which there is insufficient information for a provincial status recommendation.

NAR Not At Risk. A species that is currently not listed as risk.

Provincial (S) Rank

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (2007) 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.* Extremely rare in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.

S2 *Imperiled.* Very rare in Ontario; usually between 5 and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.

S3 *Vulnerable.* Rare to uncommon in Ontario; usually between 20 & 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.

S4 *Apparently Secure.* Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.

S5 *Secure.* Very common and demonstrably secure in Ontario.

SH Historically known from Ontario, but not verified recently (typically not recorded in the province in the last 20 years); however suitable habitat is thought to be still present in the province and there is reasonable expectation that the species may be rediscovered.

SR Reported for Ontario, but without persuasive documentation which would provide a basis for either accepting or rejecting the report.

SRF Reported falsely from Ontario.

SX Apparently extirpated from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites.

SE Exotic; not believed to be a native component of Ontario's flora.

S? Not Ranked Yet, or if following a ranking, Rank Uncertain (e.g. S3?). S? Species have not had a rank assigned.

SU Unrankable, often because of low search effort or cryptic nature of the species, there is insufficient information available to assign a more accurate rank; more data is needed.

Coefficient of Conservatism (CC) Definition (Plants)

Each native taxon was assigned a rank of 0 to 10 ("coefficient of conservatism") based on its degree of fidelity to a range of synecological parameters. Plants found in a wide variety of plant communities, including disturbed sites, were assigned ranks of 0 to 3. Taxa that typically are associated with a specific plant community, but tolerate moderate disturbance, were assigned ranks of 4 to 6. Rankings of 7 to 8 were applied to those taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance. Those plants with high degrees of fidelity to a narrow range of synecological parameters were assigned a value of 9 to 10

Wetness Index (CW) (Plants)

The wetness index gives an indication of were plant species are typically found. A wetness value (coefficient of wetness) between -5 and 5. A value of -5 was assigned to Obligate Wetland (OBL) species and a value of 5 to Obligate Upland species (UPL), with intermediate values assigned to the remaining categories. The wetland categories and their corresponding values are as follows:

These categories are defined as follows:

OBL	-5	OBL Wetland	Obligate	Occurs almost always in wetlands under natural conditions (estimated > 99% probability).
FACW+	-4	FACW	Facultative Wetland	Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67-99% probability).
FACW	-3			
FACW-	-2			
FAC +	-1	FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability).
FAC 0				
FAC-	1			

FACU+	2	FACU	Facultative Upland	Occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33 % probability).
FACU	3			
FACU-	4			
UPL	5	UPL	Obligate Upland	Occurs almost never in wetlands under natural conditions (estimated <1 % probability).