Environment

NextEra Energy Canada, ULC
Goshen Wind Energy Centre

Natural Heritage Assessment and Environmental Impact Study Report

Prepared by:

AECOM
300 – 300 Town Centre Boulevard 905 477 8400 tel
Markham, ON, Canada L3R 5Z6 905 477 1456 fax
www.aecom.com

Project Number:

60155032

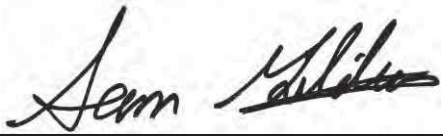
Date:

January, 2013

AECOM Signatures

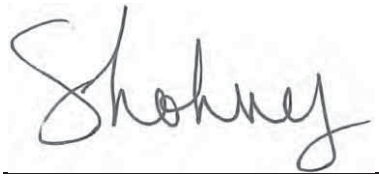
Report Prepared By:

Rob Aitken, B.Sc.
Terrestrial Ecologist



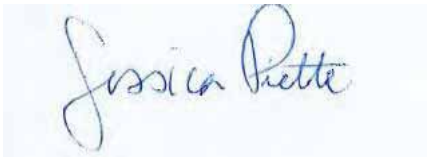
Sam Gildiner, M.E.M., R.P.F.
Terrestrial Ecologist

Olga Hropach, (Hon) B.Sc.
Terrestrial Ecologist



Shelley Lohnes, (Hon) B.Sc.
Ecologist

Jennifer Paterson, B.A., M.Sc.
Biogeographer



Jessica Piette, (Hon) B.ES
Terrestrial Ecologist

Kelly Ross, (Hon) B.Sc., M.A.
Senior GIS Specialist/Coordinator

Report Reviewed By:

Jillian deMan, (Hon) B.Sc.
Senior Terrestrial & Wetland Ecologist

Gary Epp, (Hon) B.Sc., M.Sc., Ph.D.
Senior Terrestrial Ecologist

James Kamstra, B.Sc., M.E.S.
Senior Terrestrial Ecologist

Nick Hodges
Senior Ecologist

Jessica M. Ward, (Hon) B.Sc., Ph.D.
Ecologist

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Glossary of Terms

ANSI	Area of Natural and Scientific Interest
Area of Investigation	Area encompassed by 120 m setback from Project Location boundary.
Candidate Significant Wildlife Habitat	Potential area of wildlife habitat that may be considered significant using procedures established or accepted by MNR.
Confirmed Significant Wildlife Habitat	Area of significant wildlife habitat verified using procedures established or accepted by MNR.
EIS	Environmental Impact Study
ELC	Ecological Land Classification; refers to ecological units defined on the basis of bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect) and corresponding vegetation.
ESA	Environmental Sensitive Area
Frac-out	Escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface.
Generalized Candidate Significant Wildlife Habitat	Wildlife habitats listed in Appendix D of the Natural Heritage Assessment Guide (MNR, 2011) which are not required to be identified for a particular project component, but may exist within 120 m of that component and are assumed to exist.
Laydown Area	A site for temporary storage of construction material.
Lek	An assembly area where animals carry on display and courtship behavior.
MNR	Ministry of Natural Resources
Mast	The nuts of forest trees, such as beechnuts or acorns.
Natural Feature	One of the following: (1) an Area of Natural and Scientific Interest (earth science or life science), (2) a coastal wetland, (3) a northern wetland, (4) a southern wetland, (5) a valleyland, (6) a wildlife habitat, or (7) a woodland.
NHIC	Natural Heritage Information Centre
NRVIS	Natural Resources and Values Information System
O. Reg. 359/09	Ontario Regulation 359/09
Project Location	The area encompassing all construction activities and project components.
Project Study Area	Wind Energy Centre Study Area and Transmission Line Study Area
Provincially Significant	Natural feature that the Ministry of Natural Resources has identified as Provincially Significant or that is considered to be Provincially Significant when evaluated using evaluation criteria or procedures established or accepted by the Ministry of Natural Resources.
REA	Renewable Energy Approval
SAR	Provincially and/or Federally-designated Species At Risk

Significant	Natural feature that (1) the Ministry of Natural Resources has identified as significant, or (2) has been confirmed in writing by the Ministry of Natural Resources to have been determined to be significant using applicable evaluation criteria or procedures established or accepted by the Ministry of Natural Resources.
UTM	Universal Transverse Mercator is a geographic coordinate system used to identify locations on the surface of the earth. UTM coordinates are typically recorded with a hand-held Geographic Positioning System (GPS) device.
Valleyland	Natural area that is south and east of the Canadian Shield and occurs in a valley or other landform depression that has water flowing through or standing for some period of the year.
Wetland	Land such as a swamp, marsh, bog or fen, other than land that is being used for agricultural purposes and no longer exhibits wetland characteristics, that (a) is seasonally or permanently covered by shallow water or has the water table close to or at the surface, and (b) has hydric soils and vegetation dominated by hydrophytic or water-tolerant plants.
Wildlife Habitat	Area where plants, animals and other organisms live or have the potential to live and find adequate amounts of food, water, shelter and space to sustain their population, including an area where a species concentrates at a vulnerable point in its annual or life cycle and an area that is important to a migratory or non-migratory species.
Woodland	Treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees, that is located south and east of the Canadian Shield.

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Woodland	Treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees, that is located south and east of the Canadian Shield.

1. Introduction

Goshen Wind, Inc., a wholly owned subsidiary of NextEra Energy Canada, ULC (NextEra), is proposing to construct a wind energy project in Bluewater and South Huron, Huron County, Ontario. The Project is referred to as the Goshen Wind Energy Centre (the "Project"). All turbines will be located on private lands (see Figure 1.1). The wind turbine technology proposed for the Project is the GE 1.6-100 Wind Turbine and the GE 1.56-100 Wind Turbine (one turbine only). The Project is categorized as a Class 4 facility.

AECOM Canada Ltd. (AECOM) was retained by NextEra to prepare a Natural Heritage Assessment (NHA) and, if required, an Environmental Impact Study (EIS) for the proposed Project, in accordance with the requirements of the Renewable Energy Approval (REA) process. The REA process combines previous requirements under the *Ontario Environmental Assessment Act* with clear provincial rules and standards in a new regulation, Ontario Regulation 359/09 (O. Reg. 359/09) under the *Environmental Protection Act*. The Regulation became law on September 24, 2009. Amendments to the regulation came into force on January 1, 2011 and July 1, 2012.

Under the REA process, a proponent who proposes to engage in a renewable energy project is required to conduct a Natural Heritage Assessment (NHA), consisting of the following:

- A Records Review (Section 25);
- A Site Investigation (Section 26); and,
- An Evaluation of Significance to determine the significance or provincial significance of natural features identified in the course of the Records Review and site investigation (Section 27).

Through this process, applicants identify natural features near the proposed Project location and determine if prohibitions and setbacks apply (Sections 37 and 38). In instances where the Project is proposed within such a setback, the applicant must prepare an Environmental Impact Study (EIS) Report (Section 38) to identify and assess the potential negative environmental effects that may result from the proposed renewable energy project, identify appropriate mitigation measures and describe how the potential effects will be addressed through the environmental effects monitoring plan and construction plan.

This document is intended to address the NHA and EIS requirements of O. Reg. 359/09 for the Project. It has been prepared for submission to the Ministry of Natural Resources (MNR) pursuant to sections 28 and 38 of that Regulation.

1.1 Project Location and Description

The proposed Project is located in Huron County, within the Municipalities of Bluewater and South Huron. The Project Study Area consists of the areas being studied for the wind farm component (Wind Energy Centre Study Area), as well as for the interconnection route (i.e., the area being studied for transmission lines to connect the Project to the electrical grid) (Transmission Line Study Area) (Figure 1.1). The Wind Energy Centre Study Area is generally bounded by Klondyke Road to the west, Rogerville Road to the north, Parr Line to the east, and Mount Carmel Drive to the south, in the Municipalities of Bluewater and South Huron. The Transmission Line Study Area is located to the east of the Wind Energy Centre Study Area, and is generally bounded by Parr Line to the west, Thames Road to the north, Perth 164 Road to the east, and Park Road to the south, extending into the Municipality of South Huron (Figure 1.2).

The location of the Project Study Area was defined early in the planning process for the proposed wind energy facility, based on the availability of wind resources, approximate area required for the proposed project, and availability of existing infrastructure for connection to the electrical grid. The Project Study Area was used to facilitate information collection and Records Review. The Project is located south of the Canadian Shield, and outside the Greenbelt Plan and Oak Ridges Moraine Plan Area.

The following UTM co-ordinates define the external boundaries of the Project Study Area:

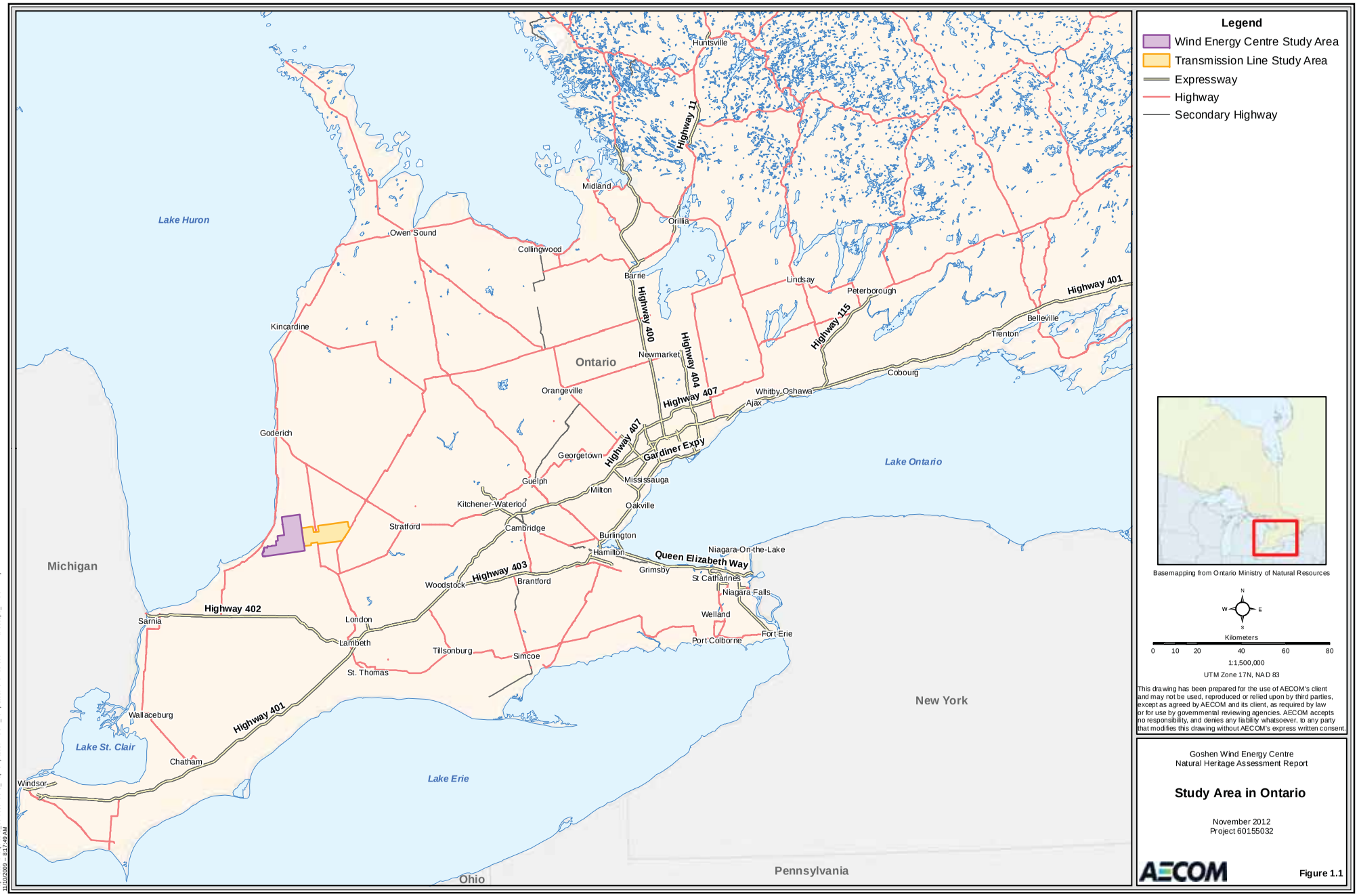
Longitude	Latitude
-81.6753290	43.4155312
-81.3011931	43.3810955
-81.3303330	43.3036317
-81.7743607	43.2379854

A Project Location was identified within the Project Study Area. The Project Location is defined in the Natural Heritage Assessment Guide for Renewable Energy Projects (July, 2011) as "*a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project*". As described therein, the Project Location boundary is the outer limit of where site preparation and construction activities will occur (i.e., Disturbance Areas described below) and where permanent infrastructure will be located, including the air space occupied by turbine blades. The proposed Project Location is shown on Figure 1.2, and includes the locations of the components of the Project listed below.

- Up to 71 GE 1.6-100 Wind Turbine generator locations and pad mounted step-up transformers and one GE 1.56-100 Wind Turbine generator location and pad mounted step-up transformer (however, only 63 turbines will be constructed);
- Turbine laydown and storage areas (including temporary staging areas, crane pads and turnaround areas surrounding each wind turbine);
- Construction laydown area for the purposes of providing temporary storage of construction materials and temporary construction offices and ancillary equipment such as electrical service from the local electrical distribution line;
- A transformer substation and ancillary equipment;
- 34.5 kV electrical collection lines to connect the turbines to the transformer substation and other ancillary equipment such as above-ground junction boxes;
- 115 kV transmission line to run from the transformer substation to a breaker switch station which will connect the electricity generated by the project to the existing Hydro One 115 kV transmission line;
- Turbine access roads;
- Three permanent meteorological towers; and
- An operations and maintenance building and ancillary equipment such as an electrical service line connected to the local distribution service.

Disturbance Areas have been identified surrounding various Project components, and are depicted on Figure 1.2. These denote areas where temporary disturbance during the construction phase may occur as a result of: temporary project component laydown and storage areas, crane pad construction and turbine turnaround areas. These disturbance areas form part of the Project Location as defined above. With the exception of the project components described above, no permanent infrastructure is proposed within these areas. Following construction activities, the Disturbance Areas will be returned to pre-construction conditions, with the exception of the area wherein vegetation removal will be maintained during operation of the transmission line.

For the purposes of completing the Natural Heritage Assessment, a 120 m Area of Investigation was defined, based on the requirements of O. Reg. 359/09 and the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a). The Area of Investigation encompasses the Project Location and an additional 120 m surrounding the Project Location, measured from the Project Location boundary as described above. As part of the REA process, features located within the 120 m Area of Investigation must be investigated and evaluated to determine whether they are significant or provincially significant, in order to ascertain whether development prohibitions apply as per O. Reg. 359/09. The location of the 120 m Area of Investigation is shown on Figure 1.2.



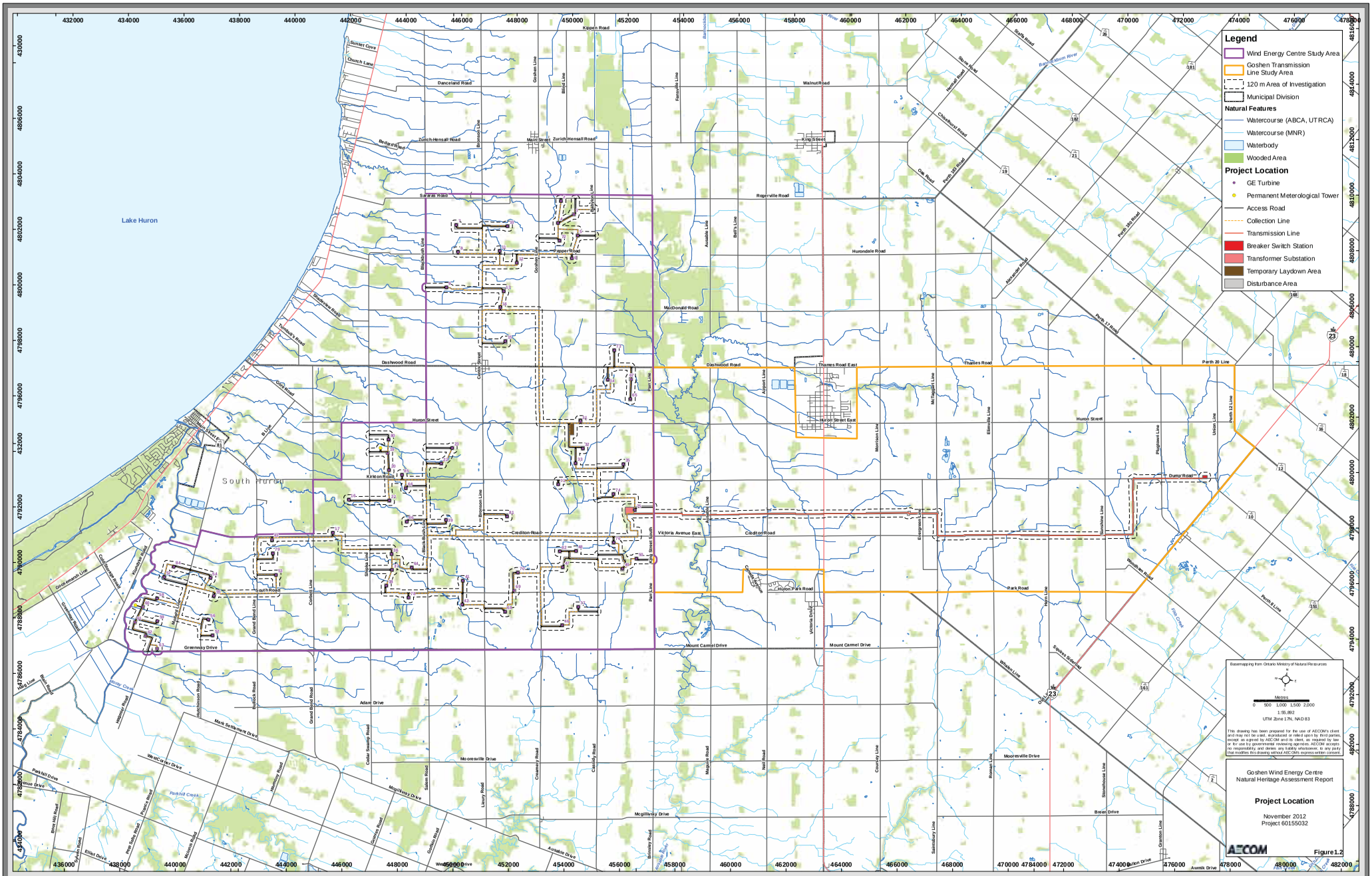
Goshen Wind Energy Centre
Natural Heritage Assessment Report

Study Area in Ontario

November 2012
Project 60155032

AECOM

Figure 1.1



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2. Records Review

2.1 REA Requirements and Methods

Under Section 25 (Natural Heritage, Records Review) of O. Reg. 359/09, a Records Review is required to identify any natural features associated with a renewable energy project. Table 2.1 below outlines the requirements of the Natural Heritage Records Review.

Table 2.1 Natural Heritage Records to be Reviewed

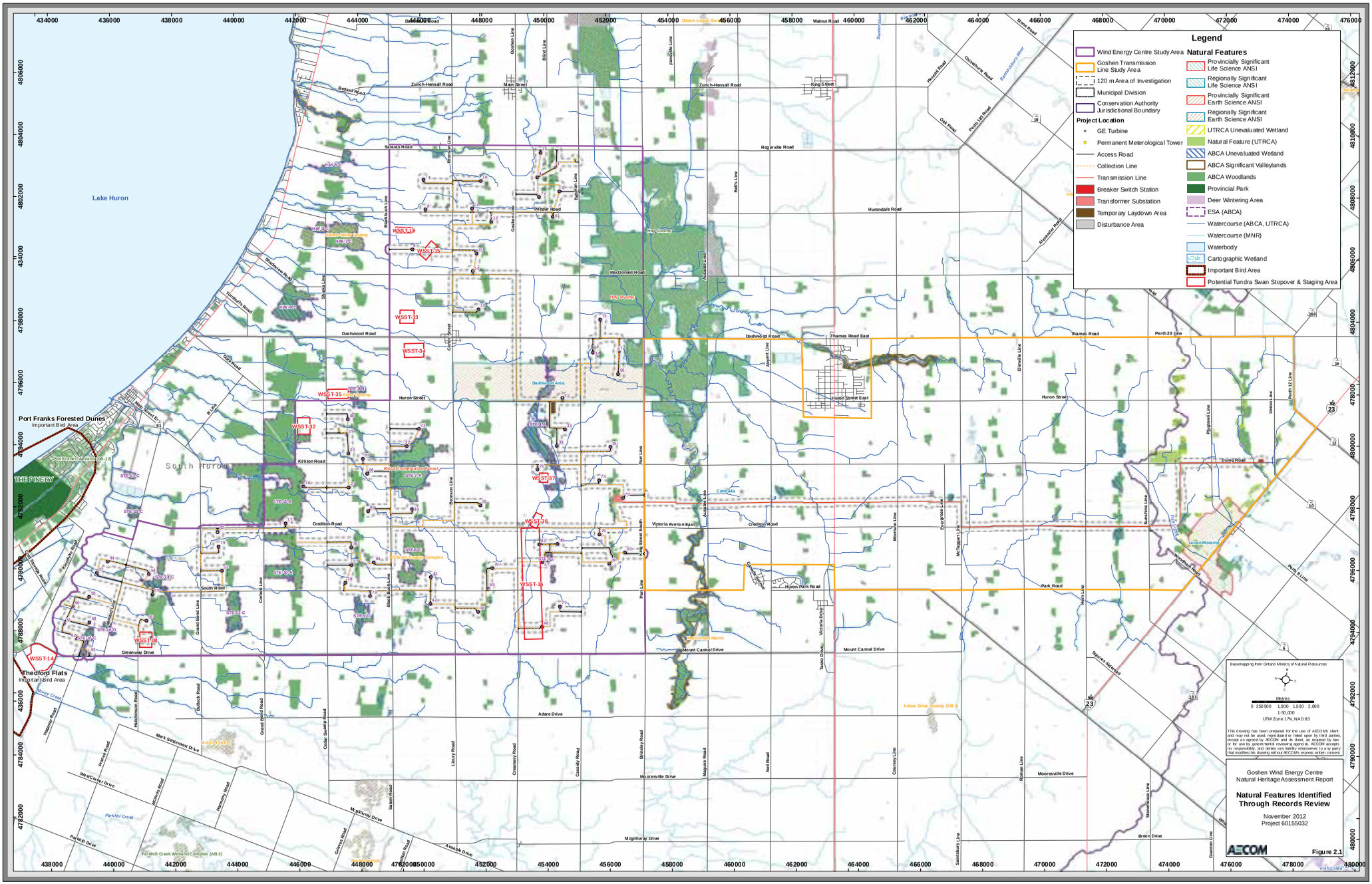
Item	Records to Be searched and Analyzed	Determination to be Made
1.	Records related to provincial parks and conservation reserves and those that are maintained by the Ministry of Natural Resources.	Whether the project location is in a provincial park or conservation reserve or within 120 metres of a provincial park or conservation reserve.
2.	Records that relate to natural features and that are maintained by: i. The Ministry of Natural Resources, ii. The Crown in right of Canada, iii. A Conservation Authority, if the project location is in the area of jurisdiction of the Conservation Authority, iv. Each local and upper-tier municipality in which the project location is situated, v. The planning board of an area of jurisdiction of a planning board in which the project location is situated, vi. The municipal planning authority of an area of jurisdiction of a municipal planning authority in which the project location is situated, vii. The local roads board of a local roads area in which the project location is situated, viii. The Local Services Board of a board area in which the project location is situated, and, ix. The Niagara Escarpment Commission, if the project location is in the area of the Niagara Escarpment Plan.	Whether the project location is: i. In a natural feature, ii. Within 50 metres of an Earth Science Area of Natural and Scientific Interest, or, iii. Within 120 m of any other natural feature protected by the REA Regulation.

The Records Review was conducted for the entire Project Study Area, including the Wind Energy Centre Study Area and the Transmission Line Study Area. An Area of Investigation was also identified, which encompasses the Project Location and an additional 120 m surrounding the Project Location (Figure 1.2). Where possible or applicable, the Records Review of natural features is summarized in the context of the Project Location design and the associated 120 m Area of Investigation (Figure 2.1).

The following types of natural features were reviewed and analyzed in the Records Review process:

- Provincial Parks and Conservation Reserves;
- Wetlands;
- Woodlands;
- Valleylands;
- Rare species and significant wildlife habitats; and
- Areas of Natural and Scientific Interest (ANSIs).

An assessment of Endangered and Threatened species (Species at Risk) and their habitats protected under the *Endangered Species Act* has been undertaken separately and will be addressed through a separate consultation and permitting process, if required, with the Ministry of Natural Resources (MNR) Guelph District. As such, records related to known occurrences of Species at Risk obtained through the Records Review process are not presented here.


Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Municipal Division
Conservation Authority Jurisdictional Boundary
Project Location
GE Turbine
Permanent Meterological Tower
Access Road
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Natural Features
Provincially Significant Life Science ANSI
Regionally Significant Life Science ANSI
Provincially Significant Earth Science ANSI
Regionally Significant Earth Science ANSI
UTRCA Unevaluated Wetland
Natural Feature (UTRCA)
ABCA Unevaluated Wetland
ABCA Significant Valleylands
ABCA Woodlands
Provincial Park
Deer Wintering Area
ESA (ABCA)
Watercourse (ABCA, UTRCA)
Watercourse (MNR)
Waterbody
Cartographic Wetland
Important Bird Area
Potential Tundra Swan Stopover & Staging Area
Lake Huron
Port Franks Forested Dunes
Important Bird Area
THE PINERY
Thedford Flats
Important Bird Area
South Huron
Basemapping from Ontario Ministry of Natural Resources
Metres
0 250 500 1,000 1,500 2,000
1:50,000
UTM Zone 17N, NAD 83
This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for the purposes of consultation and review. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Natural Features Identified Through Records Review
November 2012
Project 60155032
AECOM
Figure 2.1

2.1.1 Background Information Sources

The records reviewed for the Project Study Area included a review of the following key resources (date of information that was searched or collected is shown in brackets):

- The Huron County Official Plan (1998);
- The Municipality of Bluewater Official Plan (2005);
- The Municipality of South Huron Official Plan (2012);
- Natural Heritage Information Centre (NHIC) (MNR, 2012a);
- Ministry of Natural Resources (MNR) Natural Resources and Values Information System (NRVIS) mapping (2012b);
- Land Information Ontario (LIO) data layers (MNR, 2012c) for:
  - Nesting Sites;
  - Thermal Assessment of Watercourses;
  - Water Virtual Flow;
  - Staging Area Wildlife;
  - Nursery Area Wildlife;
  - Deer Wintering Areas;
  - Conservation Reserves;
  - Ontario Hydro Network Waterbody;
  - Ontario Hydro Network Watercourse;
  - Provincial Park Regulated;
  - National Wildlife Area;
  - Crown Game Preserves;
  - Areas of Natural and Scientific Interest (ANSIs);
  - Environmentally Significant Areas (ESAs);
  - Evaluated Wetlands;
  - Fish Spawning areas; and
  - Wooded Areas.
- MNR Wetland Evaluations (various);
- MNR ANSI Reports (various);
- Ausable Bayfield Conservation Authority (ABCA) GIS data layers and published reports (various);
- Upper Thames River Conservation Authority (UTRCA) GIS data layers and published reports (various);
- Ontario Provincial Parks website (Ontario Parks, 2012);
- MNR Land Use Policy Atlas (2011c);
- Important Bird Areas database (IBA Canada, 2011); and
- Various wildlife atlases (birds, mammals, herpetofauna).

2.1.2 Agency Correspondence

Written requests (submitted via email) for natural heritage information were made to a number of agencies. These requests were made for available information pertaining to natural features (Provincial Parks and Conservation Reserves, wetlands, woodlands, valleylands, wildlife habitat and ANSIs), species inventories and related GIS data layers. Table 2.2 describes the agencies contacted, information source, and data or information obtained.

Table 2.2 Summary of Agency Consultation

Agency	Date/Information Requested/Method of Communication	Date/Data or Information Obtained/Method of Response
Ministry of Natural Resources	• June 8, 2010: AECOM submitted Natural Heritage Assessment (NHA) work plan and Records Review request to MNR Guelph District. • August 25, 2011: AECOM resubmitted NHA Records Review request, as requested by MNR Renewable Energy Operations Team. • March 21, 2012: AECOM submitted NHA Records Review request for the Transmission Line Study Area.	• August 31, 2010: MNR Guelph District provided information pertaining to wetlands, woodlands, ANSIs, and wildlife habitat within the Wind Energy Centre Study Area. • September 20, 2011: MNR Renewable Energy Operations Team provided information pertaining to wetlands, woodlands, valleylands, ANSIs, and significant wildlife habitat within the Wind Energy Centre Study Area. • May 1, 2012: MNR Renewable Energy Operations Team provided information pertaining to wetlands, woodlands, valleylands, ANSIs, and significant wildlife habitat within the Transmission Line Study Area. • May 27, 2012: MNR Guelph District provided information pertaining to the wetland evaluation for McDonald Marsh.

Table 2.2 Summary of Agency Consultation

Agency	Date/Information Requested/Method of Communication	Date/Data or Information Obtained/Method of Response
Ausable Bayfield Conservation Authority (ABCA)	• August 12, 2010: AECOM requested natural heritage information relevant to the Project Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers. • September 8, 2011: AECOM requested rare species information for the Project Study Area. • November 22, 2011: AECOM requested the GIS layer for conservation areas owned by ABCA as well as the percentage of wooded areas in the Goshen Study Area. AECOM also requested information regarding conservation areas and ESAs in the Goshen Study Area. • November 24, 2011: AECOM requested information pertaining to ABCA conservation areas and ESAs in the Project Study Area, including any relevant reports, species inventories, and information on wildlife habitats and/or ecological functions of the areas. • March 12, 2012: AECOM requested natural heritage information relevant to the Transmission Line Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers.	• May 24, 2011: ABCA provided GIS data layer for natural areas mapping. • September 14, 2011: In regard to the request for information on rare species, ABCA suggests retrieving information from NHIC. • November 17, 2011: ABCA confirmed that they do not have a significant woodlands GIS data layer, and that the Natural Areas data layer provided by ABCA includes all woodlands, wetlands, thickets, meadows, valleylands, etc. • November 29, 2011: ABCA provided a copy of the report describing ESAs in the Project Study Area (ABCA, 1984). • December 19, 2011: ABCA provided GIS layers for conservation areas in the Wind Energy Centre Study Area. • March 26, 2012: ABCA provided GIS layers for natural features including woodlands, significant valleylands and wetlands, as well as ABCA owned conservation lands.
Upper Thames River Conservation Authority (UTRCA)	• March 13, 2012: AECOM requested natural heritage information relevant to the Transmission Line Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers.	• March 16, 2012: UTRCA provided comments and GIS data layers for natural areas and unevaluated wetlands.
Canadian Wildlife Service (CWS)	• May 12, 2011: AECOM requested natural heritage information relevant to the Project Study Area, including species inventories and information pertaining to wildlife habitat.	• June 10, 2011: CWS indicated that they do not collect and maintain a comprehensive list of this information. CWS recommended consulting with the MNR district office, MNR's NHIC database, and the Ontario Breeding Bird Atlas.
Huron County	• May 12, 2011: AECOM requested natural heritage information relevant to the Project Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers. • March 12, 2012: AECOM requested natural heritage information relevant to the Transmission Line Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers.	• May 12 and 20, 2011: Huron County indicated that natural heritage information they have was obtained from the Ausable Bayfield Conservation Authority or MNR. Due to license restrictions on sharing agreements, this information should be requested directly from those agencies. • November 17, 2011: Huron County indicated that the Bluewater Official Plan (OP) identifies that forests cover approximately 16.5% of lands within the Municipality (Section 6.1) and that Section 6.4.6 of the OP states that forested areas greater than 1 ha and less than 4 ha are of local significance while forested areas 4 ha and larger are of Provincial significance. The determination of the boundaries of the forested areas and their classification would have been completed in consultation with the Ausable Bayfield Conservation Authority (ABCA). ABCA should be contacted for the latest forested area mapping. • March 23, 2012: Huron County advised that it would be best to obtain natural heritage information from the local conservation authority.
Municipality of Bluewater	• May 12, 2011: AECOM requested natural heritage information relevant to the Project Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers. • September 12, 2011: AECOM requested information pertaining to the percentage of wooded areas in the Municipality of Bluewater, criteria used to evaluate significant woodlands and related GIS data layers for significant woodlands, as identified in the Municipality of Bluewater Official Plan.	• September 19, 2011: Municipality of Bluewater indicated that they forwarded AECOM's request to ABCA and other agencies (including Huron County) to determine who has the most information that would be of value to AECOM. When the Municipality of Bluewater receives advice as to who/which agency will be handling this request, the Municipality of Bluewater will forward that information to AECOM. • September 19, 2011: Municipality of Bluewater forwarded request for information pertaining to significant woodlands and related GIS data layers to Huron County.

Table 2.2 Summary of Agency Consultation

Agency	Date/Information Requested/Method of Communication	Date/Data or Information Obtained/Method of Response
	• September 29 and November 17, 2011: AECOM requested information pertaining to the percentage of wooded areas in the Municipality of Bluewater. • March 12, 2012: AECOM requested natural heritage information relevant to the updated Project Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers.	• April 24, 2012: Municipality of Bluewater indicated that AECOM should refer to the MNR, Ausable Bayfield Conservation Authority and relevant agencies to develop information relating to the natural features within the Goshen Transmission Line Study Area.
Municipality of South Huron	• May 12, 2011: AECOM requested natural heritage information relevant to the Project Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers. • September 12, 2011: AECOM requested information pertaining to the percentage of wooded areas in the Municipality of South Huron, criteria used to evaluate significant woodlands and related GIS data layers for significant woodlands, as identified in the Municipality of South Huron Official Plan. • September 29, 2011: AECOM requested information pertaining to the percentage of wooded areas in the Municipality of South Huron. • March 12, 2012: AECOM requested natural heritage information relevant to the updated Project Study Area, including information pertaining to woodlands, valleylands, wetlands, wildlife habitat, species inventories, conservation areas and related GIS data layers.	• September 12, 2011: Municipality of South Huron indicated AECOM should contact the Ausable Bayfield Conservation Authority for mapping. • October 5, 2011: Municipality of South Huron forwarded request for percentage of wooded areas to Huron County. On October 5, 2011, Huron County indicated that ABCA would have the most up-to-date information. • March 13, 2012: Municipality of South Huron responded that AECOM should contact Huron County and ABCA for information.

2.1.3 Preliminary Avian Surveys

An initial series of avian surveys was conducted by Golder Associates for the Wind Energy Centre Study Area. The Goshen Wind Energy Centre Avian Use Monitoring Report – 2010 (Golder Associates, 2011), which is located in Appendix A, describes the results of spring Tundra Swan/waterfowl surveys, winter avian use surveys, spring migration avian use surveys, breeding (summer) avian use surveys and fall migration avian use surveys. It was used in conjunction with Ontario Breeding Bird Atlas (Cadman *et al*. 2007) data to describe the bird species known to use habitats in the Project Study Area.

AECOM conducted additional breeding bird surveys in 2011 to identify bird breeding habitats associated with specific natural areas located within the 120 m Area of Investigation. Breeding bird surveys were conducted from late May 2011 to early July 2011 for features located in or within 120 m of turbine locations in a preliminary project layout for which property access was obtained at the time of the surveys. The 2011 breeding bird survey protocol was developed with reference to the Draft Birds and Bird Habitats Guidelines for Wind Power Projects (MNR, 2010a).

Field maps showing the extent of the areas searched in each survey are provided in Appendix B. These surveys were undertaken by qualified biologists (qualifications of field personnel are provided in Appendix C). Two surveys were conducted at least ten days apart at each location, as permitted by property access. Surveys were conducted in the morning between sunrise and 11:00 am. During each survey, an area search (as defined in MNR, 2010a and described below) was conducted within the area of the feature located at or within 120 m of a proposed turbine (*i.e.,* within a circular area having a radius of 171.5 m; or 120 m from turbine blade tip). Surveyors recorded the locations of all bird species encountered (seen or heard), as well as the date, start time, finish time, and weather conditions during the survey. A complete list of species detected on each visit was compiled and evidence of breeding and observations of other relevant behaviours was recorded using standard breeding bird atlas codes (EC-CWS, 2007c). A complete list of bird species observed during the 2011 breeding bird surveys conducted by AECOM is provided in Appendix D.

Additional breeding bird surveys were conducted in 2012 for specific natural features identified as candidate significant wildlife habitat for birds through the Site Investigation phase of this NHA. The survey methods and results of 2012 breeding bird surveys are presented in the Evaluation of Significance chapter (Section 4) of this report.

2.1.3.1 Tundra Swan

A preliminary spring Tundra Swan/waterfowl survey was conducted in March 2010 as described in the Goshen Wind Energy Centre Avian Use Monitoring Report (Appendix A). All roads within the Avian Study Area were driven, with frequent stops made to survey fields and other habitats for birds. In addition, the shore of Lake Huron on the westernmost edge of the Avian Study Area was surveyed. Fields and Lake Huron were scanned using a high power spotting scope and good quality binoculars. All birds identified were recorded.

Additional spring Tundra Swan migration surveys were completed by AECOM in 2012. These surveys were conducted on three occasions approximately one week apart during the peak Tundra Swan migratory period in March 2012. All roads within the Goshen Wind Energy Study Area were driven, with frequent stops made to visually search fields and other habitats for Tundra Swans. To the extent possible, surveys were conducted under calm, clear weather conditions. Weather conditions (wind, cloud cover, temperature), start time and end time were recorded on all survey dates. Surveys were conducted between sunrise and noon, during the most active period for Tundra Swans. During the surveys, all waterfowl observed via binoculars and spotting scopes were recorded (i.e., at their approximate GPS point or by recording the location on a map so as to minimize disturbance), identified, and their age (adult or immature), and behaviour noted. Field notes are provided in Appendix B.

The results of these surveys conducted in 2010 and 2012 were used in combination with Tundra Swan observations reported by local residents to identify locations of possible Waterfowl Stopover and Staging Areas (a type of significant wildlife habitat). These locations will be further investigated during the Site Investigation phase of this NHA.

2.2 Results of the Records Review

Available background data were reviewed to determine which portions of the Project Location are in a natural feature or within 120 m of a natural feature (50 m of Earth Science ANSIs). The results of the Records Review are described in the following sections and shown on Figure 2.1.

2.2.1 Records Related to Provincial Parks and Conservation Reserves

2.2.1.1 Provincial Parks

Based on the Provincial Parks and Conservation Reserves layers maintained by Land Information Ontario, as well as the Crown Land Use Policy Atlas administered by the Ministry of Natural Resources, there are no provincial parks identified within the Project Study Area. The closest provincial park to the study area is Pinery Provincial Park, located approximately 1.3 km from the southwest corner of the Project Study Area and 2.1 km from the Project Location. A search of the Ontario Provincial Parks website (accessed on May 10, 2012) was also undertaken, through which no provincial parks were identified within the Project Study Area. As a result, no additional work for this feature type is required in subsequent phases of the NHA for the Project.

2.2.1.2 Conservation Reserves

There are no Conservation Reserves within the Project Study Area (MNR, 2011d and MNR, 2012d). As a result, no additional work for this feature type is required in subsequent phases of the NHA for the Project.

2.2.2 Records Related to Natural Features

2.2.2.1 Wetlands

As described in the MNR's Ontario Wetland Evaluation System Manual (3rd edition; December, 2002), wetlands are lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface, where the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants.

Evaluation and identification of wetlands as Provincially Significant is completed through a standardized assessment process developed by the MNR, the Ontario Wetland Evaluation System (OWES). The key components considered in a wetland evaluation are the biological, social, hydrological and special features of the wetland or wetland complex. Based on scoring, a wetland can fall into one of two classes: Provincially Significant or Locally Significant (non-Provincially Significant).

A review of the Natural Heritage Information Centre (MNR, 2011a; accessed on 15 March 2012), MNR Natural Resources and Values Information System (NRVIS) mapping (accessed on 15 March 2012), and the Evaluated Wetlands data layer maintained by Land Information Ontario (accessed on 15 March 2012), has indicated that there are two evaluated Provincially Significant Wetlands (Hay Swamp and MacDonald Marsh) and three evaluated Locally Significant Wetlands (Datars-Miller Swamp, Keller Swamp and O'Brien Swamp complex) located within, or immediately adjacent to the Project Study Area. MacDonald Marsh is designated as Locally Significant in records used in this Records Review; however, according to correspondence with MNR (May 7, 2012), this designation has recently been upgraded to Provincially Significant. As a result, MacDonald Marsh is reflected as Provincially Significant in this NHA report.

No Provincially Significant coastal wetlands were identified within the Project Study Area, Project Location or 120 m Area of Investigation (MNR, 2011a).

Provincially Significant Wetlands

- Hay Swamp, 268 ha in size, is a Provincially Significant Wetland (PSW) complex, which represents the largest natural feature in the Project Study Area. The following description of this Provincially Significant Wetland is derived from the Natural Heritage Information Centre (NHIC) Natural Area Record (MNR, 2012a). This wetland complex contains fifteen individual wetlands and is composed of two wetland types, including 98% swamp and 2% marsh. Soils are predominantly clay, loam or silt (78%) with some organic content (22%), and the site type is classified as 74% riverine, 24% palustrine and 2% isolated. Hay Swamp provides nesting habitat for colonial waterbirds and is an active feeding area. This Provincially Significant Wetland also provides winter cover for wildlife, is of local significance for Deer, and provides habitat for many different species including Bullfrogs, Snapping Turtles, and a diversity of mammals including Muskrat, Raccoon, Beaver, Mink, Red Fox, Coyote, Striped Skunk, and Squirrels (MNR, 2012a).

  Hay Swamp occurs within the Project Study Area, but is located outside of the Area of Investigation. At Babylon Line, north of Pepper Road, Hay Swamp is approximately 250 m from the Project Location. In the area south of Dashwood Road and west of Parr Line, Hay Swamp is located approximately 121 m from the Project Location (occurring along the boundary of the 120 m Area of Investigation).

- MacDonald Marsh is a wetland complex that has recently been designated as Provincially Significant. This change in designation (from Locally Significant) reflects the designation of Snapping Turtle as a Special Concern species, which occurred following the completion of the wetland evaluation. The complex is composed of five

individual wetlands. Wetlands within this complex are composed of two wetland types (12% swamp and 88% marsh). The soil type is 100% sand. MacDonald Marsh provides suitable waterfowl breeding habitat, and locally significant fish spawning and nursery habitat (MNR, 2012a). MacDonald Marsh occurs outside of the Project Study Area, approximately 2.7 km outside of the Area of Investigation.

While these two Provincially Significant Wetlands occur within, or directly adjacent to the Project Study Area, both are located outside of the 120 m Area of Investigation.

Locally Significant Wetlands

According to MNR's Natural Resource Values Information System (NRVIS) mapping (MNR, 2012b), there are three Locally Significant Wetlands or wetland complexes, covering a total area of approximately 98 ha within the Goshen Project Study Area. The following general descriptions of the locally significant wetlands located within, or immediately adjacent to the study area, are derived from NHIC Natural Area Records (MNR, 2012a).

- Datars-Miller Swamp, 78 ha in size, is a non-Provincially significant coastal wetland complex containing two individual wetlands composed of 100% swamp. The soil type is 100% clays, loams or silts and the site type is classified as 66% palustrine and 34% isolated. The Datars-Miller Swamp provides winter cover for wildlife including White-tailed Deer and Red Fox, Squirrels and Raccoon (MNR, 2012a). Datars-Miller Swamp is located approximately 730 m outside of the 120 m Area of Investigation.
- Keller Swamp, covering 5 ha, is a Locally Significant Wetland that is 100% swamp. The soil type is 100% clays, loams or silts and the site type is classified as 100% isolated. The Keller Swamp provides habitat to Racoons (MNR, 2011a). Keller Swamp is located approximately 350 m outside of the 120 m Area of Investigation.
- O'Brien Swamp complex is a Locally Significant Wetland complex, 15 ha in size containing three individual wetlands composed 100% of swamp. The soil type is 100% clays, loams or silts and the site type is classified as 100% palustrine. The O'Brien Swamp provides winter cover for wildlife including the Ruffed Grouse, Cottontail, Squirrel and Fox. It also provides habitat for Racoons (MNR, 2012a). O'Brien Swamp complex is located approximately 90 m outside of the 120 m Area of Investigation.

While these three Locally Significant Wetlands occur within, or directly adjacent to the Project Study Area, all three are located outside of the 120 m Area of Investigation.

Unevaluated Wetlands

Unevaluated wetlands are associated with several Environmentally Significant Areas (ESAs) located within the Project Study Area (ABCA, 1984). In total, twelve ESAs have been identified within the Project Study Area, seven of which are located in or within the 120 m Area of Investigation (Figure 2.1). All seven of these areas are described as containing wetlands (STE-17-C, STE-14-C, STE-10-A, STE-11-A, STE-4-A, STE7-A and STE-5-C) (ABCA, 1984). Detailed descriptions of these ESAs are provided in Section 2.2.2.4 of this report. These features will be assessed during the Site Investigation phase of this NHA to determine whether they contain wetlands in or within the 120 m Area of Investigation.

The mapped locations of unevaluated wetlands under the jurisdiction of Ausable Bayfield Conservation Authority (ABCA) were provided by ABCA as part of this Records Review. Unevaluated wetlands, identified by ABCA within the Wind Energy Centre and Transmission Line Study Areas (located in the area approximately west of Sunshine Line) are shown on Figure 2.1. These features will be assessed during the Site Investigation phase of this NHA to determine whether they contain wetlands in or within the 120 m Area of Investigation.

The mapped locations of unevaluated wetlands under the jurisdiction of Upper Thames River Conservation Authority (UTRCA) were provided by UTRCA as part of this Records Review. Unevaluated wetlands, identified by UTRCA within the Transmission Line Study Area (located in the area approximately east of Sunshine Line) are shown on Figure 2.1. These features will be assessed during the Site Investigation phase of this NHA to determine whether they contain wetlands in or within the 120 m Area of Investigation.

There is potential for additional unevaluated wetlands to exist in the Project Study Area. The presence or absence of wetland features in or within the 120 m Area of Investigation will be determined during the Site Investigation phase of this NHA.

2.2.2.2 Woodlands

The Project Study Area is located in the Mixed-wood Plains Forest Region (MNR, 2012e). Under natural conditions, the forest in this region consists of a diverse mix of conifer (such as pine, cedars and hemlock) and deciduous tree species (maples, ashes, oaks, elm, poplars and several other groups).

MNR's NRVIS mapping and natural features mapping provided by ABCA and UTRCA indicate that the Project Study Area contains woodlands ranging in size from small hedgerow features to woodlands approximately 180 ha in size. The Wind Energy Centre Study Area contains a large number of isolated woodlands. Larger, contiguous wooded areas are associated with Hay Swamp (east of Babylon Line) and occur in the southwestern portion of the Project Study Area, along Corbett Line. Narrow bands of woodland corridors occur throughout the Transmission Line Study Area, predominately running north-south in orientation.

The Official Plan for the Municipality of Bluewater states in Section 6.4 (Natural Environment Policies), that "the most significant natural features in the Municipality, identified as being Provincially or locally significant, are designated Natural Environment" (Official Plan – Schedule B). Within the Municipality of Bluewater, a number of woodlands of varying size and some larger, contiguous woodland areas occurring in the 120 m Area of Investigation are included under this designation in the Official Plan. Woodlands shown in Schedule B of the Official Plan are reflected as ABCA Woodlands on Figure 2.1 of this report.

Section 3.4.2 of the Official Plan for The Municipality of South Huron states that "Significant Woodlands have been determined based on the following criteria: woodland size, proximity to other natural features, woodland shape, proximity to watercourses and potential connectivity/linkage". All wooded areas in excess of 2 ha are considered significant in South Huron. The South Huron Official Plan has designated the most significant and sensitive natural areas. These features are designated "Natural Environment" on Schedule B of the Official Plan. Woodlands shown in Schedule B of the Official Plan are reflected as ABCA Woodlands and UTRCA Natural Features on Figure 2.1 of this report.

Woodlands in or within the 120 m Area of Investigation will be assessed during the Site Investigation phase of this NHA.

2.2.2.3 Valleylands

Under the REA regulation, a "valleyland" is defined as a natural area that is south and east of the Canadian Shield and occurs in a valley or other landform depression that contains flowing or standing water for some period of the year (MNR, 2011a).

The mapped locations of Significant Valleylands under the jurisdiction of ABCA were provided by ABCA as part of this Records Review. Three Significant Valleylands have been identified by ABCA within or adjacent to the Wind Energy Centre and Transmission Line Study Areas and are shown on Figure 2.1. While all three of these Significant

Valleylands are located outside of the 120 m Area of Investigation, one is associated with the Ausable River approximately 720 m south of the proposed transmission line crossing.

A number of tributaries, creeks and rivers occur within the Project Study Area, which may exhibit valleyland characteristics. Watercourse features within the Project Location and its associated 120 m Area of Investigation will be assessed during the Site Investigation phase of this NHA to determine if valleylands are present or absent.

2.2.2.4 Wildlife Habitat (including rare species)

Wildlife habitat is defined in the Significant Wildlife Habitat Technical Guide (MNR, 2000) as areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle, and areas which are important to migratory or non-migratory species.

A review of wildlife habitat was conducted using available secondary source information and the compiled information provided by MNR for the Project Study Area, in order to assess wildlife use and to determine if areas of confirmed Significant Wildlife Habitat occur within the Project Study Area.

The Port Franks Forested Dunes Important Bird Area (IBA) ON024 is located west of the Project Study Area, between the shoreline of Lake Huron and Lakeshore Road (Figure 2.1). Important Bird Areas Canada describes the Port Franks Forested Dunes IBA as follows:

> *The Port Franks Dune Forest complex lies along the Lake Huron Shoreline just to the south of Grand Bend in Lambton County. In all, the forest complex covers over 45 km^2 and is the largest forested area on the eastern shore of Lake Huron south of the Bruce Peninsula. The whole site is nearly contiguous forest, and includes important areas such as Pinery Provincial Park, Lambton County Heritage Forest, Port Franks Forested Dunes and Wetlands, Karner Blue Sanctuary, and the Kettle Point Indian Reserve. The forest complex is generally comprised of a series of wooded dunes (oak and pine) that extend inland from the Lake Huron shoreline. The oldest dunes, which are situated farthest inland, are nearly 25 m high. A series of low wet interdunal meadows and ponds lie between the dune ridges. The varied topography and mix of wetland and upland habitats make the forest complex very diverse. The area supports an exceptional concentration of provincially and nationally threatened vegetation communities, flora, and fauna.*
>
> *The Port Franks Forest Complex supports an exceptional concentration of threatened bird species. At least six species identified as threatened in Canada have bred here in recent years, and two additional threatened species have historically bred here. These threatened species include: Hooded Warbler (Nationally Threatened) - ten territories were reported from the Port Franks Forested Dunes and Wetlands section in 1994, and nine territories were recorded from this section in 1997. This may represent as much as 6.9% of Canada's estimated Hooded Warbler population; Acadian Flycatcher (Nationally Endangered) - one territory was reported in 1997 - fewer than 50 pairs of this species are estimated in Canada; Red-Headed Woodpecker (Nationally Vulnerable) - 5 to 10 pairs consistently nest within the forest complex (close to 1% of the estimated national population); Cerulean Warbler (Nationally Vulnerable) - at least three singing males were recorded in 1997; Louisiana Waterthrush (National Vulnerable) - one singing male was recorded in 1997; and Red-shouldered Hawk (Nationally Vulnerable) - one pair nested in 1998. Threatened species that formerly nested in the forest complex include: Prothonotary Warbler (Nationally Endangered) - for three years in the mid-1980s one pair bred successfully at Pinery Provincial Park; and Prairie Warblers (Nationally Vulnerable, although recently downlisted May 1999) - as many as 20 pairs were present in the 1970s, 6 pairs were present in the early 1980s, and unfortunately, only one sighting since. In addition to threatened species, the forest complex is significant for forest birds in general, with 15 to possibly*

18 species of breeding wood warblers being recorded during surveys completed in 1994 and 1997. Large numbers of warblers and other songbirds also congregate in the forests along the lake shore during both the spring and fall migrations. From a landscape perspective, the forest complex is well situated to act as a 'bottleneck', and invertebrates are likely abundant due to the proximity of the lake and the numerous wetlands. However, numbers of migrants are not well documented (IBA Canada, 2011).

Thedford Flats IBA ON026 occurs along the southwestern corner of the Project Study Area, located west of Lakeshore Road. Important Bird Areas Canada describes the Thedford Flats IBA as follows:

The Thedford Flats are located near the Lake Huron shoreline in northwest Lambton County, about 10 km north of Thedford, and 10 km south of Grand Bend. Pinery Provincial Park borders the west side of the site. At one time this area was a shallow bay and marsh that was cut off from Lake Huron by the formation of 30 metre high dunes on the east side of what is now Pinery Provincial Park. In 1875, a canal was cut through the dunes to drain the marsh, and the last remnant (Lake Smith), was drained circa 1959. At present, the flats must be drained with pumps in the spring. Potatoes and onions have been grown here, but in recent years the crops were primarily corn and beans.

Since at least 1970, Tundra Swans have congregated at the Thedford Flats during late March. Peak one-day counts have been recorded regularly since the early 1980s, and the long-term average (1983 to 1998) is just over 7,600 birds. A more recent average (1993 to 1998) is 10,800 birds, which is almost 6.5% of the North American Tundra Swan population, and about 12.5% of the estimated eastern population. The maximum one-day count was recorded in 1994, when 16,356 birds were tallied. Since these one-day counts consider turnover rates, the number of swans moving through the site during the entire spring migration is likely much larger (IBA Canada, 2011).

The Port Franks Forested Dunes IBA and the Thedford Flats IBA are located outside the 120 m Area of Investigation. The Port Franks Forest IBA occurs approximately 390 m outside the Project Study Area and 930 m outside the 120 m Area of Investigation; the Thedford Flats IBA is located approximately 1.3 km outside the Project Study Area and 1.6 km outside the 120 m Area of Investigation.

Information provided by the Lambton Heritage Museum indicates that Tundra Swan migration typically occurs between mid to late-March, but can vary significantly based on weather conditions (Table 2.3).

Table 2.3 Tundra Swan Migration Data Obtained from the Lambton Heritage Museum

Year	Date Tundra Swans Arrive	Date Tundra Swans Depart (or end of monitoring)	Maximum Number of Tundra Swans Observed (Daily Observation)
2002	February 22	March 31	17,000
2003	March 17	-	few
2004	March 2	March 25 (end of monitoring)	25,000
2005	March 21	April 4 (end of monitoring)	unknown
2006	March 9	March 28	unknown
2007	March 10	April 3 (end of monitoring)	many
2008	March 20	April 6 (end of monitoring)	20,000
2009	March 14	March 31	10,000
2010	March 10	March 21	>1,000
2011	March 8	April 3 (end of monitoring)	>20,000
2012	December 30, 2011	March 17, 2012	500

Several Environmentally Significant Areas (ESAs) have been designated by ABCA within the Project Study Area. Although these areas are not identified as natural features requiring identification and evaluation within O.Reg. 359/09, a consideration of the ecological features and functions of these areas contributes to an understanding of wildlife habitat across the Project Study Area and potential identification of Significant Wildlife Habitat. Twelve ESAs have been identified within the Project Study Area, seven of which are located in or within the 120 m Area of Investigation (Figure 2.1). These seven ESAs are listed below with brief descriptions, summarized from ABCA's Environmentally Significant Areas Report (1984):

STE-4-A: ..... This site forms part of the headwaters of Parkhill Creek and is known locally as Mud Creek. Species of trees located in this swamp include red and silver maple, basswood, elm, cedar and some bitternut hickory. Ground conditions displayed moisture slightly below the surface, however much of the forested area is only seasonally wet. The Mud Creek Drain and Pfaff Drain cut across this property.

STE-5-C: ..... This site consists of two separate wetland areas having a water table slightly below the ground surface. Upland forest communities and cultivated farmland surround this site. A strip of cultivated land separates the two sections of this woodlot. This wetland augments the flow of Mud Creek as well as serving a minor water storage function. It has, however, been greatly affected by adjacent land draining operations.

STE-7-A: ..... This woodlot includes the ABCA's 40 ha Stephen Wildlife Area and a 40 ha ABCA/MNR Agreement Forest. This site also contains Canadian Forestry Service Experimental Plots. There are five small wetland areas identified through this large woodlot. The woodland is generally a sugar maple upland forest. These range from a small pond to patches of a silver maple and yellow birch swamp. There are two municipal drains that run through the property.

STE-10-A: ..... Approximately 60% of this site is made up of ABCA/MNR Agreement Forest. A large soft maple swamp exists in the southern section of this property. Several smaller wetland areas occur throughout the remainder of the ESA. A heavily channelized stream passes through this site and empties into Parkhill Creek.

STE-11-A: ..... Approximately 280 ha of this site is owned and managed as an ABCA/MNR Agreement Forest. The north half of the site is comprised of a coniferous plantation. Many small swampy areas are located throughout the woodland. Natural upland areas along the drier but still moist sandy ridges consist of trembling aspen, poplar, white birch and some sugar maple. There are four drains that traverse the area.

STE-14-C: ..... A well-defined valley system containing wetland species along the floodplain dominates this ESA. Dogwood, willow, elm, trembling aspen and poplar provide vegetative cover for the valley floor and walls. The large amount of vegetation in this woodlot does serve to protect the valley walls from erosion as well as to filter runoff.

STE-17-C: ..... Approximately one half of this site consists of soft maple swamp. The surrounding woodland community is best described as an immature lowland forest consisting of poplar, trembling aspen, elm, hawthorn and white ash with willow and dogwood in the understorey. A municipal drain runs through the centre of the site including the largest wetland area.

These ESAs will be assessed to determine whether they contain candidate significant wildlife habitat or wetlands during the Site Investigation phase of this NHA.

Significant Wildlife Habitat

Significant wildlife habitat is grouped into four categories as per the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) and the Draft Ecoregion 6E and 7E Criterion Schedule Addendums to the SWHTG (MNR, 2011e; MNR, 2011f) as follows: Seasonal Concentration Areas of Animals, Rare Vegetation Communities or Specialized Habitats for Wildlife, Habitat for Species of Concentration Concern, and Animal Movement Corridors. The following sections describe Records Review results related to significant wildlife habitat types within these categories. As required by MNR, the habitat criteria and information for each habitat type as described in the Draft Significant Wildlife Habitat 6E and 7E Ecoregion Criterion Schedules (MNR, 2011e; MNR, 2011f) are reproduced below.

Seasonal Concentration Areas of Animals

Habitats within the Project Study Area have been identified as habitats of seasonal concentrations of animals and/or possessing characteristics that make them potential habitats of seasonal concentrations. Seasonal Concentration Areas of Animals are areas where wildlife species occur annually in aggregations at certain times of the year, on an annual basis. Such areas are sometimes highly concentrated with members of a given species, or several species, within relatively small areas. In the spring and autumn, migratory wildlife species will concentrate where they can rest and feed. Other wildlife species require habitats where they can survive winter. Based on the natural heritage background information reviewed and on direct input from MNR on seasonal concentration areas of animals, all of the following habitats will be carried forward to Phase 2 (Site Investigation) of this NHA unless stated otherwise:

Waterfowl Stopover and Staging Areas (Terrestrial and Aquatic):

Terrestrial Waterfowl Stopover and Staging Areas can be found in fields with sheet water resulting from snow melt and runoff during spring (mid-March to May); such fields can provide important invertebrate foraging habitat for migrating waterfowl. Agricultural fields with waste grains are commonly used by waterfowl, and may be considered Significant Wildlife Habitat if used by Tundra Swans in the Grand Bend area (MNR, 2011e; MNR, 2011f).

Aquatic Waterfowl Stopover and Staging Areas can be found in ponds, marshes, lakes, bays, coastal inlets, and watercourses; such areas may be used by migrant waterfowl. Sewage treatment ponds and stormwater ponds do not qualify as Significant Wildlife Habitat; however, a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundant food supply, mostly aquatic invertebrates and vegetation in shallow water (MNR, 2011e; MNR, 2011f).

Two flocks of approximately 2000 to 5000 Tundra Swans were observed feeding in fields just outside of the southwest corner of the Project Study Area during the spring Tundra Swan/Waterfowl Survey conducted in March 2010 (Golder Associates, 2011). Additional locations were identified during Tundra Swan migration surveys conducted by AECOM in 2012, through correspondence with the Lambton Heritage Museum, and by local residents through personal correspondence and information obtained at public meetings and site meetings. Tundra Swans were observed in nine additional locations within the Project Study Area, including locations in or within the 120 m Area of Investigation (Table 2.4). The general locations where Tundra Swans were observed are shown on Figure 2.1.

Table 2.4 Tundra Swan Observations in Vicinity of Project Study Area

Feature No.	Observations	Source of Information
WSST-08	Approximately 280 Tundra Swans observed feeding in field during 2012 Tundra Swan survey.	2012 Tundra Swan surveys (AECOM)
WSST-14	Two flocks of approximately 2000 and 5000 Tundra Swans observed feeding in fields during 2010 Tundra Swan survey. Several flocks of 10 to 600 Tundra Swans observed feeding in field during 2012 Tundra Swan survey. Annual use of site by Tundra Swans recorded by Lambton Heritage Museum and reported by resident through personal correspondence.	2010 (Golder, 2011) and 2012 (AECOM) Tundra Swan surveys; Lambton Heritage Museum; local residents.
WSST-15	Tundra Swans feeding in field reported by resident through personal correspondence. Approximately 1860 Tundra Swans observed feeding in field during 2012 Tundra Swan survey. Annual use of site by Tundra Swans reported by resident through personal correspondence.	2012 Tundra Swan survey (AECOM); local residents.
WSST-16	Tundra Swans feeding in field reported by resident through personal correspondence. Approximately 160 Tundra Swans observed feeding in field during AECOM roadside survey. Annual use of site by Tundra Swans reported by resident through personal correspondence.	2012 Tundra Swan survey (AECOM); local residents.
WSST-32	Approximately 1000 Tundra Swans feeding in field reported by resident through personal correspondence. Annual use of site by Tundra Swans reported by resident at public meeting.	Local residents
WSST-33	Approximately 220 Tundra Swans feeding in field reported by resident through personal correspondence. Annual use of site by Tundra Swans reported by resident through personal correspondence.	Local residents
WSST-34	Approximately 100 Tundra Swans feeding in field reported by resident through personal correspondence.	Local residents
WSST-35	Approximately 200 Tundra Swans feeding in field reported by resident through personal correspondence.	Local residents
WSST-36	Annual use of site by Tundra Swans reported by local residents at public meetings and through personal correspondence.	Local residents
WSST-37	Annual use of Tundra Swans reported by resident during site meeting.	Local residents

Wood Ducks, American Widgeons, Canada Geese, Common Mergansers, Red-breasted Mergansers and Mallards were also observed within the Project Study Area during spring migration surveys conducted by Golder and AECOM. According to information provided by the MNR during the Records Review, waterfowl stopover and staging areas may occur in or within the 120 m Area of Investigation (MNR, 2011d and MNR, 2012d).

Shorebird Migratory Stopover Areas:

High quality shorebird stopover habitat is extremely rare and typically has a long history of use. These areas include shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October.

Spotted Sandpiper, Least Sandpiper and Upland Sandpiper were recorded during spring avian surveys conducted in the Project Study Area (Golder Associates, 2011). According to information provided by MNR during this Records Review, shorebird migratory stopover and staging areas may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Raptor Wintering Areas:

This habitat type consists of a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. To be significant, raptor wintering sites need to be greater than 20 ha in size with a combination of forest and upland habitat. Least disturbed sites, idle/fallow or lightly grazed field/meadows (>15 ha) with adjacent woodlands, and sites used by multiple species, a high number of individuals and used annually are most significant (MNR, 2011d; MNR, 2011f).

Rough-legged Hawk and Red-tailed Hawk were observed during winter avian use surveys conducted in the Project Study Area (Golder Associates, 2011). According to information provided by MNR during this Records Review, raptor winter feeding and roosting areas may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Bat Hibernacula and Maternity Colonies:

Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. The locations of bat hibernacula are relatively poorly known and all sites with confirmed hibernating bats are significant wildlife habitat (MNR, 2011d; MNR, 2011f). According to the Ontario Ministry of Northern Development and Mines (MNDM) Abandoned Mines Information System (AMIS), (Ontario Ministry of Northern Development and Mines, 2012) there are no abandoned mines in the vicinity of the Project Study Area.

Maternity colonies can be found in tree cavities, vegetation and often in buildings; however, buildings are not considered to be Significant Wildlife Habitat. Maternity roosts are not found in caves and mines in Ontario. Maternity colonies located in mature deciduous or mixed forest stands with >10/ha large diameter (>25 cm diameter at breast height (dbh)) wildlife trees. Female bats prefer wildlife tree (snags) in early stages of decay class 1-3 or class 1 or 2. Northern Myotis prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees. Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows and older forest areas with at least 21 snags/ha are preferred (MNR, 2011e; MNR, 2011f).

There are several features which have the potential to contain suitable habitat for bat hibernacula or maternity colonies, including known and inferred Karst topography as well as woodlands. Inferred Karst occurs across the Project Study Area (MNDM, 2012). Karst is susceptible to the creation of geologic features, such as caves, which may be suitable for bat hibernacula (MNDM, 2012). Woodlands in the Project Study Area may contain a sufficient density of snags or cavity trees which could provide suitable habitat for bat maternity colonies. Bat species known to occur in the vicinity of the Project Location include Little Brown Bat (*Myotis lucifugus*), Big Brown Bat (*Eptesicus fuscus*), Eastern Red Bat (*Lasiurus borealis*), and Hoary Bat (*Lasiurus cinereus*) (Dobbyn, 1994). Suitable hibernacula or maternity colony habitats for these species may occur in or within the 120 m Area of Investigation.

Bat Migratory Stopover Areas:

Stopover areas for long distance migrant bats are important during fall migration. Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. During fall migrations bats may temporarily concentrate at traditional stopover areas. The location and characteristics of stopover habitats are generally unknown (MNR, 2011e; MNR, 2011f).

The confirmed criteria and habitat areas for this Significant Wildlife Habitat are still being determined and are not currently defined in the Significant Wildlife Habitat Technical Guide (MNR, 2000). In the absence of MNR criteria for confirming bat migratory stopover areas, this Natural Heritage Assessment relied on its broader assessment of effects on bat habitat, including bat hibernacula and bat maternity colonies. Therefore, this habitat will not be carried forward to the Site Investigation phase of this NHA.

Turtle Wintering Areas:

For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen (MNR, 2011e; MNR, 2011f).

According to the Ontario Herpetofaunal Summary Atlas (Oldham and Weller, 2000; accessed April 12, 2012), Snapping Turtle and Midland Painted Turtle are known to occur in the vicinity of the Project Study Area. Suitable wintering habitats for these species may occur in or within the 120 m Area of Investigation.

Reptile Hibernacula:

For all snakes, hibernation habitat may be found in nearly any ecosite in central Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites offer the best potential hibernation habitats. Observations of congregations of snakes on sunny, warm days in the spring or fall are a good indicator. The existence of rock piles or slopes, stone fences and crumbling foundations assist in identifying candidate Significant Wildlife Habitat (MNR, 2011e; MNR, 2011f).

For snakes, hibernation takes place in sites located below frost lines 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. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover (MNR, 2011e; MNR, 2011f).

Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures (MNR, 2011e).

According to the Ontario Herpetofaunal Summary Atlas (accessed April 2, 2012); the following snake species are known to occur in the vicinity of the Project Study Area: Eastern Garter Snake, Brown Snake, Northern Redbelly Snake, Northern Water Snake and Smooth Green Snake (Oldham and Weller, 2000). Suitable hibernacula for these species may occur in or within the 120 m Area of Investigation.

Colonially-nesting Bird Breeding Habitat (Bank and Cliff, Tree/Shrub, Ground):

Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. Significant Habitat can include any site or areas with exposed soil banks, undisturbed or naturally eroding, that is not a licensed/permitted aggregate area. This habitat type may be found on eroding banks, sandy hills, borrow pits, steep slopes, and sand piles (Bank Swallow and Northern Rough-winged Swallow) and cliff faces, bridge abutments, silos and barns (Cliff Swallows). Man-made structures such as bridges or buildings or recently (two years) disturbed soil areas, such as berms, embankments, and soil or aggregate stockpiles, as well as licensed/permitted mineral aggregate operation, are not Significant Wildlife Habitat (MNR, 2011e; MNR, 2011f).

Colonially-nesting tree/shrubs bird species nest in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from the ground, near the top of the tree (MNR, 2011e; MNR, 2011f).

Ground nesting colonial bird species may use any rocky island or peninsula (natural or artificial) within a lake or large river, whereas Brewer's Blackbird nest in close proximity to watercourses in open fields or pastures with scattered trees or shrubs. Nesting colonies of gulls and terns are found on islands or

peninsulas associated with open water or in marshy areas. Brewer's Blackbird colonies are found loosely on the ground or in low bushes in close proximity to streams and irrigation ditches within farmland (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, known Great Blue Heron nesting habitats are present to the north of the Project Study Area (MNR, 2011d and MNR, 2012d). According to the Atlas of the Breeding Birds of Ontario, there is evidence of breeding for several colonially nesting breeding birds including Bank Swallow, Cliff Swallow, Northern Rough-winged Swallow, Great Blue Heron and Green Heron in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Bank Swallows, Cliff Swallows, Northern Rough-winged Swallows, Great Blue Herons and Herring Gulls were recorded during spring and summer avian surveys conducted by Golder in the Project Study Area (Golder Associates, 2011). Northern Rough-winged Swallows, Great Blue Herons and Green Herons were also recorded by AECOM during breeding bird surveys conducted in the Wind Energy Centre Study Area (Appendix D). Suitable habitats for colonially-nesting birds may occur in or within the 120 m Area of Investigation.

Migratory Butterfly Stopover Areas:

Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter. A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario or Lake Erie. 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 (MNR, 2011e; MNR, 2011f).

The project location is not situated within 5 km of Lakes Ontario or Erie; therefore, this habitat will not be carried forward to the Site Investigation phase of this NHA.

Landbird Migratory Stopover Areas:

Sites with a high diversity of species as well as high numbers of individuals are most significant. Woodlots need to be greater than 10 ha in size and within 5 km of Lake Ontario or Erie. Woodlands more than 2 km from Lake Ontario or Erie are more significant. Sites have a variety of habitats; forest, grassland and wetland complexes. The largest sites are more significant (MNR, 2011f).

The project location is not situated within 5 km of Lakes Ontario or Erie; therefore, this habitat will not be carried forward to the Site Investigation.

Deer Winter Congregation Areas:

Deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions. To be considered Significant Wildlife Habitat, woodlots will typically be greater than 100 ha in size, however woodlots less than 100 ha may be considered significant based on MNR studies or assessment. Large woodlots greater than 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1 to 1.5 deer/ha. Woodlots with high densities of deer due to artificial feeding are not significant (MNR, 2011e; MNR, 2011f).

Deer management is an MNR responsibility. Deer winter congregation areas considered significant are identified and mapped by MNR.

According to the MNR's NRVIS mapping, a deer wintering area is located outside the Project Location but within the 120 m Area of Investigation (approximately 23 m from the access road to Turbine 5, on the opposite side of Babylon Line), in association with the Hay Swamp Life Science Area of Natural and

Scientific Interest (ANSI) and Provincially Significant Wetland (Figure 2.1). According to the wetland evaluation for Hay Swamp (MNR, 1987), this feature is considered of regional significance for winter cover that serves as a Stratum 2 deer wintering area for White-tailed Deer. This feature will be carried forward to the Site Investigation phase of this NHA.

Rare Vegetation Communities

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. Based on the natural heritage background information reviewed and direct input from MNR on rare vegetation communities, the following habitats will be carried forward to Phase 2 (Site Investigation) of the NHA:

Cliffs and Talus Slopes:

Cliffs and talus slopes are extremely rare habitats in Ontario. A cliff is vertical to near vertical, consists of bedrock, and is more than 3 m in height. A talus slope is rock rubble at the base of a cliff made up of coarse rock debris. Most cliff and talus slopes in southern Ontario occur along the Niagara Escarpment (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, cliff and talus slopes may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Sand Barrens:

Sand barrens are rare in Ontario and support rare species. Most sand barrens have been lost due to cottage development and forestry. Sand barrens typically are exposed sand, 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. Vegetation can vary from patchy and barren to tree covered with less than 60% canopy. Sand Barrens are usually located within other types of natural habitat such as forest or savannah (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, sand barrens may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Alvars:

Alvars are extremely rare habitats in this part of Ontario. An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Vegetation can vary from patchy and barren to tree-covered but less than 60% (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, alvars may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Old-growth or Mature Forest Stands:

Due to historic logging practices, extensive old growth forest is rare in Ecoregions 6E and 7E. Interior habitat provided by old growth forests is required by many wildlife species. Old growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, old-growth or mature forest stands may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Savannahs:

Savannahs are extremely rare habitats in Ontario. A savannah is a tall-grass prairie habitat that has tree cover between 25% and 60%. There is no minimum size requirement for the Significant Wildlife Habitat type, but the site must be restored or a natural site. Remnant disturbed sites such as railway right-of-ways are not considered Significant Wildlife Habitat (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, savannahs may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Tallgrass Prairies:

Tallgrass prairies are extremely rare habitats in Ontario. A tallgrass prairie has ground cover dominated by prairie grasses. An open tallgrass prairie habitat has less than 25% tree cover. There is no minimum size requirement for the Significant Wildlife Habitat type, but the site must be restored or a natural site. Remnant sites such as railway right-of-ways are not considered Significant Wildlife Habitat (MNR, 2011f). According to information provided by MNR during this Records Review, savannahs may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

According to information provided by MNR during this Records Review, tallgrass prairies may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Other Rare Vegetation Communities:

Rare vegetation communities often contain rare species which depend on the habitat for survival. Provincially rare vegetation communities are ranked S1, S2 or S3; these may include beaches, fens, forest, marsh, barrens, dunes and swamps (MNR, 2011f).

According to information provided by MNR during this Records Review, other rare vegetation communities may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Specialized Habitats of Wildlife

Based on the natural heritage background information reviewed and on direct input from MNR on specialized habitats for wildlife, the following habitats were carried forward to Phase 2 (Site Investigation) of this NHA unless stated otherwise:

Waterfowl Nesting Areas:

Waterfowl nesting areas are important to local waterfowl populations; sites with the greatest number of species and highest numbers of individuals are considered Significant Wildlife Habitat. A waterfowl nesting area extends 120 m from a wetland greater than 0.5 ha is size, or a wetland greater than 0.5 ha in size with small wetlands (less than 0.5 ha) within 120 m, or a cluster of three or more small wetlands (less than 0.5 ha) within 120 m of each individual wetland where waterfowl nesting is known to occur. Upland areas should be at least 120 m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nest sites (MNR, 2011e; MNR, 2011f).

According to the Atlas of the Breeding Birds of Ontario there is breeding evidence for American Black Duck, Northern Pintail, Gadwall, Blue-winged Teal, Green-winged Teal, Northern Shoveler, Mallard and Wood Duck in the vicinity of the Project Study Area (Cadman, et al. 2007). Wood Duck and Mallard were identified during spring and summer avian surveys conducted in the Project Study Area by Golder Associates in 2010 and AECOM in 2011. Suitable breeding habitats for these species may occur in or within the 120 m Area of Investigation.

Bald Eagle and Osprey Nesting, Foraging and Perching Habitat:

Bald Eagle and Osprey nest sites are fairly uncommon in Ecoregions 6E and 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat. Nests are often associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water (MNR, 2011e; MNR, 2011f).

Osprey nests are usually located at the top of a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects such as telephone poles and constructed nesting platforms are not considered Significant Wildlife Habitat (MNR, 2011e; MNR, 2011f).

According to the Atlas of the Breeding Birds of Ontario, there is no evidence of breeding for Osprey in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Osprey was recorded during summer and fall surveys conducted in the Project Study Area (Golder Associates, 2011). According to information provided by MNR during this Records Review, Osprey nesting, foraging and perching habitat may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

According to the Atlas of the Breeding Birds of Ontario, there is possible evidence of breeding for Bald Eagle in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Bald Eagle was recorded during winter and fall surveys but not during spring and summer surveys conducted in the Project Study Area (Golder Associates, 2011). Suitable nesting habitat for Bald Eagle may occur in or within the 120 m Area of Investigation.

Woodland Raptor Nesting Habitat:

Nest sites for woodland raptors are rarely identified; although nest sites are often used annually by these area-sensitive species. To be Significant Wildlife Habitat, natural or conifer plantation forest stands must be greater than 30 ha in size with greater than 10 ha of interior habitat (i.e., habitat at least 200 m from the forest edge). Stick nests may be found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within the tops or crotches of trees. Species such as Cooper's Hawk nest along forest edges, and sometimes on peninsulas or small off-shore islands. Nests in disturbed sites may be used again, or a new nest will be in close proximity to old nest (MNR, 2011e; MNR, 2011f).

According to the Atlas of the Breeding Birds of Ontario, there is confirmed evidence of breeding for Red-tailed Hawk and Cooper's Hawk and possible evidence for Sharp-shinned Hawk, Broad-winged Hawk and Barred Owl in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Northern Goshawk, Cooper's Hawk and Sharp-shinned Hawk were recorded in the Project Study Area during spring/summer avian surveys (Golder Associates, 2011). Red-shouldered Hawk was also recorded in the Project Study Area during breeding bird surveys conducted by AECOM (Appendix D). Suitable nesting habitats for these species may occur in or within the 120 m Area of Investigation.

Turtle Nesting Areas:

These habitats are rare and when identified will often be the only breeding site for local populations of turtles. The best nesting habitats for turtles occur close to water and away from roads, and in sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and be located in an open, sunny area. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not considered Significant Wildlife Habitat. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes and rivers are most frequently used by nesting turtles (MNR, 2011e; MNR, 2011f).

According to the Ontario Herpetofaunal Summary Atlas (accessed April 12, 2012), Snapping Turtle and Midland Painted Turtle are known to occur in the vicinity of the Project Study Area (Oldham and Weller, 2000). Suitable nesting habitats for these species may occur in or within the 120 m Area of Investigation.

Seeps and Springs:

Seeps and springs are typical of headwater areas and are often located at the source of coldwater streams. Seeps and springs are areas where groundwater comes to the surface. They are often found within headwater areas in forested habitats. Any forested ecosite within the headwater areas of a stream or river system could have seeps or springs. Seeps and springs are important feeding and drinking areas for wildlife, especially in the winter, and will typically support a variety of plant and animal species (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, seeps and springs may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Amphibian Breeding Habitat (Woodland and Wetland):

Woodland amphibian breeding habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations. To be considered significant Wildlife Habitat, a wetland, lake, or pond must be present within or adjacent to (i.e., within 120 m of) a woodland (no minimum size). Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. Breeding pools within the woodland or a short distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians (MNR, 2011e; MNR, 2011f).

Wetlands supporting breeding for amphibian species are extremely important and restricted within southern Ontario. Wetlands and pools (including vernal pools) greater than 500 m^2 (about 25 m diameter) isolated (*i.e.*, more than 120 m) from woodlands, supporting high species diversity are Significant Wildlife Habitat. Some small or ephermeral habitats may not be identified on MNR mapping and could be important breeding habitats. The presence of shrubs and logs increases the significance of pond for some amphibian species because these provide structure for calling, foraging, escape and concealment from predators. Bullfrogs require permanent water bodies with abundant emergent vegetation (MNR, 2011e; MNR, 2011f).

According to the Ontario Herpetofaunal Summary Atlas (accessed April 2, 2012); the following amphibian species are known to occur in the vicinity of the Project Study Area: American Toad, Spring Peeper, Western Chorus Frog, Gray Treefrog, Wood Frog, Northern Leopard Frog, Green Frog, Bullfrog, Common Mudpuppy, Eastern Newt, Jefferson/Blue-Spotted Salamander Complex and Northern Redback Salamander (Oldham and Weller, 2000). Suitable breeding habitats for these species may be located in woodland and wetland areas in or within the 120 m Area of Investigation.

Habitats for Species of Conservation Concern (not including Endangered or Threatened species)

Based on the natural heritage background information reviewed and on direct input from MNR on habitats for Species of Conservation Concern, the following habitats were carried forward to Phase 2 (Site Investigation) of this NHA unless stated otherwise:

Marsh Bird Breeding Habitat:

Wetlands used by marsh breeding birds are typically productive and fairly rare in southern Ontario. Nesting occurs in wetlands, and all wetland habitat is to be considered provided there is shallow water with emergent aquatic vegetation present. For Green Heron, breeding habitat is usually located at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland meadows, thickets or forests a considerable distance from water (MNR, 2011e; MNR, 2011f).

According to the Atlas of the Breeding Birds of Ontario, there is breeding evidence for Sora, American Coot, Pied-billed Grebe and Green Heron in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Suitable breeding habitat for these species may occur in the Project Study Area. Common Loon was recorded during spring, summer and fall avian surveys, Green Heron was recorded during summer avian surveys and Trumpeter Swan was recorded during the spring avian survey conducted in the Project Study Area (Golder Associates, 2011). Green Heron was also recorded in the Project Study Area during breeding bird surveys conducted by AECOM. Suitable breeding habitat for these marsh birds may occur in or within the 120 m Area of Investigation.

Woodland Area-Sensitive Bird Breeding Habitat:

Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area-sensitive interior forest song birds. These habitats are typically large mature (greater than 60 years old) forest stands or woodlots greater than 10 ha in size. Interior forest habitat is at least 200 m from the forest edge (MNR, 2011e; MNR, 2011f).

According to the Atlas of the Breeding Birds of Ontario, there is evidence of breeding of interior forest breeding birds including Red-breasted Nuthatch, Blue-headed Vireo, Black-throated Green Warbler, Blackburnian Warbler, Winter Wren, Pileated Woodpecker, Yellow-bellied Sapsucker, Veery, Ovenbird and Scarlet Tanager in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Suitable habitats for these species may be present in or within the 120 m Area of Investigation.

Open Country Bird Breeding Habitat:

This wildlife habitat type is declining throughout Ontario and North America. To be Significant Wildlife Habitat, large grassland areas, including natural and cultural fields and meadows, must be greater than 30 ha is size. Class 1 or 2 agricultural lands, and lands actively used for farming (i.e., row cropping, intensive hay or livestock pasturing in the last five years) are not Significant Wildlife Habitat. To be considered significant, grassland sites should have a history of longevity, such as abandoned fields, mature hayfields and pasturelands that are at least five years old. The indicator bird species for this habitat type are area-sensitive, requiring larger grassland areas than the common grassland species (MNR, 2011e; MNR, 2011f).

With respect to open country breeding birds, there is breeding evidence for, Eastern Meadowlark, American Kestrel, Upland Sandpiper, Grasshopper Sparrow, Northern Harrier, Savannah Sparrow and Vesper Sparrow in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Suitable habitats for these species may be present in or within the 120 m Area of Investigation.

Shrub/Early Successional Bird Breeding Habitat:

This wildlife habitat type is declining throughout Ontario and North America. To be Significant Wildlife Habitat, large shrub lands and field areas succeeding to shrub and thicket habitats, must be greater than 10 ha in size, as large shrub and thicket habitats are most likely to support and sustain a diversity of species. Class 1 or 2 agricultural lands, and lands actively used for farming (*i.e.*, row cropping, intensive hay or livestock pasturing in the last five years) are not Significant Wildlife Habitat. Shrub and thicket habitats are most likely to support and sustain a diversity of these species. To be considered significant, shrub and thicket habitat sites should have a history of longevity, such as abandoned fields or pasturelands (MNR, 2011e; MNR, 2011f).

According to the Atlas of the Breeding Birds of Ontario, there is breeding evidence for Brown Thrasher, Clay-coloured Sparrow, Field Sparrow, Black-billed Cuckoo, Eastern Towhee and Willow Flycatcher in the general vicinity of the Project Study Area (Cadman, *et al*. 2007). Suitable breeding habitat for these species may occur in the Project Study Area. Brown Thrasher was recorded during spring, summer and fall avian surveys, Field Sparrow and Willow Flycatcher were recorded during spring and summer avian surveys, Clay-colored Sparrow and Black-billed Cuckoo were recorded during summer avian surveys and Eastern Towhee was recorded during summer and fall avian surveys conducted in the Project Study Area (Golder Associates, 2011). Brown Thrasher, Field Sparrow, Black-billed Cuckoo, Eastern Towhee and Willow Flycatcher were also recorded in the Project Study Area during breeding bird surveys conducted by AECOM. Suitable breeding habitat for these bird species may occur in or within the 120 m Area of Investigation.

Terrestrial Crayfish:

Terrestrial crayfish are only found within southwestern Ontario in Canada and their habitats are rare. Terrestrial crayfish construct burrows in the edges of marshes, mudflats, and the meadows (no minimum size) where the ground is not too moist; they can often be found far from water. Both the Chimney (or Digger) Crayfish and Devil (or Meadow) Crayfish are semi-terrestrial burrowers which spend most of their life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well-formed and conspicuous (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, terrestrial crayfish may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Special Concern and Rare Wildlife Species:

As defined in the Significant Wildlife Habitat Technical Guide (MNR, 2000), species that may be considered Species of Conservation Concern include:

- *species identified as Nationally Endangered or Threatened by the Committee on the Status of Endangered Wildlife in Canada, which are not protected in regulation under Ontario's Endangered Species Act;*
- *species identified as Provincially Special Concern (formerly Vulnerable) based on lists of Vulnerable, Threatened, Endangered or Extirpated Species of Ontario that are updated periodically by the OMNR;*
- *species that are listed as rare or historical in Ontario based on records kept by the Natural Heritage Information Centre in Peterborough (S1 is extremely rare, S2 is very rare, S3 is rare to uncommon);*
- *species whose populations are known to be experiencing substantial declines in Ontario;*

- *species that have a high percentage of their global population in Ontario and are rare or uncommon in the planning area;*
- *species that are rare within the planning area, even though they may not be Provincially rare;*
- *species that are subjects of recovery programs; and*
- *species considered important to the municipality, based on recommendations from the Conservation Advisory Committee.*

The NHIC data and information provided by MNR for the preparation of this Records Review were used to identify Species of Conservation Concern that occur or have the potential to occur in or within the 120 m Area of Investigation.

Information pertaining to species designated as Endangered or Threatened in the Province of Ontario is excluded from this report. As noted above, Endangered and Threatened species are addressed through a parallel Species at Risk review and approval process under the *Endangered Species Act* administered by the MNR Guelph District.

Table 2.5 lists the Species of Conservation Concern that were identified through the Records Review as occurring or having the potential to occur within the Project Study Area. This table was compiled with results from a search of the NHIC database, conducted in April 2012 and on records identified in correspondence from MNR for this Records Review. In total, 63 Species of Conservation Concern, including 60 Provincially rare species (i.e., species that are ranked S1 to S3), 15 Special Concern species, and one species listed as Endangered federally but not provincially, have been identified as potentially occurring within the Project Study Area.

Descriptions of the preferred habitat of each species were obtained from Appendix G of the Significant Wildlife Habitat Technical Guide (MNR, 2000) and are included in Table 2.5. The presence/absence of suitable habitats for Species of Conservation Concern in or within the 120 m Area of Investigation will be determined during the Site Investigation phase of this NHA.

Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another. They are important to ensure genetic diversity in populations, to allow seasonal migration of animals and to allow animals to move throughout their home range from feeding areas to cover areas. Based on the natural heritage background information reviewed and on direct input from MNR on animal movement corridors, the following habitats were carried forward to Phase 2 (Site Investigation) of this NHA unless stated otherwise:

Amphibian Movement Corridors:

Corridors for amphibians moving from their terrestrial summer habitat to breeding habitat can be very important for local populations. Corridors may be found in all ecosites associated with water. Corridors will be determined when amphibian breeding habitat is confirmed as Significant Wildlife Habitat. Amphibian movement corridors consist of native vegetation, roadless areas without gaps such as fields, waterways or water bodies, and undeveloped areas. Corridors should be at least 200 m wide with gaps less than 20 m and, if following a riparian area, with at least 15 m of vegetation on both sides of the waterway (MNR, 2011e; MNR, 2011f).

According to information provided by MNR during this Records Review, amphibian movement corridors may occur in or within the 120 m Area of Investigation (MNR, 2011d; MNR, 2012d).

Table 2.5 Species of Conservation Concern

Common Name	Scientific Name	G-rank[1]	S-rank[2]	COSEWIC Status[3]	MNR Status[4]	Preferred Habitat	Last Observed Date	Source
PLANTS (45 species)								
American Gromwell	*Lithospermum latifolium*	G4	S3	-	-	Species occurs on river floodplains, woods and edges of woods.	5/27/1989 H	NHIC
A Moss	*Astomum muehlenbergianum*	G5	S2	-	-		5/4/1966 H	NHIC; MNR Correspondence
Autumn Coral-root	*Corallorhiza odontorhiza*	G5	S2	-	-	Species occurs in open, oak-pine woods or occasionally in open, red pine or white pine plantations		MNR Correspondence
Burning Bush	*Euonymus atropurpureus*	G5	S3	-	-	Species occurs in dry to moist thickets and woods	11/21/1983 H	NHIC
Carolina Whitlow-grass	*Draba reptans*	G5	S3	-	-	Primarily inhabits dry sandy areas, dry open flats and limestone pavements.	5/5/1958 H	NHIC
Chinese Hemlock Parsley	*Conioselinum chinense*	G5	S2	-	-	Species inhabits calcareous cedar swamps, wet borders of streams and rivers. Also found among seepage slopes.	9/1/1986 H	NHIC
Crowned Beggarticks	*Bidens trichosperma*	G5	S2	-	-	Found in openings in swamps, marshes, along shores, and wet fields.	1936 H	NHIC; MNR Correspondence
Dwarf Chinquapin	*Quercus prinoides*	G5	S2	-	-	Occurs in open, dry sandy places, savannahs	7/26/1999	NHIC
Eastern Green-violet	*Hybanthus concolor*	G5	S2	-	-	Occurs in rich, wet-mesic floodplain forests as well as mesic forests over limestone.	5/27/1989 H	NHIC
False Tomentose Balsam Groundsel	*Packerapaupercula var. pseudotomentosa*	G5TNR	S2S3	-	-	Species occurs in prairies, sandy open woods and savannah	5/15/1990	NHIC
Fogg's Goosefoot	*Chenopodium foggii*	G2G3	S2	-	-	Species occurs in sandy areas on limestone under oak or pine-oak forests	8/18/1975 H	NHIC
Giant Ironweed	*Vernonia gigantean*	G5	S1?	-	-	Found in mesic prairies, thickets, moist woods, roadsides and grassy meadows	11/21/1983 H	NHIC
Great Lakes Sand Reed	*Calamovilfa longifolia var. magna*	G5T3T5	S3	-	-	Species occurs in active sand dunes, open sand plains, and openings in forests on stabilized sand dunes	9/30/2004	NHIC
Green Dragon	*Arisaema dracontium*	G5	S3	SC	SC	Species found in bottomlands often along rivers and creeks.	2000	NHIC, MNR Correspondence
Hairy Bedstraw	*Galium pilosum*	G5	S3	-	-	Occurs in dry, sandy woods and thickets; occasionally in dry sandy fields	7/26/1999	NHIC
Hairy Valerian	*Valeriana edulis*	G5	S1	-	-	Inhabits swampy river flats and meadows, wet prairies, and wooded, rocky riverbanks.		MNR Correspondence
Hairy Wood Mint	*Blephilia hirsute*	G5?	S1	-	-	Species found in woodlands, preferably rocky, and especially among rivers.	09/05/59 H	NHIC; MNR Correspondence
Harbinger-of-spring	*Erigenia bulbosa*	G5	S3?	-	-	Occurs in rich, moist deciduous woods, especially on floodplains.		MNR Correspondence
Hill's Pond Weed	*Potamogeton hillii*	G3	S2	SC	SC	Aquatic plant found in highly alkaline waters of ditches, and ponds.		MNR Correspondence
Large Round-leaved Orchid	*Platanthera macrophylla*	G4	S2	-	-	Species inhabits moist mixed woods.	1867 H	MNR Correspondence
Lizard's Tail	*Saururus cernuus*	G5	S3	-	-	Species inhabits shores and streambanks along shallow water.	8/17/2005	NHIC
Moss Phlox	*Phlox subulata*	G5	S1?	-	-	Species is found in open, sandy woods, and sandy roadsides and lakeshores	5/24/1906 H	NHIC
Narrow-leaved Puccoon	*Lithospermum incisum*	G5	S1	-	-	Occurs in dune, savannah, sandy woods and dry ground	5/24/1906 H	NHIC
Pawpaw	*Asimina triloba*	G5	S3	-	-	Species occurs in moist woods and stream banks	6/16/1959 H	NHIC
Pillose Evening Primrose	*Oenothera pilosella*	G5	S2	-	-	Found in moist edges of woods and waste ground, prairie	6/25/1919 H	NHIC
Prostrate Tick-trefoil	*Desmodium rotundifolium*	G5	S2	-	-	Species occurs in sandy woods	7/1/1970 H	NHIC
Pumpkin Ash	*Fraxinus profunda*	G4	S2?	-	-	Occurs in swamps and floodplains	1994	NHIC
Ram's-head Lady's-slipper	*Cypripedium arietinum*	G3	S3	-	-	Found in cedar woodlands, limestone plains and wooded fens.	1994	NHIC
Rattlesnake Hawkweed	*Hieracium venosum*	G5	S2	-	-	Species inhabits open, dry sandy woods.	07/04/56 H	NHIC; MNR Correspondence
Round-leaved Groundsel	*Packera obovata*	G5	S3	-	-	Found in moist woods	7/25/1987 H	NHIC
Round-leaved Hawthorn	*Crataegus lumaria*	G3G4	S3?	-	-	Species occurs in old fields, poorly managed pastures, fencelines and roadsides	5/31/1978 H	NHIC
Scarlet Beebalm	*Monarda didyma*	G5	S3	-	-	Found in moist woods, thicket swamps and floodplains.	7/1/1900 H	NHIC; MNR Correspondence
Shore Bluestem	*Schizachyrium littorale*	G5T5	S2?	-	-	Occurs in sand dunes and sandy shores of the lower Great Lakes	9/13/2000	NHIC
Slender Blazing Star	*Liatris cylindracea*	G5	S3	-	-	Species occurs in limestone and dolostone pavement, prairies, open woods	10/1/2004	NHIC
Slender Knotweed	*Polygonum tenue*	G5	S2	-	-	Found in dry, sandy, open areas in deciduous (often oak woods), prairie meadows; at edges of sand pits	8/6/1964 H	NHIC
Slender Vulpia	*Vulpia octoflora*	G5	S2	-	-	Species inhabits dry, sandy sites including meadows, dry forests, and stabilized dunes.	6/10/1970 H	NHIC
Slim-flowered Muhly	*Muhlenbergia tenuiflora*	G5	S2	-	-	Found in rich deciduous forest, often on rocky or sandy soils.		MNR Correspondence
Slim-spiked Three-awned Grass	*Aristida longespica var. longespica*	G5T5?	S2	-	-	Species inhabits dry to moist sandy fields and sandy openings in prairies	9/19/1989 H	NHIC
Stiff Gentian	*Gentianella quinquefolia*	G5	S2	-	-	Found in moist soils of streambanks, edges of woods and wet prairies.	1982 H	NHIC; MNR Correspondence
Sundial Lupine	*Lupinus perennis*	G5	S3	-	-	Inhabits dry, sandy oak savannahs and prairies	5/31/2000	NHIC
Tall Blazing Star	*Liatris aspera*	G4G5	S2	-	-	Occurs in open, sandy woods, dry roadsides and sandy prairies	7/26/1999	NHIC
Tuberous Indian Plantain	*Arnoglossum plantagineum*	G4G5	S3	SC	SC	Species occurs in wet, calcareous meadows or shoreline fens.		MNR Correspondence
Woodland Pinedrops	*Pterospora andromedea*	G5	S2	-	-	Species found in conifer woods, under pine.	7/11/1936 H	NHIC
Yellow Ladies'-tresses	*Spiranthes ochroleuca*	G4	S2	-	-	Found in sandy meadows and prairies.	10/12/1942 H	NHIC
Yellow Stargrass	*Hypoxis hirsute*	G5	S3	-	-	Occurs in dry open sandy woods; wet to dry meadows and prairies	6/24/1983 H	NHIC
BIRDS (7 species)								
Bald Eagle	*Haliaeetus leucocephalus*	G5	S3B	-	SC	Nests in tall trees often near shore. Feeds on fish in large open water bodies.		MNR Correspondence
Common Nighthawk	*Chordeiles minor*	G5	S4B	THR	SC	Species inhabits open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.		MNR Correspondence
Horned Grebe	*Podiceps auritus*	G5	S1B, S4N	-	SC	Species inhabits deep water marshes or sloughs with a mix of open water and emergent vegetation; small freshwater ponds or protected bays of larger lakes with emergent vegetation.	Fall, 2010	Golder Avian Use Report, 2011
Louisiana Waterthrush	*Seiurus motacilla*	G5	S3B	SC	SC	Species prefers wooded ravines, and swamps and mature forests with closed canopy. This species nests on the ground.	5/17/1984 H	NHIC; MNR Correspondence
Red-headed Woodpecker	*Melanerpes erythrocephalus*	G5	S4B	THR	SC	Species inhabits open, deciduous forest with little understorey; fields or pasture lands with scattered large trees; woodedswamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory.		MNR Correspondence
Short Eared Owl	*Asio flammeus*	G5	S2N, S4B	SC	SC	Species can be found in grasslands, marshes, and bogs. Species is a ground nester. s. It requires 75-100 ha of contiguous open habitat.		MNR Correspondence
Yellow-breasted Chat	*Icteria virens*	G5	S2B	SC	SC	Species inhabits large thicket habitats; nests above ground in bush, vines etc.		MNR Correspondence

Table 2.5 Species of Conservation Concern

Common Name	Scientific Name	G-rank[1]	S-rank[2]	COSEWIC Status[3]	MNR Status[4]	Preferred Habitat	Last Observed Date	Source
INSECTS (7 species)								
Azure Bluet	*Enallagma aspersum*	G5	S3	-	-	Species inhabits small ponds and bogs.	7/8/1997	NHIC
Dusted Skipper	*Atrytonospsis hianna*	G4G5	S1	-	-	Species is confined to remnants of dry prairie, and sand dune areas.	5/28/1990	NHIC
Monarch Butterfly	*Danaus plexippus*	G5	S2N, S4B	SC	SC	Species can be found in any open habitat, especially where milkweed occurs.		MNR Correspondence
Mottled Duskywing	*Erynnis martialis*	G3	S2	-	-	Usually seen nectaring or on wet sandy roads with of other species of Erynnis.	5/29/1990	NHIC
Sleepy Duskywing	*Erynnis brizo*	G5	S1	-	-	Species occurs in open oak woods	5/23/1992	NHIC
Tawny Emperor	*Asterocampa clyton*	G5	S2S3	-	-	Species is restricted to areas where Hackberry grows.	7/3/1994	NHIC
West Virginia White	*Pieris virginiensis*	G3G4	S3	-	SC	This species is restricted to rich deciduous woods, where its foodplant Toothwort occurs.		MNR Correspondence
REPTILES & AMPHIBIANS (3 species)								
Eastern Ribbonsnake	*Thamnophis sauritus*	G5	S3	SC	SC	Occurs in wet meadows, marshes or sphagnum bogs, usually near water such as ponds, or streams. Species hibernates in groups.	5/31/1987[H]	NHIC; MNR Correspondence
Milksnake	*Lampropeltis triangulum*	G5	S3	SC	SC	Species inhabits abandoned farmlands, meadows thickets and woodlands. Often found hiding under stones, or under boards	8/22/1988[H]	NHIC; MNR Correspondence
Snapping Turtle	*Chelydra serpentina*	G5	S3	SC	SC	Requires permanent, semi-permanent fresh water, including marshes, swamps rivers and streams. Nests in open habitats on south-facing slopes. Hibernates in mud under water.		MNR Correspondence
MAMMALS (1 species)								
Little Brown Bat	*Myotis lucifugus*	G5	S4	END	-	Species uses caves, quarries, tunnels, hollow trees or buildings for roosting near wetlands or forest edges where it can feed. It overwinters in humid caves. Maternity sites are found in dark warm areas such as attics and barns.		Atlas of the Mammals of Ontario (Dobbyn, 1994)

[1] ***G-rank*** *G Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and The Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies or variety. Definitions are as follows:*
G1.....Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2.....Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3.....Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4.....Common; usually more than 100 occurrences; usually not susceptible to immediate threats.
G5.....Very common; demonstrably secure under present conditions.

[2] ***S-rank:*** *The Natural Heritage provincial ranking system (provincial S-rank) is used by the MNR Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities.*
Definitions are as follows: S1 ... Extremely rare in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.
S2 ... 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 ... Rare to uncommon in Ontario; usually between 20 and 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 ... Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.
S5 ... Very common and demonstrably secure in Ontario.
SE ... Exotic; not believed to be a native component of Ontario's flora.
*SH ... **Possibly Extirpated (Historical)**—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.*

[3] ***COSEWIC Status*** *COSEWIC (Committee on the Status of Endangered Wildlife in Canada) assigns a federal status ranking for all species that it assesses.*
EXT .... Extinct. A species that no longer exists
EXP .... Extirpated. A species that no longer exists in the wild in Canada, but occurring elsewhere in the world
END.... Endangered. A species facing imminent extirpation or extinction throughout its range.
THR.... Threatened. A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction
SC ..... Special Concern. A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.
IND..... Indeterminate. A species for which there is insufficient information to support a status designation.
NAR.... Not at Risk. A species that has been evaluated and found to be not at risk.
**..... Indicates a species found on Schedule 1 of the federal Species At Risk Act.*

[4] ***MNR Status:*** *Based on consultation with COSSARO (Committee on the Status of Species at Risk in Ontario). COSSARO is the Ministry of Natural Resources (MNR) committee that evaluates the conservation status of species occurring in Ontario.*
Definitions are as follows: EXT ... Extinct. A Species that no longer exist anywhere.
EXP ... Extirpated. Any native species no longer existing in the wild in Ontario, but existing elsewhere in the wild.
END R ... Endangered (Regulated). A species facing imminent extinction or extirpation in Ontario which has been regulated under Ontario's Endangered Species Act
END ... Endangered (not regulated). A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under the Ontario Endangered Species Act
THR ... Threatened. Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a significant portion of its Ontario range if the limiting factors are not reversed.
SC ... Special Concern [formerly Vulnerable].A species with characteristics that make it sensitive to human activities or natural events.
NAR ... Not at Risk [formerly Not In Any Category]. A species that has been evaluated and found not to be at risk.
DD ... Data Deficient [formerly Indeterminate]. Any native species for which there is insufficient scientific information on which to base a status recommendation

Deer Movement Corridors:

Corridors are important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling. Corridors typically follow riparian areas, woodlots, and areas of physical geography (ravines or ridges). Movement corridor must be determined when deer wintering habitat is confirmed as significant wildlife habitat.

Deer movement corridors associated with the deer winter congregation area in Hay Swamp will be assessed during the Site Investigation phase of this NHA to determine if they are present or absent in or within the 120 m Area of Investigation.

Exceptions for Ecoregion 6E

Mast-producing Areas:

Foraging areas with abundant mast (mast producing areas) are relevant to more northerly locations (Ecodistrict 6E-14), where forest stands providing hard mast (e.g., oak and beech nuts) can be important food resources for Black Bear. This habitat type was not carried forward to the Site Investigation phase of this NHA.

Leks:

Sharp-tailed grouse only occur on Manitoulin Island in Ecoregion 6E-17. Leks are an important habitat to maintain their population. This habitat type was not carried forward to the Site Investigation phase of this NHA.

2.2.2.5 Areas of Natural and Scientific Interest (ANSIs)

The MNR evaluates Areas of Natural and Scientific Interest (ANSIs) to determine whether they are Provincially or Regionally (Locally) Significant. This evaluation takes into consideration the value of the area for conservation, scientific study and education. Provincially Significant ANSIs are protected under section 2.1 of the *Provincial Policy Statement* (2005), which prohibits development and site alteration in (Provincially) Significant ANSIs and on adjacent lands unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

ANSIs are designated as Earth Science or Life Science depending on whether they contain significant geological features (e.g., rock, fossil and landform features) or biological feature (e.g., natural landscapes, ecological communities, plant and animal species), respectively.

Life Science ANSIs

According to the MNR's NRVIS mapping (MNR, 2012b), there are two Life Science ANSIs within the Project Study Area, both of which are Regionally Significant.

The Natural Heritage Information Centre (NHIC) Natural Area Record describes the Hay Swamp ANSI as a "lowland swamp forest on spillway supporting small sections of sugar maple bush with lowland (red maple swamp) forest and associated wetlands predominating. Communities present include red maple, black ash, trembling aspen-red maple. The site is an important water storage area and contains the headwaters for Black Creek, a tributary of the Ausable River" (MNR, 2012a). The Hay Swamp ANSI occurs within the Project Study Area, but outside the Project Location.

In one location (Babylon Line, north of Pepper Road), Hay Swamp ANSI occurs within the 120 m Area of Investigation, approximately 70 m from the Project Location.

Khiva Conservation Forests is described as gently rolling wet mesic to mesic mixed forest of sugar maple-ash-beech with hemlock-red-maple-witch hazel and pockets of wet, dead elm-ash-white birch forest. The forest is classified as an intermediate-aged forest containing moss hummocks. The conservation forest also contains old fields, old logging roads and some areas, current logging roads (MNR, 2012a). Khiva Conservation Forests occurs immediately outside of the Project Location (>0.1 m at closest point), and within the 120 m Area of Investigation along its north and west edges (east of Blackbush Line).

Although the Hay Swamp and Khiva Conservation Forest Life Science ANSIs both occur within the Project Study Area and fall within 120 m of the Project Location, they are not Provincially Significant Life Science ANSIs and therefore were not carried forward to the Site Investigation phase of this NHA.

Earth Science ANSIs

According to the MNR's NRVIS mapping (MNR, 2012b), there is one Provincially Significant Earth Science Area of Natural and Scientific Interest (ANSI) located within the Project Study Area (Figure 2.1). The Lucan Moraine ANSI exhibits Late Wisconsinan, Port Bruce Stadial, Lucan Moraine, Rannoch Till, Kirkton Esker, outwash terraces and outwash. This ANSI is representative of the deglaciation of the St. Mary's map area as the Huron ice lobe retreated to the west. The glacial landscape is well preserved (MNR, 2012b). The Lucan Moraine is located along the southeastern limit of the Transmission Line Study Area, but outside of the Area of Investigation (approximately 240 m from the Project Location).

Although the Lucan Moraine Earth Science ANSI is a Provincially Significant Earth Science ANSI, it does not occur within 120 m of the Project Location and therefore was not carried forward to the Site Investigation phase of this NHA.

According to the MNR's NRVIS mapping (MNR, 2012b), there is one Regionally Significant Earth Science ANSI located within the Project Study Area (Figure 2.1). According to the Natural Heritage Information Centre (NHIC) Natural Area Record, Dashwood Area Moraine covers an area of 763 ha and contains Late Wisconsinan, Port Huron Stadial, Wyoming Moraine, St. Joseph Till, melt water channel and Lake Warren beach. The site is representative of the Wyoming Moraine in the Grand Bend- Parkhill area. The glacial features were deposited by the Huron ice lobe (MNR, 2012b). The Dashwood Area Moraine occurs within the Project Location and its associated 120 m Area of Investigation in areas between west of Goshen Line and west of Parr Line and between Dashwood Road and Huron Street.

Although the Dashwood Area Earth Science ANSI occurs within the Project Study Area and falls within 50 m of the Project Location, it is not a Provincially Significant Earth Science ANSI and therefore was not carried forward to the Site Investigation.

2.3 Summary of Key Findings of the Records Reviews

Table 2.6 summarizes the natural features identified through the Records Review as occurring or potentially occurring in the Project Location or in or within the 120 m Area of Investigation; these are the features that were carried forward to the Site Investigation. Site investigations will be required to confirm the presence and boundaries of these features, as well as to determine whether any additional natural features are present in or within the 120 m Area of Investigation.

Table 2.6 Summary of Natural Features in or within the 120 m Area of Investigation Identified Through the Records Review

Feature	Results of Records Review
Provincially Significant Wetlands	No Provincially Significant Wetlands were identified within 120 m of the Project Location. Unevaluated wetlands may be present in or within the 120 m Area of Investigation; their presence/absence will be determined during the Site Investigation.
Significant Coastal Wetlands	No Provincially Significant coastal wetlands were identified in or within the 120 m Area of Investigation.
Significant ANSIs (Life Science)	No Provincially Significant Life Science ANSIs were identified in or within the 120 m Area of Investigation.
Significant ANSIs (Earth Science)	No Provincially Significant Earth Science ANSIs were identified in or within 50 m of the Area of Investigation.
Significant Valleylands (South and East of the Canadian Shield)	No known Significant Valleylands were identified in or within the 120 m Area of Investigation. Watercourses in or within the 120 m Area of Investigation may be associated with valleyland features and will be assessed during the Site Investigation.
Significant Woodlands (South and East of the Canadian Shield)	Woodlands have been identified in or within the 120 m Area of Investigation, including woodlands identified as significant in municipal official plans. Woodlands in or within the 120 m Area of Investigation will be assessed during the Site Investigation.
Significant Wildlife Habitat	Significant Wildlife Habitats have been identified within the Project Study Area and may occur in or within the 120 m Area of Investigation. Several features and type of significant wildlife habitat were identified within the Project Study Area in background documents and through consultation with MNR, ABCA, UTRCA and local municipalities, and may occur in or within the 120 m Area of Investigation. Sixty-three Species of Conservation Concern were identified as potentially occurring within the Project Study Area. This information will form the basis for the assessment and potential identification of candidate Significant Wildlife Habitat in or within the 120 m Area of Investigation during the Site Investigation.
Provincial Parks and Conservation Reserves	No provincial parks or conservation reserves were identified in or within the 120 m Area of Investigation.

The following features will be carried forward to the Site Investigation phase of this NHA to determine their presence/ absence in or within the 120 m Area of Investigation: wetlands, woodlands, valleylands and significant wildlife habitat.

3. Site Investigation

3.1 REA Requirements

As required under the REA process, detailed site investigations were completed in accordance with O.Reg. 359/09. This Site Investigation report was prepared in accordance with O.Reg. 359/09 and the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011a), hereafter referred to as the Natural Heritage Assessment Guide.

MNR was consulted on proposed work plans and field protocols for the Goshen Wind Energy Centre site investigations including:

- Proposed Work Plan, Goshen Wind Energy Centre Natural Heritage Assessments, submitted June 8, 2010 to Guelph District MNR (response received August 31, 2010).
- Proposed Site Investigation field protocols, submitted May 9, 2011 to Guelph District MNR (response received May 16, 2011).
- Meeting to discuss the Goshen Wind Energy Centre Natural Heritage Assessment on July 25, 2011 in Burlington, Ontario.
- Meeting to discuss the Goshen Wind Energy Centre Natural Heritage Assessment on September 20, 2011 in Markham, Ontario.

Information collected during the Records Review was used to guide the site investigations. The presence and boundaries of features identified during the Records Review were confirmed, and any changes were noted. Any additional features not identified through the Records Review but identified through the Site Investigation as occurring in or within the 120 m Area of Investigation were also described.

3.2 Site Investigation Methods

Site investigations were conducted for features in or within the 120 m Area of Investigation, which encompasses the Project Location and an additional 120 m surrounding the Project Location. In order to facilitate Site Investigation data collection and reporting, “natural areas” were identified and their boundaries delineated as contiguous natural areas (e.g., comprised of woodland, wetland, successional vegetation communities, or a combination thereof). Each natural area was assigned a unique identifier. Site Investigation survey data were initially organized according to natural areas (as defined above) rather than natural features as defined within the REA process (i.e., woodlands, wetlands, valleylands, Significant Wildlife Habitat), because the identification of these features relies on the results of Site Investigation surveys. Survey data were later analyzed to identify natural features (i.e., woodlands, wetlands, valleylands, Significant Wildlife Habitat), as required by the REA process.

Natural features identified through the Records Review were assessed to determine their composition, form and function. Any corrections to the Records Review, including changes to the boundaries of natural features or new features, were identified, as documented in Section 3.3. The following sections describe the methods used to conduct site investigations. Appendix B contains detailed site investigation field notes (including dates, start and end times), Appendix C contains qualifications (i.e., curriculum vitae) for all investigators, and Appendix E documents weather conditions during field investigations.

3.2.1 Ecological Land Classification (ELC) and Vascular Plant Surveys

Field surveys to classify vegetation communities and identify vascular plant species composition in or within the 120 m Area of Investigation were conducted during the period of May 30, 2011 to July 12, 2012. Survey dates are provided in Table 3.3 (refer to Appendix B for survey start and end times).

All natural areas occurring within the Project Study Area were initially classified to the ELC Community Series level through aerial photography interpretation. On-site field surveys of each natural area occurring in or within the 120 m Area of Investigation were conducted where permission to enter was available. If property access was unavailable at the time of site investigations, an Alternative Site Investigation was conducted following the protocols described in Section 3.2.2 of this report. Reconnaissance site investigations were also conducted to confirm the presence/absence of additional natural areas not identified through aerial photography interpretation.

Vegetation communities were described using the Ecological Land Classification (ELC) for Southern Ontario (Lee *et al.*, 1998). ELC is the provincially accepted standard for classifying vegetation communities in Ontario, and provides methods for identifying and mapping areas in a form that is useful for land use planning. This protocol distinguishes vegetation communities based on stand structure and composition which includes the compilation of a floral species list noting dominant species within each vegetation layer and a delineation of vegetation communities into Ecological Land Classification units.

This protocol uses a series of 6 levels (Site Region, System, Community Class, Community Series, Ecosite and Vegetation Type) each giving context to the site from largest to finest scale. Wherever possible, communities were described to Vegetation Type which is the finest level of classification. However, in some cases where Alternative Site Investigations were conducted, including where aerial photography was used for the assessment, vegetation communities were described to Ecosite and/or to Community Series. The ELC assessment consisted of a combination of soil profile analysis, basal area prism sweeps, and multilayer (canopy, sub-canopy, and ground cover) vegetation inventories.

During site investigations it became apparent that some of the vegetation communities observed did not fit within the existing ELC designations for Vegetation Type, therefore, AECOM staff have created a list of “new” ELC codes (e.g., CUT1a, FOD4a, etc.) for the purposes of this project. These are presented in Appendix F.

Vascular plant inventories were completed in conjunction with vegetation community surveys, where possible. Plant species were considered rare if designated provincially as S1 (Extremely rare in Ontario), S2 (Very rare in Ontario), or S3 (Rare to uncommon in Ontario), or locally rare in Huron County by Oldham (1993). Species having a high coefficient of conservatism (8, 9 or 10) as designated by Oldham *et al*. (1995) were also considered species of interest due to their fidelity to specific habitats.

A small inclusion located in the northern portion of natural area 720 is dominated by basswood. No ELC code is suitable for a community dominated by basswood hence the use of FOD7. This is a very disturbed community with the ground cover layer being dominated by garlic mustard, common dandelion, burdock, spotted geranium, herb-robert, and yellow trout lily. No evidence of wetland plants or standing water was observed and therefore the inclusion was not considered to be a wetland community.

3.2.2 Alternative Site Investigation

In certain instances, it was necessary to conduct an Alternative Site Investigation, as described in Part IV, Section 26 of O.Reg. 359/09. Alternative site investigations were completed when access to private property was not granted and on-site investigations could not be conducted as per Section 3.2.1 above. Alternative Site Investigations were completed using aerial photograph interpretation as well as field observations including observations made from the nearest property where entry was granted (fence line surveys) and observations made from a municipal or provincial road right-of-ways (roadside surveys). Through aerial photography and visual field observations, vegetation communities in these natural areas were identified to the lowest possible level using the Ecological Land Classification for Southern Ontario.

Table 3.1 provides a summary of the Alternative Site Investigations conducted for the Goshen Wind Energy Centre, including the reason why a site investigation could not be conducted and how information pertaining to the natural area was obtained. The locations of specific natural areas are shown on Figures 3.2a to 3.2i.

Table 3.1 Alternative Site Investigations

Natural Area	Date of Alternative Site Investigation	Method of Alternative Site Investigation	Rationale for Alternative Site Investigation
189	November 7, 2011 April 26, 2012 July 4, 2012	In the south end of the natural area, a fence line survey of the FOD7d community was conducted from the property immediately west. In the mid-portion of the natural area, a fence line survey of the FOD9-4 community was conducted from the property immediately west. In the north end of the natural area, a fence line survey of the SWD2-2 community was conducted from the property immediately west.	Did not have permission to enter properties on which this natural area is located.
190	October 14, 2011	A roadside survey of the FOD5-8 and CUW1m communities was conducted from South Road along the north side of the natural area.	Did not have permission to enter property on which this natural area is located.
215	November 8, 2011	A fence line survey of the FOD4f community was conducted from the property immediately west of the natural area.	Did not have permission to enter property on which this natural area is located.
220	April 26, 2012 May 18, 2012	A roadside survey of the CUM1-1 community was conducted from Grand Bend Line along the east side of the natural area.	Did not have permission to enter property on which this natural area is located.
229	November 9, 2011 April 24, 2012	A fence line survey of the FOD5-6 community in the north end of the natural area was conducted from the property in the southern portion of the natural area.	Did not have permission to enter property on which this natural area is located.
232	September 15, 2011 April 25, 2012	A fence line survey of the FOD5-5 and FOD3-1 communities in the northeast end of the natural area was conducted from the properties immediately east.	Did not have permission to enter property on which this natural area is located.
236	November 9, 2011	A fence line survey of the FOD9-4 community was conducted from the property line to the west and south of the natural area.	Did not have permission to enter property on which this natural area is located.
240	December 13, 2011 April 24, 2012	A fence line survey of the FOD7-2 community was conducted from the property line to the north of the natural area.	Did not have permission to enter property on which this natural area is located.
244	April 27, 2012	A fence line survey of the FOD6-5 community to the south was conducted from the northern portion of the natural area.	Did not have permission to enter property on which this natural area is located.
249	April 27, 2012 July 4, 2012	A fence line survey of the OAO and SWD2-2 communities was conducted from the fence line to the south.	Did not have permission to enter property on which this natural area is located.
255	May 9, 2012	A roadside survey of the FOM5-2 community was conducted from Crediton Road to the south and Corbett Line to the east.	Did not have permission to enter property on which this natural area is located.
261	April 24, 2012 June 7, 2012	A fence line survey of the FOD6-5 community in the central portion of the natural area was conducted from the adjacent properties.	Did not have permission to enter property on which this natural area is located.
266	September 7, 2011 April 24, 2012	A roadside survey of the FOD4a and CUP3-2 communities in the north end of the feature was conducted from Black bush Line to the north-west of the natural area.	Did not have permission to enter property on which this natural area is located.
274	May 2, 2012	A roadside survey of the MAM3-2 and SWD6-3 communities was conducted from Kirkton Road to the north of the natural area.	Did not have permission to enter property on which this natural area is located.
300	September 21, 2011 May 2, 2012	In the north end of the natural area, a roadside survey of the SWD3-3 community was conducted from Huron Street to the north of the natural area. In the south end of the natural area, a roadside survey of the FOD7-2 community was conducted from Kirkton Road to the south of the natural area.	Did not have permission to enter property on which this natural area is located.
331	July 4, 2012	A fence line survey of the FOD5-2 community was conducted from the property line to the west.	Did not have permission to enter property on which this natural area is located.
339	September 7, 2011	A fence line survey of the SWD3-3 and FOD5-2 community was conducted from the roadside and property line to the east.	Did not have permission to enter property on which this natural area is located.
352	July 19, 2011	A fence line survey of the FOD5-2 community was conducted from the property line within/ to the south of the natural area.	Did not have permission to enter property on which this natural area is located.
358	September 7, 2011 November 9, 2011	A fence line survey of the FOD5-2 community was conducted from the property line to the north and east of the natural area.	Did not have permission to enter property on which this natural area is located.
361	December 12, 2011 July 3, 2012	Fence line and roadside surveys of the FOD7-2 community were conducted from the property line to the south and from Bronson Line to the east.	Did not have permission to enter property on which this natural area is located.

Table 3.1 Alternative Site Investigations

Natural Area	Date of Alternative Site Investigation	Method of Alternative Site Investigation	Rationale for Alternative Site Investigation
362	June 7, 2012	A fence line survey of the FOD8-1 community was conducted from the property line to the south.	Did not have permission to enter property on which this natural area is located.
370	June 11, 2012	A fence line survey of the CUP2a community was conducted from the fence line to the north.	Did not have permission to enter property on which this natural area is located.
609	May 31, 2012	A fence line survey of the northern portions of the SWT2-2 and SWD2-2 communities was conducted from the fence line to the south.	Did not have permission to enter property on which this natural area is located.
635	June 5, 2012	A fence line survey of the CUM1-1 community was conducted from the property line to the south.	Did not have permission to enter property on which this natural area is located.
702	May 8, 2012	A fence line survey of the FOD9-1 community was conducted from the property line to the west of the natural area.	Did not have permission to enter property on which this natural area is located.
723	June 6, 2012	A fence line survey of the FOD6-5 community was conducted from the properties to the west and north of the natural area.	Did not have permission to enter property on which this natural area is located.
756	n/a	Air photo interpretation of the MAS community.	Air photo interpretation was conducted as we could not access the natural area.

3.2.3 Wetlands and Coastal Wetlands

Through the Records Review, the boundaries of evaluated (identified by MNR) and unevaluated wetlands (identified by Conservation Authorities) were initially identified within the Project Study Area. The boundaries of these wetlands were confirmed and additional wetlands were identified during site investigations where field surveys were initially undertaken between May 2011 and December 2011, and between March 2012 and July 2012 according to the Ontario Ministry of Natural Resources' Ontario Wetland Evaluation System (OWES) (MNR, 2002). Field personnel consisted of certified Ontario Wetland Evaluator biologists. Qualifications (i.e. curriculum vitae) for field personnel and weather conditions during site investigations are summarized in Appendices C and E, respectively. Survey dates are provided in Table 3.3.

Wetland boundaries were delineated using standardized methods as outlined within the OWES manual for Southern Ontario. More specifically, the wetland boundary was delineated where 50% of the physical area was covered by wetland indicator species and 50% by upland plant species (MNR, 2002). Wetland species identification was based on the Coefficient of Wetness Index in Oldham *et al.*, (1995), indicator species outlined in Appendix 5 of the OWES manual (MNR, 2002) and MNR memorandum regarding OWES (2007b), and species identified in Newmaster *et al.* (1997). Tree and/or shrub forms were used as the best indicators for long term site conditions. Where woody vegetation species did not clearly indicate upland or wetland areas, other vegetation forms were also considered.

The Coefficient of Wetness is one component of the "Floristic Quality Assessment System for Southern Ontario" (Oldham *et al.*, 1995). This system provides a numerical ranking of the relative affinity for wet soil conditions for native plant species. For the purposes of the wetland index, plants are designated as:

Obligate Wetland (-5):..... almost always occurs in wetlands under natural conditions (estimated probability >99%);

Facultative Wetland (-4 to -2): ..... usually occurs in wetlands, but occasionally found in non-wetlands (estimated probability 67 to 99%);

Facultative (-1 to 1):..... equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66%);

Facultative Upland (+2 to +4): ..... occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated probability 1 to 33%); and

Obligate Upland (+5):..... occurs almost never in wetlands under natural conditions (estimated probability <1%).

Plant species can exist as distinct ecotypes, which can tolerate different moisture regimes. For example, red maple (*Acer rubrum*), which has a Wetness Index value of 0, demonstrates high genetic variability between ecodistricts and can be found in very dry conditions and in areas where hydric soils or saturated conditions prevail. To further support the wetland boundary determination in areas where the vegetation does not clearly indicate a wetland community, a soil profile analysis was also taken to determine the presence/absence of hydric soils. Hydrologic conditions, including the presence of seeps, were also assessed.

Wetland features occurring in or within 120 m of the Project Location were identified as individual wetlands or wetland complexes meeting the minimum size requirements for evaluation outlined in OWES (MNR, 2002), as follows:

- According to the OWES manual, wetland complexes or contiguous wetlands smaller than 2 ha are generally not evaluated. In this assessment, all individual wetland complexes or contiguous wetlands greater than 2 ha in size were identified as wetland features. Those located at least partially in or within 120 m of the Project Location were carried forward to the Evaluation of Significance.
- Wetland complexes or contiguous wetlands smaller than 2 ha can however sometimes provide important habitat for wildlife or be important for other reasons and, therefore, may be evaluated if there is a rationale for including them. This is particularly true in wetland complexes. In this Natural Heritage Assessment, individual wetland communities or contiguous groups of wetland communities less than 2 ha in size were assessed to determine whether they are functionally linked and no more than 750 m away from the outer boundary of a wetland feature greater than 2 ha in size. If these criteria were met, the wetland communities were complexed together, as per the wetland complexing procedure described in the OWES manual. Wetland complexes located at least partially in or within 120 m of the Project Location were carried forward to the Evaluation of Significance. If a wetland less than 2 ha in size was not within 750 m of the outer boundary of a wetland feature greater than 2 ha in size, it was assessed to determine if it provides an important ecological function, such as rare species habitat, seepage or linkage functions.
- According to the OWES manual, isolated individual wetland communities or contiguous groups of wetland communities that are less than 0.5 ha in size are generally not mapped, provided they do not contain rare wetland communities, species or other types of special features or functions. Therefore wetlands less than 0.5 ha in size where no special features or functions were encountered during site investigations were not mapped.

Wetland data were collected during the 2011 field season using the standard ELC data cards. In 2012, wetland data cards were created using standard OWES criteria (e.g. Vegetation Forms and Species Composition, Wetland Type, Site Type, Presence of Groundwater, % Open Water). Field notes including wetland data cards are provided in Appendix B.

3.2.4 Woodlands

Woodland or forested areas were initially identified through the Records Review and aerial photography interpretation. The presence, boundaries and composition of woodlands were then confirmed at the time of vegetation community surveys during site investigations wherever they occurred in or within the 120 m Area of Investigation.

Ecological vegetation community mapping was used to identify woodlands according to the definition of woodlands provided in O. Reg. 359/09, as amended through O. Reg. 521/10, whereby a “woodland” is defined as a treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees, that is located south and east of the Canadian Shield.

Woodland features were identified according to the procedures described in the Natural Heritage Assessment Guide which states that “a bisecting opening 20 m or less in width between crown edge is not considered to divide a woodland into two separate woodlands and the area of the developed opening (e.g. maintained public opening or rail line) is not included in the wooded area calculation”. Woodland features were therefore established by grouping qualifying ELC polygons located within 20 m or less of each other. Woodland features located at least partially in or within the 120 m Area of Investigation were carried forward to the Evaluation of Significance.

3.2.5 Valleylands

The Natural Heritage Assessment Guide defines valleylands as a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. Potential valleylands were initially identified through interpretation of flood limit and topographic mapping overlaid on ortho-imagery. The presence of valleyland features and their boundaries, attributes and composition was subsequently confirmed during site investigation where field surveys were undertaken in or within the 120 m Area of Investigation in May, 2012.

To determine the presence/absence of candidate significant valleylands, Section 5.5 of the Natural Heritage Assessment Guide was referenced. This section explains how to define the physical boundaries of well-defined valleys and less well-defined valleys. For well-defined valleys, the physical boundary is defined by the stable top-of-bank or the predicted top-of-bank. For less well-defined valleys, the physical boundary is defined in a number of ways including the consideration of riparian vegetation, the flooding hazard limit, the meander belt or the highest general level of seasonal inundation.

Additional information was collected during site investigations in order to evaluate identified valleylands using the criteria described in Section 6.2.3 of the Natural Heritage Assessment Guide including:

- Surface water functions;
- Degree of naturalness;
- Linkage functions; and
- Restoration: existing/committed projects.

Valleyland features occurring at least partially in or within the 120 m Area of Investigation were carried forward to the Evaluation of Significance.

3.2.6 Wildlife Habitat

Field investigations to identify candidate Significant Wildlife Habitat located in or with 120 m of the Project Location were conducted in conjunction with Ecological Land Classification (ELC) mapping and vascular plant surveys from May 2011 to December 2011 and March 2012 to July 2012. These surveys were generally conducted between 7:00 am and 6:00 pm. The dates on which specific surveys were conducted are provided in Table 3.3. Qualifications (i.e. curriculum vitae) for field personnel and weather conditions during site investigations are summarized in Appendices C and E, respectively.

As described in the Natural Heritage Assessment Guide, candidate Significant Wildlife Habitats were identified using criteria established by MNR in the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000), Draft Ecoregion 6E and 7E Criterion Schedule Addendums to the SWHTG (MNR, 2011e; MNR, 2011f) and through consultation with MNR wildlife biologists. Bat-related habitats were also assessed with reference to the draft and final versions of Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR 2010b; MNR 2011g).

The determination of the presence or absence of candidate Significant Wildlife Habitat located at least partially in or within the 120 m Area of Investigation was initiated through the identification and delineation of ELC communities and completion of vascular plant species inventories as described in Section 3.2.1 of this report. Incidental wildlife observations were also recorded during site investigations. In addition, site investigation surveys focused on identifying Significant Wildlife Habitat triggers including vernal pools, potential hibernacula (e.g., rock piles), raptor nests or tree cavities. For data collection in the 2012 season, Significant Wildlife Habitat field data cards were created to facilitate the efficient application of criteria used to identify candidate Significant Wildlife Habitats. A summary of the criteria and methods used to identify each type of candidate Significant Wildlife Habitat is provided in Table 3.2. These criteria have been assembled from the following sources:

- Significant Wildlife Habitat Technical Guide (MNR, 2000);
- Draft version of Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR 2010b);
- Final version of Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR, 2011g);
- Draft Ecoregion 6E Criterion Schedule Addendum to the Significant Wildlife Habitat Technical Guide (MNR, 2011e); and,
- Draft Ecoregion 7E Criterion Schedule Addendum to the Significant Wildlife Habitat Technical Guide (MNR, 2011f).

Because the Project Study Area is located at the approximate boundary between Ecoregions 6E and 7E, the draft Criterion Schedules for both Ecoregions were examined to identify criteria for consideration of candidate Significant Wildlife Habitat. Where differences between the two criterion schedules were noted, the most inclusive criterion was applied (i.e., the criterion resulting in treatment of more features as candidate Significant Wildlife Habitat). These criteria are presented in Table 3.2 below.

Wherever a feature met the criteria outlined in Table 3.2 for a particular habitat type, Appendix D of the Natural Heritage Assessment Guide was consulted to determine whether the feature should be carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat or as Generalized Candidate Significant Wildlife Habitat. Appendix D of the Natural Heritage Assessment Guide sets out the criteria for identifying candidate Significant Wildlife Habitat required to be identified based on occurrence within 120 m of specific types of project infrastructure (refer to *Table 16 – Candidate SWH required to be identified within 120 metres of the project location based on project location component*). Candidate Significant Wildlife Habitats which are not required to be identified based on their proximity to Project infrastructure were treated as Generalized Candidate Significant Wildlife Habitat.

3.2.6.1 Bat Habitat Assessment Surveys

NRSI conducted site investigations in June 2010 and June 2011 based on the guidance material that was available at the time, which included the Draft Ecoregion Criteria Schedules Addendum (MNR 2009) and Draft Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR, 2010b). Criteria used to identify candidate bat maternity colonies included the presence of snags or live cavity trees which were greater than 20 cm diameter at breast height (dbh) with exfoliating bark and/or cavities. In addition, any suitable candidates had a clear entranceway to the cavity or surrounding exfoliating bark.

Site investigations conducted after June of 2011 followed the most recent MNR guidance document, Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR, 2011g), which indicates that the number of wildlife trees per hectare should be determined using 0.05 ha plots (or circular plots with a radius of 12.6 m), which are randomly placed throughout each woodland being investigated. The document stipulates that a minimum of 10 plots should be used for woodlands which are 10 ha or less in size, with one additional plot for every additional hectare for larger

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Seasonal Concentration Areas		
Waterfowl Stopover and Staging Areas (Terrestrial)	• Presence of the following Ecosites[2]: CUM1, CUT1; • Evidence of annual spring flooding from melt water or runoff; and, • Flooded agricultural land with waste grains and evidence of annual spring flooding that are utilized by Tundra Swans during the spring.	• Search for presence of cultural meadows or cultural thicket or agricultural fields with waste grains that may provide spring flooding or runoff on air photo mosaics within project area. • Search for evidence of annual or frequent spring flooding or runoff where suitable ecosites encountered during site investigation. • Determine if areas show evidence of extensive seasonal flooding to host large numbers of staging waterfowl. • Record location and physical attributes of any potentially qualifying features.
Waterfowl Stopover and Staging Areas (Aquatic)	• Presence of the following Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, SWD1, SWD3; • Where standing water is present including ponds, marshes, lakes, bays, coastal inlets and watercourses during migration; • Significant sites generally have better habitat quality (e.g. optimal vegetation composition, ratio of open water to emergent vegetation; extensive shoreline; abundant food, nocturnal roosting cover); and, • Larger wetlands are more significant (size).	• Search for presence of marsh, shallow water or deciduous swamp communities large enough to act as waterfowl staging areas on air photo mosaics within project area. • Search for presence of marsh, shallow water or deciduous swamp communities large enough to act as waterfowl staging areas where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Shorebird Migratory Stopover Areas (Shorebird Staging)	• Presence of the following Ecosites: BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1, MAM2, MAM3, MAM4, MAM5; and, • Shorelines of lakes, rivers and wetlands, including beach areas, bars, seasonally flooded shoreline, mudflats, rock groynes, and other forms of armour rock lakeshore.	• Search for stretches of undisturbed landscape found along shorelines of lakes, rivers and wetlands on air photo mosaics within project boundaries. • Search for presence of mudflats or shorelines adjacent to large open water area during site investigation. • Record location and physical attributes of any potentially qualifying features.
Raptor Wintering Area	• Combination of ELC Community Series; presence of one Community Series from each land class: ▪ Forest: FOC, FOD, FOM; ▪ Upland: CUM, CUT, CUS, CUW; • Sites must be at least 20 ha in size, with a combination of forest and upland habitats; • Upland communities must be >15 ha in size; • Sites that are less disturbed by agricultural activities are more significant; and, • Sites with better habitat quality (e.g., abundant prey and perches; a tendency toward less snow accumulation due to exposure to strong prevailing winds) are probably more significant.	• Search for fields and open meadows on air photo mosaics within project area that are >15 ha in size and adjacent to forest habitats. • Search for fields that provide a variety of herbaceous plant species which offer seeds, nuts, fruit and leafy plant matter throughout the year which supports high populations of prey (small mammals and ground nesting birds) where suitable ecosites encountered during site investigations. • Record location and physical attributes of any potentially qualifying features.

1. *Derived from the following sources:*
   - *Significant Wildlife Habitat Technical Guide (MNR, 2000);*
   - *Draft and final versions of Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR 2010 and 2011);*
   - *Bats and Bat Habitats: Guidelines for Wind Power Projects (MNR, 2011);*
   - *Draft Ecoregion 6E Criterion Schedule Addendum to the Significant Wildlife Habitat Technical Guide (MNR, 2011); and,*
   - *Draft Ecoregion 7E Criterion Schedule Addendum to the Significant Wildlife Habitat Technical Guide (MNR, 2011).*
2. *Ecosites are defined as "*mappable, landscape units integrating a consistent set of environmental factors and vegetation characteristics*" (Lee* et al.*, 1998).*

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Bat Hibernacula	• All caves, abandoned mine shafts, underground foundations, karst, or one of the following Ecosites: CCR1, CCR2, CCA1, CCA2 (buildings are not to be considered SWH).	• Search for presence of caves, mine shafts, underground formations and karst within project area. • Record location and physical attributes of any potentially qualifying features.
Bat Maternity Colonies	• Presence of all Ecosites associated with the following ELC Community Series: FOD and FOM; • Forests that have >10/ha cavity trees (snags or cavity trees) which are >25 cm diameter at breast height (dbh); and, • Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario.	• Search for presence of deciduous or mixed forest communities on air photo mosaics within project area. • Search for presence of forests that have a high density of cavity trees (snags or cavity trees) which are >25 cm dbh during site investigation. • Record location and physical attributes of any potentially qualifying features.
Turtle Wintering Areas	• Presence of all Ecosites associated with the following ELC Community Series: FEO, BOO; or the following ELC Community Classes: SW, MA, OA, SA; • Open water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat; • Overwintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen; and, • Water has to be deep enough not to freeze and have soft mud substrates.	• Search for presence of ponds, large marshes, lakes or other water bodies on air photo mosaics within project area. • Search for presence of deep ponds, large marshes, lakes or other water bodies during site investigation. • Record location and physical attributes of any potentially qualifying features.
Reptile Hibernacula	• No ELC Ecosites are directly related to these habitats; and, • Areas of broken and fissured rock, rock piles or slopes, stone fences, crumbling foundations, and old wells that extend below the frost line are candidate SWH.	• Search for presence of wooded areas adjacent to fields or thickets on air photo mosaics within project area. • Search for areas of broken and fissured rock, rock piles or slopes, stone fences, crumbling foundations, and old wells during site investigation. • Record location and physical attributes of any potentially qualifying features.
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	• Presence of the following Ecosites: CUM1, CUT1, CUS, BLO1, BLS1, BLT1, CLO1, CLS1, CLT1; • Eroding banks, sandy hills, pits, steep slopes, and rock faces that are undisturbed or naturally eroding for 10 years or more; and, • Significant habitats are not located in licensed aggregate pits.	• Search for presence of earthen banks on air photo mosaics within project area. • Search for presence of earthen banks where suitable ecosites encountered during ELC field investigations. Record location of any potentially qualifying features.
Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)	• Presence of the following Ecosites: SWM2, SWM3, SWM5, SWM6, SWD1, SWD2, SWD3, SWD4, SWD5, SWD6, SWD7, FET1; • Significant sites generally have better habitat quality (e.g. optimal vegetation composition, abundant food); and, • Size of habitat and level of disturbance are also important.	• Search for presence of treed wetlands (e.g. mixed or deciduous swamps or treed fen habitats) on air photo mosaics within project area. • Search for presence of large stick nests (particularly where more than one) where suitable ecosites encountered during site investigation. • Record location of any nests, as well as the size of the habitat and evidence of disturbance.
Colonially-Nesting Bird Breeding Habitat (Ground)	• Any (rocky) island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map); • Significant sites generally have better habitat quality (e.g. optimal vegetation composition, abundant food); and, • Size of habitat and level of disturbance are also important.	• Search for presence of rocky islands or peninsulas within lakes or large rivers on air photo mosaics within project area. • Search for presence of rocky islands or peninsula where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Deer Winter Congregation Areas	• Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD; • Conifer plantations (CUP) smaller than 50 ha may also be used; • Woodlots > 100 ha in size or if large woodlots are rare in a planning area woodlots >50 ha; and • Woodlots with high densities of deer due to artificial feeding are not significant.	• Deer Winter Congregation Areas are evaluated by MNR following methods outlined in Selected Wildlife and Habitat Features: Inventory Manual.
Rare Vegetation Communities		
Cliffs and Talus Slopes	• Presence of any of the following Ecosites: CLO1, CLS1, CLS2, CLT1, CLT2, TAO1, TAO2, TAS1, TAS2, TAT1, TAT2; • Cliffs are greater than 3 m in height of vertical to near-vertical bedrock; and, • A talus slope is rock rubble at the base of a cliff made up of coarse rocky debris.	• Search for presence of cliffs and talus slopes on air photo mosaics within project area. • Search for presence of cliffs and talus slopes during site investigation. • Record location and physical attributes of any potentially qualifying features.
Sand Barrens	• Presence of any of the following Ecosites: SBO1, SBS1, SBT1; • Typically exposed sand habitats, generally sparsely vegetated and caused by lack of moisture, periodic fires, and erosion. Sand barrens 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 savannah; • Sites must not be dominated by non-indigenous species; and, • Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always $\leq$ 60%.	• Search for presence of sand barrens on air photo mosaics within project area. • Search for presence of sand barrens during site investigation. • Record location and physical attributes of any potentially qualifying features.
Alvars	• Presence of any of the following Ecosites: ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2; • Typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil; • Sites must be at least 0.5 ha in size; and, • Sites must not be dominated by non-indigenous species.	• Search for presence of alvars on air photo mosaics within project area. • Search for presence of savannahs and document all flora during site investigation. • Record location and physical attributes of any potentially qualifying features. • Refer to Appendix N of the Significant Wildlife Habitat Technical Guide (MNR, 2000) and determine whether alvar indicator species are present.
Old-growth or Mature Forests	• Presence of all Ecosites associated with the following ELC Community Series: FOD, FOC, FOM; • Typically relatively undisturbed, structurally complex and contain a wide variety of trees and shrubs in various age classes; • Most significant sites will contain numerous trees which are at least 140 years old. Stands containing younger trees (e.g. 100 years or older) are significant where older trees no longer exist; and, • Stands containing predominantly long-lived species are probably more significant than stands consisting primarily of short-lived species (e.g. trembling aspen, birch).	• Search for forest communities on air photo mosaics within project area. • Search for mature trees in forested areas that have never been cutover (Old-Growth) and mature trees in forest stands consisting of a broad range of tree size classes (Mature Forest Stands) where suitable ecosites encountered during site investigation. • Search for large standing snags and abundance of downed wood in variable sizes where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Savannahs	• Presence of any of the following Ecosites: TPS1, TPS2, TPW1, TPW2, CUS2; • Tallgrass prairie habitat with tree cover between 25% and 60%. Site conditions must be restored or natural (e.g., not railway right-of-ways); and, • Sites must not be dominated by non-indigenous species.	• Search for presence of savannahs on air photo mosaics within project area. • Search for presence of savannahs and document all flora during site investigation. • Record location and physical attributes of any potentially qualifying features. • Refer to Appendix N of the Significant Wildlife Habitat Technical Guide (MNR, 2000) and determine whether savannah indicator species are present.

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Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Tall-grass Prairies	• Presence of any of the following Ecosites: TPO1, TPO2; • Sites with ground cover dominated by prairie grasses and less than 25% tree cover; • Site conditions must be restored or natural (e.g., not railway right-of-ways); and, • Sites must not be dominated by non-indigenous species.	• Search for presence of tall-grass prairies on air photo mosaics within project area. • Search for presence of tall-grass prairies and document all flora during site investigation. • Record location and physical attributes of any potentially qualifying features. • Refer to Appendix N of the Significant Wildlife Habitat Technical Guide (MNR, 2000) and determine whether tall-grass prairie indicator species are present.
Other Rare Vegetation Communities	• Provincially Rare S1, S2 and S3 vegetation communities as listed in Appendix M of the *Significant Wildlife Habitat Technical Guide*; and • Any ELC Ecosite that has a possible ELC vegetation type that is Provincially Rare.	• Search for presence of provincially rare vegetation communities and document all flora during Site Investigation. • Record location and physical attributes of any potentially qualifying features. • Refer to Appendix M of the Significant Wildlife Habitat Technical Guide and determine whether provincially rare vegetation communities are present.
Specialized Habitat for Wildlife		
Waterfowl Nesting Areas	• All upland habitats located adjacent to (within 150 m of) the following Ecosites: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4; or upland habitats adjacent to (within 150 m of) Provincially Significant Wetlands; • Upland areas should be at least 120 m wide so that predators have difficulty finding nests; • Larger sites of suitable habitat are more significant; • Significant sites generally have better habitat quality (e.g. optimal vegetation structure, stable water levels, abundant cover); and, • Sites with little disturbance (e.g. from agricultural activities such as hay cultivation or cattle grazing) are more significant.	• Search for upland habitat located near marshes or other wetland/open water areas on air photo mosaics within project area. • Search for upland habitat located near suitable wetland ecosites when encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	• Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD; • Forest communities directly adjacent to riparian areas of rivers, lakes, ponds, wetlands, and islands; and, • Nests located on man-made objects are not included.	• Search for presence of forest communities directly adjacent to open water on air photo mosaics within project area. • Search for presence of nest bowls where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features and nests.
Woodland Raptor Nesting Habitat	• Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD, or the following Ecosite: CUP3; and, • All natural or conifer plantation woodland/forest stands >30 ha with at least 4 ha of interior forest habitat.	• Search for extensive forested areas (>30 ha in size) on air photo mosaics within project area. • Search for large patches of suitable ecosites during site investigation. • Record location and physical attributes of any potentially qualifying features.
Turtle Nesting Areas	• Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, BOO1, FEO1; • Areas of sand and/or gravel that turtles are able to dig in that are located in open, sunny areas, including sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers; and, • Nesting areas on the sides of municipal and provincial road embankments, railway embankments and active aggregate operations are not SWH.	• Search for presence of open vegetated areas near ponds, marshes, lakes or other water bodies on air photo mosaics within project area. • Search for areas that are elevated and consist of gravel or sandy soils where suitable ecosites encountered during site investigation. • Search for evidence of turtle egg predation (broken turtle shells) where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.

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Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Seeps and Springs	• Seeps and springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats; • Any forested Ecosite within the headwater areas of a stream could have seeps or springs; and, • Seeps were identified using groundwater indicator plants, with reference to McKenny and Peterson (1996), Crow and Hellquist (2000), and Niering and Thieret (2009).	• Search for presence of forest or swamp communities on air photo mosaics within project area. • Search for presence of seeps or springs, and determine presence of indicator species during site investigations. • Record location and physical attributes of any potentially qualifying features.
Amphibian Breeding Habitat (Woodland)	• Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD; • Woodland with a wetland, lake or pond, including breeding pools that may be permanent, seasonal, ephemeral, and located within or adjacent to (within 120 m of) the woodland; • To be significant, vernal ponds in woodlands should persist until mid-July; and, • Wetlands used for breeding with presence of shrubs and logs around the edges are more significant because of increased structure for calling, foraging, escape and concealment from predators.	• Search for presence of forests and swamps on air photo mosaics within project area. • Search for permanent or temporary wooded pools that are likely to hold water until July and have depths of at least 50 cm in early spring where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Amphibian Breeding Habitat (Wetland)	• Presence of the following Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, SWT1; or presence of the following ELC Community Classes: SW, MA, FE, BO, OA and SA; • Larger sites of suitable habitat are more significant; • Wetlands used for breeding with presence of shrubs and logs around the edges are more significant because of increased structure for calling, foraging, escape and concealment from predators; and, • Wetlands and pools (including vernal pools) >500 m^2 (about 25 m diameter) isolated from woodlands (>120 m) supporting high species diversity are more significant.	• Search for presence of meadow marsh, shallow marsh, and other suitable ecosites on air photo mosaics within project area. • Search for presence of temporary or permanent standing water where suitable ecosites encountered during site investigation. • Search for pools that are likely to hold water until July and have depths of 50 cm in early spring where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)		
Marsh Breeding Bird Habitat	• Presence of the following Ecosites: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, FEO1, BOO1; • For Green Heron, presence of CUM1 Ecosites and all Ecosite associated with the following Community Classes: SW, MA; • Wetland habitats containing shallow water and emergent aquatic vegetation; and • For Green Heron, habitat is usually at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees.	• Search for presence of large marshes on air photo mosaics within project area. • Search for marshes containing standing water at least 30 cm deep, and where emergent aquatic vegetation is present during site investigation. • Search for swamps containing standing water at least 30 cm deep where stick nests are observed. • Record location and physical attributes of any potentially qualifying features.
Woodland Area-Sensitive Bird Breeding Habitat	• Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD; • Large mature (>60 years old) forest (non-plantation) stands or woodlots greater than 30 ha in size; and, • Woodlands with at least 4 ha interior forest habitat (at least 200 m from edge of forest).	• Search for contiguous areas of forest of at least 30 ha, with at least 4 ha of interior habitat on air photo mosaics within project area. • Determine whether large mature trees are present where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Open Country Bird Breeding Habitat	• Presence of the following Ecosite: CUM1, CUM2 and, • Grassland areas (includes natural and cultural fields and meadows) greater than 30 ha in size, excluding Class 1 and 2 agricultural lands and lands actively used for farming (i.e., no row-cropping in the last 5 years).	• Search for presence of large patches (>30 ha) of grassland or old field habitat on air photo mosaics within project area. • Search for large grassland patches where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.

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Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Shrub/Early Successional Bird Breeding Habitat	• Presence of the following Ecosites: CUT1, CUT2, CUS1, CUS2, CUW1, CUW2; and • Shrublands or successional fields greater than 10 ha in size, excluding Class 1 or 2 agricultural lands and lands actively used for farming (i.e., no row-cropping in the last 5 years).	• Search for presence of shrublands or early successional fields >10 ha in size on air photo mosaics within project area. • Search for presence of large shrublands or early successional fields during site investigation. • Record location and physical attributes of any potentially qualifying features.
Terrestrial Crayfish	• Presence of all Ecosites associated with the following ELC Community Series: MAM and MAS; and • Entrances of terrestrial crayfish burrows, which are conspicuous tall "chimneys" constructed from pellets of excavated mud.	• Search for presence of large meadow marsh and shallow marsh communities on air photo mosaics within project area. • Search for entrances of burrows ("chimneys") where suitable ecosites encountered during site investigation. • Record location and physical attributes of any potentially qualifying features.
Species of Conservation Concern Identified Through Records Review-Special Concern and Rare Wildlife		
American Gromwell (*Lithospermum latifolium*) Species of Conservation Concern Vulnerable – S3	• Preferred habitat Shaded river banks, wooded floodplains [6]. River floodplains, woods and edges of woods. [2] • Corresponding ELC: FOD7	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time - spring[1]).
A Moss (*Astomum muehlenbergianum*) Species of Conservation Concern Imperiled – S2	• Preferred habitat Thin soil over level outcrop ledges and on soil under grasses in open prairie. [18] • Corresponding ELC: ALO, TPO	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – spring[18]).
Autumn Coral-root (*Corallorhiza odontorhiza*) Species of Conservation Concern Imperiled – S2	• Preferred habitat Oak-pine woods or occasionally in open, red pine or white pine plantations. Dry, sandy woods. Scattered occurrences are restricted to southern Ontario mainly in the Carolinian zone.[2] • Corresponding ELC: FOM1, FOM2, CUP3	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time - summer to fall, but some years not at all[2]).
Burning Bush (*Euonymus atropurpureus*) Species of Conservation Concern Vulnerable – S3	• Preferred habitat Species occurs in dry to moist deciduous thickets and woods.[14, 2] • Corresponding ELC: FOC, FOM, FOD	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – April – June[19]).
Carolina Whitlow-grass (*Draba reptans*) Species of Conservation Concern Vulnerable – S3	• Preferred habitat Primarily inhabits dry sandy areas, dry open flats & limestone pavements. Occasionally weedy. [2, 6] • Corresponding ELC: SBO, SBS, SBT, ALO, ALS, ALT	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – mid-March to mid-June[4]).

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Chinese Hemlock Parsley (*Conioselinum chinense*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat • Swampy places with deciduous trees, cedars, tamarack; river banks, creek borders[6]. Species inhabits calcareous white cedar swamps, wet borders of streams and rivers. Also found among calcareous seepage slopes. [2]Corresponding ELC: SWC1, SWC3, SWC4, SWM1, SWM2, SWM4, SWM5, SWM6	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time –summer to fall).
Crowned Beggarticks (*Bidens trichosperma*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Found in openings in swamps, marshes, along shores & wet fields within the Carolinian zone and southeastern Georgian bay [2]. Bogs, fens, tamarack swamps [13]. • Corresponding ELC: SWC, SWM, SWD,SWT, MAM, MAS	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – late summer[5]).
Dwarf Chinquapin (*Quercus prinoides*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Occurs in open, dry sandy woods, savannahs. [14, 2] • Corresponding ELC: TPW, TPS	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – mid March to late June[17]).
Eastern Green-violet (*Hybanthus concolor*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Occurs in rich, wet-mesic floodplain forests as well as mesic forests over limestone [3]. Includes floodplains and river banks [6]. • Corresponding ELC: ALT1, FOD7	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time –mid March to August[4]).
False Tomentose (*Packera paupercula var. pseudotomentosa*) **Species of Conservation Concern** Imperiled to Vulnerable – S2S3	• Preferred habitat Species occurs in prairies, sandy open woods and savanna. [2,14] • Corresponding ELC: TPO, TPS, TPW	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey.
Fogg's Goosefoot (*Chenopodium foggii*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species occurs in sandy areas under oak or pine-oak forests[14], or in edges. [2] • Corresponding ELC: TPS, TPW, FOM1, FOM2	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time - Bloom Time – August – September[25]).
Giant Ironweed (*Vernonia gigantea*) **Species of Conservation Concern** Critically Imperiled – S1? (rank uncertain)	• Preferred habitat Found in mesic prairies, thickets, moist woods, roadsides and grassy meadows.[14] • Corresponding ELC: TPO2, TPS2, TPW2	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – early June to the end of August[17]).

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Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Great Lakes Sand Reed (*Calamovilfa longifolia var. magna*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Species occurs in active sand dunes, open sand plains, and openings in forests on stabilized sand dunes. [14] Species is restricted to the sandy shorelines of Lake Huron.[2] Occasionally introduced along roadsides and railways.[2] • Corresponding ELC: SDO1, SBO1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom Time – mid-summer to early fall[1]).
Green Dragon (*Arisaema dracontium*) **Species of Conservation Concern** Vulnerable – S3; COSEWIC (SC) and MNR Status (SC)	• Preferred habitat Species found in damp deciduous forest and along river streams [8]. It grows in wet forests particularly Maple forest and forest dominated by Red Ash and White Elm[7]. • Corresponding ELC: FOD6, FOD7, FOD9	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – May and June[8]).
Hairy Bedstraw (*Galium pilosum*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Occurs in dry, sandy woods and thickets; occasionally in dry sandy fields. [2,14] • Corresponding ELC: TPO1, TPS1, TPW1, FOM1, FOM2, FOM3, FOM4, FOD1, FOD2, FOD3, FOD4, FOD5	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – June – August[20]).
Hairy Valerian (*Valeriana edulis*) **Species of Conservation Concern** Critically Imperiled – S1	• Preferred habitat Inhabits swampy river flats and meadows, wet prairies, and wooded, rocky riverbanks [3] and fens [6] • Corresponding ELC: FEO1, FES1, FET1, SWC, SWM, SWD, SWT, TPO, TPS, TPW	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time –June to August[11]).
Hairy Wood Mint (*Blephilia hirsuta*) **Species of Conservation Concern** Critically Imperiled – S1	• Preferred habitat Rich woods, swamp forests, floodplains [6]. Species found in woodlands, preferably rocky, and especially among rivers. • Corresponding ELC: FOD6, FOD7, SWM, SWD	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – summer for a month and a half[10]).
Harbinger-of-spring (*Erigenia bulbosa*) **Species of Conservation Concern** Vulnerable – S3? (rank uncertain)	• Preferred habitat Occurs in rich, moist deciduous woods, especially on floodplains [2]. • Corresponding ELC: FOD6, FOD7, FOD8, FOD9	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – early to late April[6]).
Hill's Pond Weed (*Potamogeton hillii*) **Species of Conservation Concern** Imperiled – S2; COSEWIC (SC) and MNR Status (SC)	• Preferred habitat Aquatic plant found in highly alkaline waters of ditches, ponds, beaver ponds, and slow-moving cold waters chiefly confined to the Bruce Peninsula and Manitoulin Island, with a few additional records from Grey, Wellington and Peel Counties[2]. • Corresponding ELC: SAS1, SAM1, SAF1	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – summer[11]).

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Large Round-leaved Orchid (*Platanthera macrophylla*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species inhabits moist mixed woods. Found in fairly mature, upland sugar maple-beech-eastern hemlock woodlands, a relatively common type of habitat in Ontario although this species is rarely encountered. At least one historic record was found in Huron County[2]. • Corresponding ELC: FOM6, FOM7, FOM8	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – June to August[11]).
Lizard's Tail (*Saururus cernuus*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Species inhabits shores and streambanks along shallow water. As well as swamps (usually deciduous but sometimes cedar), floodplains, shallow water and mudflats at the borders of streams and ponds [6]. • Corresponding ELC: MAM2, MAM3, MAS2, MAS3, SWD	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – June – September[12]).
Moss Phlox (*Phlox subulata*) **Species of Conservation Concern** Critically Imperiled – S1? (rank uncertain)	• Preferred habitat Species is found in open, dry sandy open woods, sandy roadsides and lakeshores[2,14]. • Corresponding ELC: TPS1, CUM, SDO1, SDT1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time Spring[21]).
Narrow-leaved Puccoon (*Lithospermum incisum*) **Species of Conservation Concern** Critically Imperiled – S1	• Preferred habitat Occurs in dune, savannah, sandy woods and dry ground. [2,14] • Corresponding ELC: SDO, TPO1, TPS1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – Mid March – Mid-June[4]).
Pawpaw (*Asimina triloba*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Species occurs in moist woods and stream banks. [14] Occurs in moist, deciduous woods. [2] • Corresponding ELC: FOD6, FOD7, FOD9	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – March – May[19]).
Pillose Evening Primrose (*Oenothera pilosella*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Found in moist edges of woods and open, disturbed ground. [2,14] • Corresponding ELC: FOM8, FOD6, FOD7, FOD9, CUM1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – Late Spring – Early Summer[22]).
Prostrate Tick-trefoil (*Desmodium rotundifolium*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species occurs in dry, sandy or rocky woods. [2,14] • Corresponding ELC: TPW1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – July – September[20]).

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Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Pumpkin Ash (*Fraxinus profunda*) **Species of Conservation Concern** Imperiled – S2? (rank uncertain)	• Preferred habitat Occurs in swamps and floodplains.[2,14] • Corresponding ELC: FOD7, SWD	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – Mid March – mid June[17]).
Ram's-head Lady's-slipper (*Cypripedium arietinum*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Found in cedar woodlands, limestone plains and wooded fens. As well as, moist coniferous swamps, dry, sandy woods, and limestone barren [2]. • Corresponding ELC: CUW1, ALO, FET1, SWC	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time –mid May to mid June[2]).
Rattlesnake Hawkweed (*Hieracium venosum*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species inhabits open, dry sandy woods[2]. Jack pine, oak and aspen woodlands[6]. • Corresponding ELC: FOD1, FOD2, FOD3, FOD4, FOD5, FOC1, FOM1, FOM5	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – April – September[11]).
Round-leaved Groundsel (*Packera obovata*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Found in moist woods[14]. • Corresponding ELC: FOD6, FOD7, FOD9	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – May–June[23]).
Round-leaved Hawthorn *(Crataegus lumaria)* **Species of Conservation Concern** Vulnerable – S3? (rank uncertain)	• Preferred habitat Species occurs in old fields, poorly managed pastures, fence lines and roadsides[14]. • Corresponding ELC: CUM1, CUT1, CUS1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey.
Scarlet Beebalm (*Monarda didyma*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Found in moist, rich woods, thicket swamps, banks and floodplains [6]. • Corresponding ELC: FOD6, FOD7, FOD8, FOD9, SWT2, SWT3	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – May to October[3]).

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Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Shore Bluestem (*Schizachyrium littorale*) **Species of Conservation Concern** Imperiled – S2? (rank uncertain)	• Preferred habitat Occurs in sand dunes and sandy shores of the lower Great Lakes[2,14]. • Corresponding ELC: SDO, SDS, SDT	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey.
Slender Blazing Star (*Liatris cylindracea*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Species occurs in limestone and dolostone pavement, prairies, open woods[14]; alvars and moist sandy meadows[2]. • Corresponding ELC: ALO, TPO, TPS, TPW	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time July – September[11]).
Slender Knotweed (*Polygonum tenue*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Found in dry, sandy, open areas in deciduous (often oak woods), prairie meadows; at edges of sand pits. [14] • Corresponding ELC: SBO, SBS, SBT, TPO1, TPS1, TPW1, FOD1, FOD2	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time June-October[11]).
Slender Vulpia (*Vulpia octoflora*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species inhabits dry, sandy habitats, including rocky woods meadows, dry forests, and stabilized dunes[2]. • Corresponding ELC: SDO1, SDS1, SDT1	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey.
Slim-flowered Muhly (*Muhlenbergia tenuiflora*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Found in rich deciduous forest, often on rocky or sandy soils [2]. Usually found on wooded dunes, hillsides, and riverbanks whether in oak or beech-maple woods[6]. • Corresponding ELC: SDT1, FOD5, FOD9	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey.
Slim-spiked Three-awned Grass (*Aristida longespica var. longespica*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species inhabits dry to moist sandy fields and sandy openings in prairies[14]. • Corresponding ELC: CUM1, TPO	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time - mid-August – October[26]).
Stiff Gentian (*Gentianella quinquefolia*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Found in moist soils of streambanks, edges of woods and wet prairies. As well as, marshy meadows, bluffs and wooded hillsides [6]. • Corresponding ELC: BLO1, BLS1, BLT1, TPO2, TPS2, TPW2, MAM2, FOD7	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – late summer to mid fall[1]).

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Sundial Lupine (*Lupinus perennis*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Inhabits dry, sandy oak savannahs and prairies [2]. As well as, open barrens or clearings in woodlands of oak, jack pine, and/or aspen[6]. • Corresponding ELC: TPS1, TPW1, CUW1, RBO, SBO	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time –mid-March to mid-June[4]).
Tall Blazing Star (*Liatris aspera*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Occurs in open, sandy woods, dry roadsides and sandy prairies[14]. • Corresponding ELC: TPO1, TPS1, TPW1, CUM1	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time - August – October[12]).
Tuberous Indian Plantain (*Arnoglossum plantagineum*) **Species of Conservation Concern** Vulnerable – S3; COSEWIC (SC) and MNR Status (SC)	• Preferred habitat Largely restricted to coast of Lake Huron. Occurs mainly in flat, sandy areas of the Bruce Peninsula. A localized species of fens, wet meadows, and calcareous river flats[2]. • Corresponding ELC: FEO, FES, FET, MAM2, MAM3	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time –mid-March to mid-June[4]).
Woodland Pinedrops (*Pterospora andromedea*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Species found in conifer woods, under pines, but also hemlock, spruce, fir, and white cedar. Also in dry or rocky soil, often with common juniper and sometimes aspen or birch [6]. • Corresponding ELC: FOC1, FOC2, FOC3, FOC4	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – summer[11]).
Yellow Ladies'-tresses (*Spiranthes ochroleuca*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Dry, open sites, usually on acidic sandy soil [2]. Also on dry to mesic open woodland, thickets, meadows, barrens, ledges, outcrops, banks and roadsides, old fields [11]. • Corresponding ELC: CUM1, CUT1, CUW1, RBO1, SBO1	• Search for presence of suitable habitat and documentation of all flora during site investigation. • Search for species during vegetation survey (Bloom Time – August to November[11]).
Yellow Stargrass (*Hypoxis hirsute*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Occurs in dry open sandy woods; wet to dry meadows and prairies[2,14]. • Corresponding ELC: TPO1, TPS1, TPW1, CUM1, FOD1, FOD2, FOD3, FOD4, FOD5	• Search for presence of suitable habitat and documentation of all flora during site investigations. • Search for species during vegetation survey (Bloom time – mid spring – early summary [1]).
Bald Eagle (*Haliaeetus leucocephalus*) **Species of Conservation Concern** MNR Status (SC)	• Preferred habitat Nests in very large trees that afford a good view, often near shore. Feeds on fish in large open water bodies[14]. • Corresponding ELC: Any habitat with suitable nesting location.	• Breeding habitat for this species was assessed as Bald Eagle Nesting Habitat (described above). • Search for presence of suitable habitat and documentation of all birds observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Common Nighthawk (*Chordeiles minor*) **Species of Conservation Concern** COSEWIC (THR) and MNR Status (SC)	• Preferred habitat Aerial forager that hunts insects over a wide variety of habitats, in particular open or semi-open areas such as farmland, open woodlands, clearcuts, burns, rock outcrops, bogs fens, prairies, gravel pits and urban areas[7]. Nests on ground in a wide range of open, sparse or vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, rock outcrops, rocky barrens, gravel pits and urban rooftops. Sometimes may nest in grasslands, pastures, peat bogs, marshes or lakeshores. • Corresponding ELC: CUW, SDO, RBO, TPS	• Search for presence of suitable habitat and documentation of all birds observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Horned Grebe (*Podiceps auritus*) **Species of Conservation Concern** Critically Imperilled - S1B,S4N	• Preferred habitat This species inhabits areas with open water, emergent aquatic vegetation; densely vegetated marshes or shrub-bordered swamps with open water; ponds with emergent shoreline vegetation; marshy inlet and bays of large lakes. Each pair requires at least 1 to 3 ha of breeding territory[14]. • Corresponding ELC: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, FEO1, BOO1	• Confirmed breeding for this species only occurs in northwestern Ontario (Cadman, *et al.* 2007) and the individuals observed were certainly migrants, (non-breeding individuals are ranked S4N) therefore no further assessment is required.
Louisiana Waterthrush (*Seiurus motacilla*) **Species of Conservation Concern** COSEWIC (SC) and MNR Status (SC)	• Preferred habitat Area sensitive species that inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps. Trees, bushes, exposed roots, cliffs, banks and mossy logs are favoured nesting spots. This species nests on the ground[14.] Riparian woodlands are preferred stopover sites during migration[8]. • Corresponding ELC: FOD, FOM	• Search for contiguous areas of forest of at least 30 ha, with at least 4 ha of interior habitat containing riparian habitat on air photo mosaics within project area. • Search for presence of suitable habitat and documentation of all birds observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Red-headed Woodpecker (*Melanerpes erythrocephalus*) **Species of Conservation Concern** COSEWIC (THR) and MNR Status (SC)	• Preferred habitat Species inhabits open woodland and woodland edges, especially in oak savannahs and riparian forest[7], open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; requires cavity trees with at least 40 cm dbh; requires about 4 ha for a territory. • Corresponding ELC: FOD, CUW, CUT	• Breeding habitat for this species was partially assessed as Old-growth or Mature Forest Habitat (described above). • Search for presence of suitable habitat and documentation of all birds observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Short Eared Owl (*Asio flammeus*) **Species of Conservation Concern** COSEWIC (SC) and MNR Status (SC)	• Preferred habitat Species is a ground nester. It requires 75 to 100 ha of contiguous open habitat[14]. The Short-eared Owl makes use of a wide variety of open habitats, including, grasslands, peat bogs, marshes, and old pastures. It also occasionally breeds in agricultural fields. Dense grasslands are preferred nesting sites. The main factor influencing the choice of its local habitat is believed to be the abundance of food, in the form of small rodents[8]. • Corresponding ELC: CUM1, BOO1, MAM2, MAM3	• Seasonal concentration areas for this species were assessed as part of Raptor Winter Feeding and Roosting Areas (described above), and breeding habitat of this species was assessed as part of Open Country Bird Breeding Habitat (described above). • Search for presence of suitable habitat and documentation of all birds observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Yellow-breasted Chat (*Icteria virens*) **Species of Conservation Concern** COSEWIC (END) and MNR Status (SC)	• Preferred habitat Species inhabits thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines, etc.[14]. • Corresponding ELC: CUT1, SWT2, SWT3	• Breeding habitat for this species was assessed as part of Shrub/Early Successional Bird Breeding Habitat (described below). • Search for presence of suitable habitat and documentation of all birds observed during site investigation. Record locations and physical attributes of suitable habitat or species if present.
Azure Bluet (*Enallagma aspersum*) **Species of Conservation Concern** Vulnerable – S3	• Preferred habitat Species inhabits fishless ponds, lakes and boggy swamps [24]. • Corresponding ELC: OAO, SA, SWM, SWD	• Search for presence of dry prairie and sand dune areas on air photo mosaics within project area. • Search for presence of dry prairie and sand dune areas and documentation of all butterflies observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Dusted Skipper (*Atrytonospsis hianna*) **Species of Conservation Concern** Critically Imperiled – S1	• Preferred habitat Species is confined to remnants of dry prairie and sand dune areas[15]. • Corresponding ELC: TPO, TPS, SDO	• Search for presence of dry prairie and sand dune areas on air photo mosaics within project area. • Search for presence of dry prairie and sand dune areas and documentation of all butterflies observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Monarch Butterfly (*Danaus plexippus*) **Species of Conservation Concern** COSEWIC (SC) and MNR Status (SC)	• Preferred Habitat Monarchs typically occur in open field habitat where the adults forage on a wide range of flowers. The adults are very mobile and may be seen moving through almost any kind of habitat. Their larvae only feed on milkweeds (*Asclepius* spp.). Habitat includes abandoned farmland, along roadsides, and other open spaces where these plants grow[8]. Monarchs migrating south in the fall build up in large concentrations along the north shores of Lake Ontario and Lake Erie. • Corresponding ELC: CUM1, CUT1, CUW1	• According to MNR criteria, Monarch Migratory Stopover Areas are not associated with the study area and were therefore not assessed during the site investigation. • Monarch Feeding and Breeding Habitats were assessed as follows: o Search for presence of suitable feeding and breeding habitat (old fields with an abundance of milkweed) and documentation of all butterflies observed during site investigation. o Record locations and physical attributes of suitable habitat or species if present.
Mottled Duskywing (*Erynnis martialis*) **Species of Conservation Concern** Imperiled – S2	• Preferred habitat Usually seen nectaring or on wet sandy roads with of other species of Erynnis [15]. • Corresponding ELC: Any habitat with any suitable nectaring habitat	• Search for presence of suitable habitat and documentation of all butterflies observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Sleepy Duskywing (*Erynnis brizo*) **Species of Conservation Concern** Critically Imperiled – S1	• Preferred Habitat Species occurs in oak or oak-pine scrub, chaparral, barrens; on well-drained sandy or shaly soils[16]. This species is regularly seen at flowers in oak woods, on the ground, and at mud puddles[15]. • Corresponding ELC: TPS, TPW	• Search for presence of suitable habitat and documentation of all butterflies observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present. • Last known occurrence for this species in area 1985 [2].
Tawny Emperor (*Asterocampa clyton*) **Species of Conservation Concern** Imperiled to Vulnerable – S2S3	• Preferred habitat Species inhabits densely wooded riparian areas, dry woods, open woods, fencerows and parks where its main host plants Common Hackberry (*Celtis occidentalis*) and Dwarf Hackberry (*Celtis tenuifolia*) are found [15, 35]. • Corresponding ELC: Suitable habitat where its host plants are located.	• Search for presence of suitable habitat and documentation of all butterflies observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
West Virginia White (*Pieris virginiensis*) **Species of Conservation Concern** MNR Status (SC)	• Preferred Habitat This species is restricted to rich, moist, deciduous woods, where its foodplant Toothwort occurs[7]. • Corresponding ELC: FOD5	• Search for presence of suitable habitat and documentation of all butterflies observed during site investigation. • Search for presence of Toothwort where suitable ecosites encountered during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Eastern Ribbonsnake (*Thamnophis sauritus*) **Species of Conservation Concern** COSEWIC (SC) and MNR Status (SC)	• Preferred Habitat Occurs in wet meadows, marshes or sphagnum bogs, usually near water such as ponds, or streams. Species hibernates in groups[14]. • Corresponding ELC: MAM2, MAM3, BO	• Seasonal concentration areas for this species were assessed as part of Reptile Hibernacula (described above). • Search for presence of suitable habitat and documentation of all insects observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Milksnake (*Lampropeltis triangulum*) **Species of Conservation Concern** COSEWIC (SC) and MNR Status (SC)	• Preferred Habitat Species inhabits abandoned farmlands, meadows, thickets and woodlands. Often found hiding under stones, or under boards[14]. • Corresponding ELC: CUM1, CUT1, MAM2, FOM, FOD	• Seasonal concentration areas for this species were assessed as part of Reptile Hibernacula (described above). • Search for presence of suitable habitat and documentation of all insects observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Snapping Turtle (*Chelydra serpentine*) **Species of Conservation Concern** COSEWIC (SC) and MNR Status (SC)	• Preferred Habitat Requires permanent, semi-permanent fresh water, including marshes, swamps, rivers and streams. Nests in open habitats on south-facing slopes. Hibernates in mud under water[14]. • Corresponding ELC:MAM2, MAM3, MAS2, MAS3, SWD, OAO, SAS, SAM, SAF	• Specialized habitats for this species were assessed as part of Turtle Nesting Habitat and Turtle Over-wintering Habitat (described above). • Search for presence of suitable habitat and documentation of all insects observed during site investigation. • Record locations and physical attributes of suitable habitat or species if present.
Little Brown Bat (*Myotis lucifugus*) **Species of Conservation Concern** COSEWIC (END)	• Preferred habitat : This species uses caves, quarries, tunnels, hollow trees or buildings for roosting. Often forages near wetlands and forest edges. Overwinters in humid caves. Maternity sites are found in dark warm areas such attics and barns[14]. • Corresponding ELC: CCR1, CCR2, CCA1, CCA2, FOC, FOM, FOD	• Seasonal concentration areas for this species were assessed as part of Bat Hibernacula and Bat Maternity Colonies (described above).
Animal Movement Corridor		
Amphibian Corridors	• Corridors may be found in all ecosites associated with water; • Corridors will be determined based on identifying significant amphibian breeding habitat; • Corridors should consist of native vegetation with no gaps such as roads, fields, waterways or waterbodies; and, Corridors should be at least 200 m wide with gaps less than 20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway.	• Search for candidate Amphibian Woodland Breeding Habitat and candidate Amphibian Wetland Breeding Habitat as described above. • Search for possible amphibian movement corridors associated with the above habitats during site investigation. • Record location and physical attributes of any potentially qualifying features.

Table 3.2 Summary of the Criteria and Methods Used to Identify Each Type of Candidate Significant Wildlife Habitat

Type of Candidate Significant Wildlife Habitat	Characteristics of the Significant Wildlife Habitat (SWH) Type[1] *(All characteristics must be met by candidate SWH)*	Methods of Assessment
Deer Movement Corridors	• Corridors may be found in all forested ecosites; and, • A Deer Winter Congregation Area identified by MNR may have corridors that the deer use during fall migration and spring dispersion.	• Corridors must be determined only when Deer Yard habitat is confirmed as Significant Wildlife Habitat. • Search for forested ecosites in association with Deer Winter Congregation Areas. • Record location and physical attributes of any potentially qualifying features.

Notes:

1. *Illinois Wildflowers, n.d. Available: www.illinoiswildflowers.info*
2. *MNR Biodiversity Explorer, 2012. Available: https://www.biodiversityexplorer.mnr.gov.on.ca*
3. *The University of Texas at Austin – Wildflower Centre, n.d. Available: www.wildflower.org*
4. *Ontario Wildflowers, 2012. Available: www.ontariowildflowers.com*
5. *United States Department of Agriculture – Natural Resources Conservation Service, 2012. Available: http://plants.usda.gov/java/charProfile?symbol=BICO*
6. *Voss, E.G., 1996. Michigan Flora, Volume 3: Dicots Concluded. Cranbrook Institute of Science Bulletin 61 & University of Michigan Herbarium. xii + pp. 622.*
7. *Royal Ontario Museum, n.d. Available: http://www.rom.on.ca/ontario/risk.php*
8. *Species at Risk Public Registry, 2012. Available: http://www.registrelep-sararegistry.gc.ca/*
9. *Montana Plant Life, n.d. Available: http://montana.plant-life.org/species/vale_edul.htm*
10. *Wikipedia, 2011. Available: http://en.wikipedia.org*
11. *eFloras.og, n.d. Available: http://www.efloras.org*
12. *Missouri Botanical Garden, n.d. Available: http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a649/saururus-cernuus.aspx*
13. *Reznicek, A.A., Voss, E.G. and Walters, B.S., 2011. Michigan Flora Online. University of Michigan. Available: http://michiganflora.net/species.aspx?id=251*
14. *MNR, 2000. Significant Wildlife Habitat Technical Guide, Appendix G.*
15. *Canadian Biodiversity Information Facility, 2010. Available: http://www.cbif.gc.ca/spp_pages/butterflies/species/MottledDuskywing_e.php*
16. *Butterflies and Moths of North America, n.d. Available: http://www.butterfliesandmoths.org/species/Asterocampa-clyton*
17. *Paulson, D., 2009. Dragonflies and Damselflies of the West. Princeton University Press. Available: http://books.google.ca/books?id=wnX1nJSmFfAC&pg=PA176&lpg=PA176&dq=ontario+dusky+dancer+habitat&source=bl&ots=wB8KW-fBZB&sig=YsH7mreaXFD_8Lnz6fDWotijdLc&hl=en&sa=X&ei=aHeET7avOobn0QHkheW-Bw&ved=0CC0Q6AEwAQ#v=onepage&q=ontario%20dusky%20dancer%20habitat&f=false*
18. *Mohlenbrock, R.H., 1999. Sedges:Carex. Southern Illinois University. Available: http://books.google.ca/books?id=1ZGekaNQ4YAC&pg=PA247&lpg=PA247&dq=carey's+sedge+bloom&source=bl&ots=iTsQPehdAa&sig=iOzBzcXy4MYWwBjImewlpTnT5WI&hl=en&sa=X&ei=asmET-C4I4X00gGr1LmxBw&ved=0CCQQ6AEwAA#v=onepage&q=carey's%20sedge%20bloom&f=false*
19. *State of Montana, n.d., Montana Field Guide. Available: http://fieldguide.mt.gov/detail_IIODO08310.aspx*
20. *Michigan Natural Features Inventory, 2007. Rare Species Explorer. Available:-http://mnfi.anr.msu.edu/explorer/species.cfm?id=11568*
21. *Oldham, M.J. and Brinker, S.R., 2009. Ministry of Natural Resources. Rare Vascular Plants of Ontario, Fourth Ed. Available: http://publicdocs.mnr.gov.on.ca/View.asp?Document_ID=15769&Attachment_ID=33301*

woodlands (up to a maximum of 35 plots). Woodlands with greater than or equal to 10 wildlife trees (cavity trees) per hectare qualify as candidate significant bat maternity colony habitats. NRSI followed this protocol for woodlands which had not been previously investigated, randomly selecting circular plots 12.6 m in radius within the portions of woodlands for which access was granted. All dead trees or snags (with or without cavities) and live trees containing cavities which were greater than 25 cm dbh were initially counted. Following clarification of the intention of the guidance documents during a field session with MNR in March of 2012, only those live trees or snags that contain cavities were counted. Re-assessment of previously assessed woodlands was determined not to be necessary because the former method of counting all snags (with or without cavities) is more conservative (i.e. more likely to meet the threshold density of cavity trees) than the latter method of counting only those snags with cavities.

NRSI's complete report describing bat habitat assessment surveys is provided in Appendix G.

3.3 Results of Site Investigations

A total of 85 "natural areas" (refer to Section 3.2 above) were identified in or within the 120 m Area of Investigation and were visited during the 2011 and 2012 site investigations. The locations of these natural areas are shown on Figure 3.1 (key map) and Figures 3.2a to 3.2i. The ELC summary by community determined through site investigations is provided in Table 3.3 below.

3.3.1 Vegetation Communities

All natural areas in or within the 120 m Area of Investigation were delineated into ELC units (Figures 3.2a to 3.2i). Vegetation communities found in or within the 120 m Area of Investigation can be divided into 13 different community series (e.g., CUM: Cultural Meadow, FOD: Deciduous Forest, SWT: Thicket Swamp etc.). This is the lowest level within the ELC classification that can be identified without site specific surveys. The units are determined based on the type of vegetation cover or plant form that best characterizes the community in question (e.g., open, shrub, treed, deciduous, coniferous, or mixed).

The observed community series designations were further separated into 24 different ecosites (e.g., CUM1: Mineral Cultural Meadow Ecosite, FOD5: Dry-Fresh Sugar Maple Deciduous Forest Ecosite, SWT2: Mineral Thicket Swamp Ecosite, etc.). Ecosites are defined as "*mappable, landscape units integrating a consistent set of environmental factors and vegetation characteristics*" (Lee *et al*., 1998).

Where possible, these ecosites were then classified to vegetation type (e.g., CUM1-1: Dry-Moist Oldfield Meadow Type, FOD5-1: Dry-Fresh Sugar Maple Deciduous Forest Type, and SWT2-5: Red-osier Mineral Thicket Swamp Type) which is the finest level of detail within the ELC classification system. These units are based on specific groupings of plants (Lee *et al*., 1998). The vegetation communities identified in or within the 120 m Area of Investigation are further described in Table 3.3 below and are summarized to the main ecosites in Table 3.4.

Through ELC surveys it was noted that deciduous forest (FOD) is the most frequent vegetation community series in or within the 120 m Area of Investigation, claiming a total of 581.9 ha. The Dry-Fresh Sugar Maple Deciduous Forest (FOD5) was the most common Ecosite in or within the 120 m Area of Investigation, dominating 167.7 ha.

The rarity of each vegetation community identified during sites investigations was determined using Appendices J and M of the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) and the Natural Heritage Information Centre (MNR, 2012a). One provincially rare community was observed during field investigations in or within the 120 m Area of Investigation, FOD7-4: Fresh-Moist Black Walnut Lowland Deciduous Forest Type. This community type is ranked S2S3 (imperilled to vulnerable) and was observed immediately east of Goshen Line and north of Huron Street, within natural area 309. The community is approximately 3.3 ha in size. This community was carried forward to the Evaluation of Significance as described in Section 3.3.6.2 below. A full list of vegetation community rankings can be found in Table 3.19.

Incidental wildlife observations recorded during site investigations are included in Table 3.3.

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
177	17.6	12-Jul-11	12-Aug-11 16-Apr-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		17.4	Mid-age to Mature	This mid-age to mature forest has a broken canopy allowing for thick shrub layer growth. Species observed within the canopy include green ash, Freeman's maple, and white elm. The sub-canopy is comprised of white elm, green ash, and hawthorn species The shrub layer is mainly dominated by American prickly ash, nannyberry, common buckthorn, and currant species. The ground cover consists of wild strawberry, dog violet, sedge species, tall agrimony.	**Birds:** Song Sparrow, Canada Goose, Downy Woodpecker, Turkey Vulture, Red-tailed Hawk, Indigo Bunting, White-breasted Nuthatch, Killdeer, Northern Flicker **Lepidoptera:** Monarch, Red-spotted Purple, Giant Swallowtail **Odonata:** Yellow-legged Meadowhawk **Mammals:** White-tailed Deer
189	63.4	13-Jul-11		FOD9-5	Fresh - Moist Bitternut Hickory Deciduous Forest Type		4.1	Mature	The canopy within this mature deciduous forest is dominated by bitternut with equal amounts of shagbark and ironwood. The sub-canopy is dominated by equal amounts of hazelnut and blue beech with some black cherry. The ground layer is dominated by poison ivy with some clearweed and narrow leaf sedge species.	No wildlife observed
		26-Apr-12		FOD9-4	Fresh - Moist Shagbark Hickory Deciduous Forest Type Surveyed from fence line		6.1	Mature	The canopy within this mature forest is dominated by shagbark hickory with fewer American beech, sugar maple and green ash associates. The sub-canopy is mainly sugar maple with some green ash. The shrub layer is dominated by choke cherry. The ground cover consists of yellow trout lily and white trillium.	**Birds:** American Crow, Great Blue Heron, Northern Flicker, American Goldfinch, Wild Turkey, Northern Cardinal **Mammals:** Gray Squirrel
		4-Jul-12		SWD2-2	Green Ash Mineral Deciduous Swamp Type Surveyed from fence line		12.2	Mid-age	The canopy layer within this mid-age swamp consists mainly of green ash with some white elm, shagbark hickory and bitternut hickory associates. The sub-canopy layer consists of white elm with less green ash. The shrub layer consists of white elm, bitternut hickory and green ash. The ground cover consists of green ash, moneywort and poison ivy.	No wildlife observed
		7-Nov-11	23-Apr-12	FOD7d	Fresh - Moist White Elm - Ash - Hawthorn Deciduous Forest Type Surveyed from fence line		22.7	Young to Mid-age	Species observed within this young to mid-age forest include white elm, green ash, and basswood, while the sub-canopy layer consists mainly of hawthorn with some common apple. The herbaceous layer consists of a mixture of white avens, Canada blue grass, garlic mustard, and graceful sedge. This community is a successional forest/thicket occurring on moist level ground.	**Birds:** Turkey Vulture **Mammals:** Raccoon
		12-Jul-11	12-Aug-11 29-Nov-11 17-Apr-12	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type		6.5	Mid-age	The canopy layer within this mid-age to mature deciduous forest is dominated by sugar maple, basswood, shagbark hickory, and ironwood. The ground cover layer is comprised of herb robert, spotted geranium, and false solomon's seal.	**Birds:** Woodpecker Species., Red-tailed Hawk, Black-billed Cuckoo, Song Sparrow, Eastern Wood-pewee, American Crow, Black-capped Chickadee **Lepidoptera:** Giant Swallowtail **Mammals:** White-tailed Deer **Crustaceans:** Chimney Crayfish
190	5.4	14-Oct-11		FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type Surveyed from roadside		0.8	Mid-age	This mid-age community is located on a small valley slope. Canopy species within this dry-fresh deciduous forest include white ash and sugar maple while the sub-canopy is dominated mainly by sugar maple with some white ash. The shrub layer consists of equal amounts of grey dogwood and sugar maple.	No wildlife observed
		14-Oct-11		CUW1m	Green Ash - Hawthorn Mineral Cultural Woodland Type Surveyed from roadside		4.5	Mid-age	The canopy of this mid-age cultural woodland is dominated by green ash with hawthorn and common apple found throughout. The ground cover is comprised mainly of garlic mustard with lesser amounts of poison ivy.	No wildlife observed
198	9.9	17-May-12		CUM1-1	Dry - Moist Old Field Meadow Type		1.2	Young	There is no canopy layer within this young meadow. The sub-canopy consists of white elm. The shrub layer consists of red-osier dogwood. The ground cover is mainly Kentucky bluegrass with lesser amounts of orchard grass.	**Birds:** Turkey Vulture, Song Sparrow, American Crow, House Wren, American Goldfinch, Yellow Warbler, Downy Woodpecker, Horned Lark, Red-winged Blackbird, American Robin, Savannah Sparrow, Killdeer **Mammals:** White-tailed Deer **Lepidoptera:** Monarch

3. Survey start and end times are provided in Appendix B.

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		7-Nov-11	17-Apr-12 17-May-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type	OAO: Open Aquatic CUT1h: Green Ash Mineral Cultural Thicket Type	3.3	Young to Mid-age	The canopy within this young to mid-age forest is dominated by green ash with fewer Freeman's maple. The sub-canopy consists of Manitoba maple. The shrub layer is mainly comprised of a hawthorn species with fewer red-osier dogwood and willows. The ground cover is mainly smooth brome grass with fewer garlic mustard and less wild madder. The small young thicket inclusion is succeeding into a green ash forest. Dominant species observed include green ash, white elm, and hawthorn. Other species observed include Kentucky bluegrass, Canada goldenrod, aster species, and wild carrot.	**Birds:** Turkey Vulture, Song Sparrow, American Crow, House Wren, American Goldfinch, Yellow Warbler, Downy Woodpecker, American Robin **Mammals:** White-tailed Deer **Lepidoptera:** Monarch
203	41.5	30-Apr-12		FOD9-3	Fresh - Moist Bur Oak Deciduous Forest Type		3.6	Mid-age	The canopy layer of this mid-age forest is dominated by bur oak with some shagbark hickory and less green ash and white elm associates. The sub-canopy layer consists mainly of white elm with fewer green ash and less ironwood. Species within the shrub layer are mainly bitternut hickory with fewer choke cherry. The ground cover consists of spotted geranium with some yellow trout lily and less violet species and sedge species.	**Birds:** Killdeer, Red-winged Blackbird
204	4.9	23-Apr-12		CUM1-1	Dry - Moist Old Field Meadow Type		0.1	Pioneer to Young	This is a pioneer to young meadow community with some small pockets of trees and shrubs. The canopy layer consists of sugar maple, eastern white pine, and Norway spruce. There is no sub-canopy layer. Species within the shrub layer are mainly eastern white cedar with less common apple. The ground cover consists of smooth brome with less orchard grass.	**Birds:** Turkey Vulture
206	11.2	8-Sep-11		CUW1c	Green Ash - Apple - Hawthorn Mineral Cultural Woodland Type		4.2	Mid-age	The canopy layer of this mid-age deciduous forest is dominated by green ash, apple, cockspur thorn. The shrub layer consists of staghorn sumac and grey dogwood. The ground cover layer consists of Canada goldenrod and tall goldenrod, with some tall white aster and New England aster.	**Birds:** Red-tailed Hawk, Great Blue Heron (fly-by) **Herpetofauna:** Wood Frog, American Toad
		20-Jul-11		FOD9-4	Fresh - Moist Shagbark Hickory Deciduous Forest Type		7.0	Mature	The canopy layer of this mature deciduous forest is dominated by shagbark hickory, green ash, bur oak and bitternut hickory. The sub-canopy layer consists of shagbark hickory and green ash, and the shrub layer is dominated by green ash. The ground cover layer consists of spotted geranium, green ash and running strawberry bush.	No wildlife observed
209	14.9	1-May-12		FOD9e	Fresh - Moist Shagbark Hickory - Sugar Maple - American Beech - Blue Beech Deciduous Forest Type	SWT2: Mineral Thicket Swamp Ecosite FOD2-1: Dry - Fresh Oak - Red Maple Deciduous Forest Type FOD8-1: Fresh - Moist Poplar Deciduous Forest Type CUP3d: White Pine - Red Pine - Scots Pine - Balsam Fir Coniferous Plantation Type	4.6	Mid-age	The canopy layer of this mid-age forest consists of shagbark hickory, sugar maple, American beech and red maple. The sub-canopy consists of American beech and blue beech. Species within the shrub layer are mainly spicebush with fewer blue beech, gray dogwood, and choke cherry associates. The ground cover consists of yellow trout lily, spotted geranium, jack-in-the-pulpit, and false solomon's seal. The thicket swamp is dominated by spice bush. The canopy layer of the plantation inclusion consists of eastern white pine, red pine, scots pine, and balsam fir. The sub-canopy is dominated by green ash. The shrub layer is dominated by choke cherry. The ground cover consists of Virginia strawberry, spotted geranium, buttercup species, and avens species.	**Birds:** Red-winged Blackbird, Black-capped Chickadee, Song Sparrow, Northern Flicker, Blue Jay, Canada Goose, White-throated Sparrow, Chipping Sparrow, American Crow, Northern Cardinal **Mammals:** White-tailed Deer
		1-May-12	4-Jul-12	CUP3-2	White Pine Coniferous Plantation Type	OAO: Open Aquatic CUP2b: White Pine - White Ash - Trembling Aspen Mixed Plantation Type CUT1: Mineral Cultural Thicket Ecosite CUM1-1: Dry - Moist Old Field Meadow Type	9.3	Mid-age	The canopy layer of this mid-age forest is dominated by eastern white pine. The sub-canopy layer consists of eastern white pine and green ash. The shrub layer is dominated by choke cherry. The ground cover consists of wild strawberry, spotted geranium, and avens species. In the plantation inclusion, the canopy layer consists mainly of eastern white pine with fewer amounts of white ash and trembling aspen. The sub-canopy consists mainly of eastern white pine with fewer amounts of white ash and trembling aspen. The shrub layer consists of choke cherry and tartarian honeysuckle. The ground cover consists of giant goldenrod, choke cherry and thimbleweed.	**Birds:** Red-winged Blackbird, Black-capped Chickadee, Song Sparrow, Northern Flicker, Blue Jay, Canada Goose, White-throated Sparrow, Chipping Sparrow, American Crow, Northern Cardinal **Mammals:** White-tailed Deer

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
210	43.9	1-May-12		CUM1-1	Dry - Moist Old Field Meadow Type		0.5	Mid-age	The canopy layer within the mid-age meadow consists of Manitoba maple and black walnut. There is no sub-canopy or shrub layer. The ground cover consists of reed canary grass, garlic mustard, common dandelion, and goldenrod species.	**Birds:** Black-capped Chickadee, Downy Woodpecker, House Wren, Red-eyed Vireo, Indigo Bunting **Mammals:** Raccoon, White-tailed Deer
		1-May-12		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		0.6	Young to Mid-age	The canopy within this young to mid-age forest consists of green ash, Manitoba maple and white elm. The sub-canopy consists of a hawthorn species, green ash, and Manitoba maple. The ground cover consists of common dandelion, garlic mustard, Manitoba maple and wild strawberry.	**Birds:** Eastern Phoebe, American Goldfinch, Killdeer, Vesper Sparrow, Horned Lark **Lepidoptera:** Red Admiral **Mammals:** White-tailed Deer
		1-May-12		CUT1i	Green Ash - Manitoba Maple Mineral Cultural Thicket Type		1.6	Mid-age	The canopy layer within this mid-age thicket consists of green ash and Manitoba maple. There is no sub-canopy. The shrub layer consists of English hawthorn, common apple, and common buckthorn. The ground cover consists of garlic mustard and bedstraw species.	**Birds:** Black-capped Chickadee, Downy Woodpecker, House Wren, Red-eyed Vireo, Indigo Bunting **Mammals:** Raccoon, White-tailed Deer
		11-Aug-11		FOD4-2	Dry - Fresh White Ash Deciduous Forest Type		4.7	Mid-age	The canopy layer within this mid-age deciduous forest is dominated by white ash and white elm with lesser amounts of sugar maple, while the sub-canopy consists of hawthorn, white ash, and choke cherry. The shrub layer consists of yellow avens, red currant, may apple and tall buttercup, and the herbaceous layer consists of poison ivy, thicket creeper, and running strawberry bush.	**Birds:** Black-capped Chickadee, Downy Woodpecker, House Wren, Red-eyed Vireo, Indigo Bunting **Mammals:** Raccoon, White-tailed Deer
		11-Aug-11	7-Nov-2011 1-May-2012	FOD7-1	Fresh - Moist White Elm Lowland Deciduous Forest Type		5.8	Mature	The canopy layer of this mature deciduous forest is dominated by Freeman's maple with lesser amounts of white elm, white ash and black walnut. Species observed within the sub canopy include white ash, hawthorn, and prickly ash. Species observed within the shrub layer include black raspberry, and prickly-ash. The herbaceous layer consists of garlic mustard, wood nettle, poison ivy, thicket creeper, and yellow avens.	**Birds:** American Goldfinch, Killdeer, Vesper Sparrow, Horned Lark, Eastern Phoebe, American Robin, Downy Woodpecker, Black-capped Chickadee, Black-billed Cuckoo **Lepidoptera:** Red Admiral
215	13.3	4-Oct-11		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		1.7	Mature	The canopy within this mature deciduous swamp is dominated by freeman's maple with lesser amounts of green ash. The sub-canopy is dominated by Freeman's maple with lesser amounts of green ash. Species present in the ground layer include a variable mix of sensitive fern, false nettle, lady fern, fowl manna grass, woodland strawberry, northern dewberry and bladder sedge.	**Birds:** Wild Turkey, American Crow, Blue Jay **Mammals:** White-tailed Deer
		4-Oct-11	8-Nov-11	FOD4f	Dry - Fresh White Ash - Basswood Deciduous Forest Type Surveyed from fence line	CUM1-1: Dry - Moist Old Field Meadow Type	3.6	Mid-age	Dominant species observed within the canopy of this mid-age deciduous forest include white ash, basswood, and lesser amounts of white elm. The sub-canopy is dominated by basswood with equal amounts of bitternut hickory, and sugar maple. The shrub layer consists of choke cherry, white ash and basswood, and the herbaceous layer is comprised of poison ivy, white avens, and calico aster.	**Birds:** Blue Jay, American Goldfinch, Downy Woodpecker **Herpetofauna:** Spring Peeper **Mammals:** Gray Squirrel
		4-Oct-11	8-Nov-11	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type		6.1	Mature	The canopy layer of this mature deciduous forest is dominated by basswood with equal amounts of sugar maple, beech and shagbark hickory. The sub-canopy consists of blue beech with equal amounts of sugar maple and American beech and some choke cherry. The shrub layer consists of prickly gooseberry and black raspberry, and the herbaceous layer contains running strawberry bush, false solomon's seal, yellow avens and Virginia waterleaf.	**Birds:** Wild Turkey, American Crow, Blue Jay, American Goldfinch, Downy Woodpecker **Herpetofauna:** Spring Peeper **Mammals:** White-tailed Deer, Gray Squirrel
216	23.9	7-Sep-11		CUW1d	Black Walnut Mineral Cultural Woodland Type		0.5	Mid-age	The canopy layer in this mid-age cultural woodland is dominated by black walnut, white ash and white pine.	**Herpetofauna:** Wood Frog **Mammals:** White-tailed Deer **Odonata:** Common Green Darner
		7-Sep-11		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		2.3	Mid-age	The canopy layer of this mid-age deciduous forest is dominated by green ash and white ash. The sub-canopy layer consists of green ash, pin cherry and staghorn sumac. The shrub layer is dominated by grey dogwood. The ground cover layer is mainly comprised of giant ragweed, Canada goldenrod and alternate-leaved dogwood.	**Herpetofauna:** Wood Frog **Mammals:** White-tailed Deer **Odonata:** Common Green Darner

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		7-Sep-11	13-Dec-11	FOD9-2	Fresh - Moist Oak - Maple Deciduous Forest Type	SWT2: Mineral Thicket Swamp Ecosite CUM1-1: Dry - Moist Old Field Meadow Type	13.2	Mature	The canopy layer of this mature deciduous forest consists of bur oak, shagbark hickory and green ash. The sub-canopy consists of equal amounts of bur oak and shagbark hickory with lesser amounts of green ash and white elm. The shrub layer consists of bitternut hickory and basswood with equal amounts of green ash and bur oak, while the herbaceous layer consists of graceful sedge, avens species and choke cherry.	**Birds:** Wild Turkey, Gray Catbird, White-breasted Nuthatch, Tundra or Trumpeter Swan (fly over) **Lepidoptera:** Monarch **Mammals:** Eastern Cottontail, White-tailed Deer
217	1.3	30-Apr-12		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		1.2	Mid-age	The canopy layer of this mid-age forest is dominated by green ash with fewer white elm, ironwood and basswood. The sub-canopy is mainly hawthorn species with fewer red maple and less white elm. Species within the shrub layer consist mainly of choke cherry with fewer red maple. The ground cover consists of yellow trout lily, white trillium, garlic mustard and spotted geranium.	**Birds:** Red-winged Blackbird, Downy Woodpecker **Mammals:** Coyote, Red Fox
220	1.1	26-Apr-12	18-May-12	CUM1-1	Dry - Moist Old Field Meadow Type Surveyed from roadside		1.1	Pioneer	The canopy layer within this pioneer meadow consists of Norway spruce and red pine. There is no sub-canopy or shrub layer. The ground cover consists mainly of smooth brome grass with some reed canary grass.	**Birds:** Turkey Vulture, American Crow, American Robin, Red-winged Blackbird
225	3.7	9-Nov-11	17-Apr-12	FOD9d	Fresh - Moist Shagbark Hickory - Green Ash Deciduous Forest Type		0.8	Mid-age	Canopy species recorded in this mid-age deciduous forest include equal amounts of shagbark hickory, and green ash while sub-canopy species include equal amounts of sugar maple, hawthorn, white elm and green ash. The herbaceous layer includes running strawberry bush, sedge species and white avens.	**Birds:** Black-capped Chickadee, Mourning Dove, Eastern Phoebe, Song Sparrow, Red-winged Blackbird, Yellow-bellied Sapsucker, Red-tailed Hawk, Northern Flicker **Crustaceans:** Chimney Crayfish
		13-Jul-11	9-Nov-11 17-Apr-12	SWD2-2	Green Ash Mineral Deciduous Swamp Type	MAM2-2: Reed-canary Grass Mineral Meadow Marsh Type	1.6	Mid-age	The canopy layer of this mid-age deciduous swamp is dominated by green ash.	**Birds:** Black-capped Chickadee, Mourning Dove, Eastern Phoebe, Song Sparrow, Red-winged Blackbird, Yellow-bellied Sapsucker, Red-tailed Hawk, Northern Flicker **Crustaceans:** Chimney Crayfish
227	28.9	18-May-12		CUM1-1	Dry - Moist Old Field Meadow Type		4.9	Young	The canopy layer of this young meadow is mainly basswood with less sugar maple and green ash. The sub-canopy layer is mainly black walnut with less white spruce. The shrub layer is mainly red-osier dogwood and nannyberry. The ground cover consists mainly of Kentucky bluegrass with fewer orchard grass and less reed canary grass.	**Birds:** Red-winged Blackbird, Song Sparrow, Brown Thrasher, Eastern Kingbird, American Goldfinch, Warbling Vireo, Turkey Vulture, Brown-headed Cowbird, American Robin, Willow Flycatcher, Tree Swallow, Horned Lark, Yellow-bellied Sapsucker, Blue Jay **Lepidoptera:** Cabbage White
229	4.3	20-Jul-11	13-Oct-11 9-Nov-11 24-Apr-12	FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type Surveyed from fence line	FOD4b: Dry - Fresh Basswood - White Elm - Bitternut Hickory - White Ash Deciduous Forest Type	4.3	Mature	The canopy of this mature deciduous forest consists of equal amounts of sugar maple and basswood with lesser amounts of white ash and American beech. The sub-canopy consists of sugar maple, ironwood and American beech. The shrub layer consists of sugar maple with some choke cherry, while the herbaceous layer consists of white avens, zigzag goldenrod and calico aster. The inclusion is a hedgerow wherein the canopy layer is dominated by basswood with equal amounts of white elm, bitternut hickory, and white ash. The sub-canopy consists of grey dogwood, white elm and common apple. Species observed within the shrub layer include red raspberry, and the herbaceous layer includes garlic mustard, white avens and tall white aster.	**Birds:** Song Sparrow, American Goldfinch, American Robin, Red-winged Blackbird, Brown-headed Cowbird, American Pipit, American Goldfinch, Northern Flicker, Blue Jay, White-crowned Sparrow **Lepidoptera:** Monarch **Mammals:** Coyote
232	118.0	14-Oct-11	8-Nov-11	FOD4c	Dry - Fresh White Ash - Paper Birch Deciduous Forest Type	FOD5-1: Dry - Fresh Sugar Maple Deciduous Forest Type FOM6-1: Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type FOD4-2: Dry - Fresh White Cedar - Poplar Deciduous Forest Type	1.2	Mid-age	Species observed within the canopy of this mid-age deciduous forest include white ash, paper birch, sugar maple, and basswood. The sub-canopy consists of equal amounts of basswood and sugar maple. The shrub layer is dominated by sugar maple, spicebush, and blackberry while dominant species in the herbaceous layer include running strawberry bush and violet species.	**Birds:** Red-tailed Hawk, American Crow, White-throated Sparrow, White-crowned Sparrow, Blue Jay, Hairy Woodpecker, Song Sparrow, White-breasted Nuthatch, Mourning Dove **Mammals:** Eastern Chipmunk, Raccoon

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		15-Sep-11		CUP3-2	White Pine Coniferous Plantation Type		1.3	Mid-age to mature	The canopy and sub-canopy of this mid-age to mature coniferous plantation is dominated by white pine with some deciduous regeneration including white ash and sugar maple. Species observed within the shrub layer include white ash and sugar maple. The herbaceous layer consists of poison ivy, herb-robert, garlic mustard and calico aster.	**Birds:** Red-tailed Hawk, American Crow, White-throated Sparrow, White-crowned Sparrow, Blue Jay, Hairy Woodpecker, Song Sparrow, White-breasted Nuthatch, Mourning Dove, Black-capped Chickadee **Mammals:** Eastern Chipmunk, Raccoon
		15-Sep-11		FOD3-1	Dry - Fresh Poplar Deciduous Forest Type Surveyed from fence line		1.8	Mid-age	Dominant species within the canopy of this mid-age deciduous forest include white ash, trembling aspen, cottonwood and sugar maple. The sub-canopy consists of hawthorn, white ash, witch hazel and blue beech. The sparse shrub layer contains black currant, while the herbaceous layer consists of running strawberry bush, Canada may flower, fowl manna grass and jack-in-the-pulpit.	**Birds:** White-breasted Nuthatch, Black-capped Chickadee
		14-Oct-11		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	3.4	Mid-age	The canopy of this mid-age deciduous forest is dominated by green ash with lesser amounts of basswood and white elm, while the sub-canopy consists of sugar maple and blue beech. Dominant species observed within the shrub layer are multiflora rose, grey dogwood, immature sugar maple, and red raspberry. The herbaceous layer includes species such as white avens, herb robert, running strawberry bush, Virginia strawberry and graceful sedge. The community had evidence of selective logging and was somewhat disturbed. A Swamp Maple Deciduous Swamp (SWD3-3) inclusion was found within the community as well as a drainage ditch.	**Birds:** Red-tailed Hawk, American Crow, White-throated Sparrow, White-crowned Sparrow, Blue Jay, Hairy Woodpecker, Song Sparrow, White-breasted Nuthatch, Mourning Dove **Mammals:** Eastern Chipmunk, Raccoon
		14-Oct-11		FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type		7.9	Mid-age	The canopy species of this mid-age deciduous forest include white ash and sugar maple with some paper birch. The sub-canopy is dominated by sugar maple. Shrub layer species observed include spicebush, black cherry and sugar maple, while the herbaceous layer consists of running strawberry bush and creeping partridge berry.	**Birds:** Red-tailed Hawk, American Crow, White-throated Sparrow, White-crowned Sparrow, Blue Jay, Hairy Woodpecker, Song Sparrow, White-breasted Nuthatch, Mourning Dove **Mammals:** Eastern Chipmunk, Raccoon
		25-Apr-12		FOD5-5	Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type Surveyed from fence line		4.1	Mid-age	The canopy within this mid-age forest is mainly shagbark hickory with fewer sugar maple. The sub-canopy layer is dominated by sugar maple. Species within the shrub layer consist of nannyberry and choke cherry. The ground cover consists of running strawberry bush with fewer yellow trout lily.	**Birds:** Northern Flicker, Red-winged Blackbird, Downy Woodpecker, Red-bellied Woodpecker, Wood Thrush **Lepidoptera:** Cabbage White, Red Admiral **Herpetofauna:** Eastern Garter Snake
235	1.6	7-Nov-11	19-Apr-12	FOD9c	Fresh - Moist Bitternut Hickory - Basswood Deciduous Forest Type		0.8	Mid-age	This is a small mid-age woodland with evidence of edge effects. Dominant species observed within the canopy of this mid-age deciduous forest include basswood, bitternut hickory and equal amounts of white elm and green ash. The sub-canopy species include equal amounts of white elm and ironwood. Species observed within the herbaceous layer include poison ivy, tall white aster and some zigzag goldenrod.	**Birds:** American Crow, Red-winged Blackbird, Brown-headed Cowbird, White-breasted Nuthatch, Downy Woodpecker, Northern Flicker, Mallard, Song Sparrow **Mammals:** White-tailed Deer **Herpetofauna:** Spring Peeper **Lepidoptera:** Clouded Sulphur, Orange Sulphur, Red Admiral, Cabbage White, Eastern Comma, **Odonates:** Common Green Darner
		7-Nov-11	19-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		0.7	Mid-age	This mid-age community is located in the southern portion of the feature and is dominated by freeman's maple with some green ash. There is evidence of seasonal flooding, likely brief in duration.	**Birds:** American Crow, Red-winged Blackbird, Brown-headed Cowbird, White-breasted Nuthatch, Downy Woodpecker, Northern Flicker, Mallard, Song Sparrow **Mammals:** White-tailed Deer **Herpetofauna:** Spring Peeper **Lepidoptera:** Clouded Sulphur, Orange Sulphur, Red Admiral, Cabbage White, Eastern Comma, **Odonates:** Common Green Darner
236	30.6	13-Oct-11	18-Apr-12 4-July-12	FOM6-2	Fresh - Moist Hemlock - Hardwood Mixed Deciduous Forest Type		0.6	Mid-age	The canopy layer within this mid-age forest consists of Basswood, White Ash, Shagbark Hickory and Red Oak. The sub-canopy layer consists of Ironwood, Sugar Maple and Bitternut Hickory. The shrub layer consists mainly of Blue Beech with less Bitternut Hickory, Shagbark Hickory and Sugar Maple. The ground cover consists of Spotted Geranium, Virginia Strawberry, Poison Ivy and Running Strawberry Bush.	**Birds:** Red-eyed Vireo, Eastern Wood-pewee, White-breasted Nuthatch

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		13-Oct-11	18-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type (north of Turbine 36)		0.6	Mid-age	This mid-age swamp community is dominated by freeman's maple.	**Birds:** Black-capped Chickadee, Song Sparrow, American Robin, Red-bellied Woodpecker, Blue Jay, Northern Flicker, White-crowned Sparrow, Swamp Sparrow, American Crow, Killdeer **Herpetofauna:** Spring Peeper, Green Frog, Eastern Newt **Mammals:** White-tailed Deer
		9-Nov-11	18-Apr-12 19-Apr-12	FOD9b	Fresh - Moist Shagbark Hickory - White Ash - Beech Deciduous Forest Type (east of Turbine 37)		0.9	Mid-age	The canopy of this mid-age forest community is dominated by white ash and shagbark hickory with lesser amounts of white ash, red oak and American beech. The sub-canopy consists of ironwood and sugar maple.	**Birds:** Song Sparrow, American Crow, Blue Jay, Black-capped Chickadee, Downy Woodpecker, American Goldfinch, Snow Bunting, Rusty Blackbird, Red-winged Blackbird, American Tree Sparrow, Dark-eyed Junco, White-breasted Nuthatch, Turkey Vulture, Belted Kingfisher, Northern Flicker, Blue Jay **Mammals:** White-tailed Deer, Gray Squirrel, Eastern Cottontail **Lepidoptera:** Red Admiral, Cabbage White, Grey Comma **Herpetofauna:** Spring Peeper
		9-Nov-11	18-Apr-12 19-Apr-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		1.2	Mid-age	This mid-age deciduous forest is dominated by green ash.	**Birds:** White-breasted Nuthatch, Turkey Vulture, Downy Woodpecker, Black-capped Chickadee, Belted Kingfisher, Northern Flicker, Blue Jay **Mammals:** White-tailed Deer, Gray Squirrel **Lepidoptera:** Red Admiral, Cabbage White, Grey Comma
		9-Nov-11	18-Apr-12 19-Apr-12	FOD9b	Fresh - Moist Shagbark Hickory - White Ash - Beech Deciduous Forest Type (northeast of Turbine 37)	SWD2-2: Green Ash Mineral Deciduous Swamp Type	1.5	Mid-age	The canopy within this mid-age forest consists of shagbark hickory, bur oak, and white ash. The sub-canopy consists of sugar maple and white elm. The ground cover consists of sedge species and white avens.	**Birds:** White-breasted Nuthatch, Turkey Vulture, Downy Woodpecker, Black-capped Chickadee, Belted Kingfisher, Northern Flicker, Blue Jay **Mammals:** White-tailed Deer, Gray Squirrel **Lepidoptera:** Red Admiral, Cabbage White, Grey Comma
		13-Oct-11	18-Apr-12	FOD4-2	Dry - Fresh White Ash Deciduous Forest Type		1.7	Mid-age to mature	This mid-age to mature deciduous forest community is dominated by white ash with small amounts of American beech, sugar maple and ironwood. The sub-canopy contains equal amounts of sugar maple and ironwood. The shrub layer consist of American beech and ironwood while the ground cover is dominated by Canada goldenrod, radiate sedge, zig zag goldenrod and white avens.	**Birds:** Black-capped Chickadee, American Robin, Red-bellied Woodpecker, Northern Flicker, White-crowned Sparrow, Swamp Sparrow, American Crow, Killdeer, Song Sparrow, Turkey Vulture, Blue Jay, Wild Turkey, Eastern Common, Mourning Dove **Mammals:** White-tailed Deer, Raccoon **Lepidoptera:** Cabbage White, Red Admiral **Herpetofauna:** Spring Peeper
		9-Nov-11	18-Apr-12 19-Apr-12	SWD2-2	Green Ash Mineral Deciduous Swamp Type (east of Turbine 37)		2.1	Mid-age	This mid-age deciduous swamp is dominated by green ash.	**Birds:** American Woodcock, American Crow, American Pipit, Killdeer, American Robin, White-breasted Nuthatch, Turkey Vulture, Downy Woodpecker, Black-capped Chickadee, Belted Kingfisher, Northern Flicker, Blue Jay **Mammals:** White-tailed Deer, Gray Squirrel **Lepidoptera:** Red Admiral, Cabbage White, Clouded Sulphur, Grey Comma **Herpetofauna:** Green Frog, Eastern Newt, Spring Peeper
		21-Sep-11	13-Oct-11 18-Apr-12 19-Apr-12	FOD9-4	Fresh - Moist Shagbark Hickory Deciduous Forest Type (east of Turbine 37) Surveyed from fence line		4.2	Mid-age	The canopy of this mid-age deciduous forest was dominated by shagbark hickory with lesser amounts of green ash and basswood. The sub-canopy is dominated by blue beech, ironwood and basswood while the herbaceous layer was comprised of running strawberry bush, immature green ash and immature shagbark hickory.	**Birds:** American Woodcock, Blue Jay, American Crow, American Pipit, Killdeer, American Robin, White-breasted Nuthatch, Turkey Vulture, Downy Woodpecker, Black-capped Chickadee, Belted Kingfisher, Northern Flicker **Lepidoptera:** Clouded Sulphur, Cabbage White, Red Admiral, Grey Comma **Herpetofauna:** Green Frog, Eastern Newt, Spring Peeper **Mammals:** White-tailed Deer, Gray Squirrel
		13-Oct-11	9-Nov-11	CUT1h	Green Ash Mineral Cultural Thicket Type	MAM2-2: Reed Canary Grass Mineral Meadow Marsh OAO: Open Aquatic CUM1-1: Dry - Moist Old Field Meadow Type	1.4	Young	This young regenerating cultural thicket is dominated by green ash. The sub-canopy consists of green ash with lesser amounts of hawthorn. Other species observed include tall goldenrod, aster species and Kentucky bluegrass. The meadow marsh inclusion is dominated by reed canary grass with a small pond.	**Birds:** American Woodcock, Blue Jay, American Crow, American Pipit, Killdeer, American Robin **Lepidoptera:** Clouded Sulphur, Cabbage White **Herpetofauna**: Green Frog, Eastern Newt, Spring Peeper **Mammals:** White-tailed Deer

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		13-Oct-11	18-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type (northeast of Turbine 36)		0.8	Mature	This mature swamp is dominated by Freeman's maple with less shagbark hickory and black ash. The sub-canopy consists of Freeman's maple and white elm. The ground layer consists of fowl manna grass. This area exhibits evidence of seasonal flooding.	**Birds:** Song Sparrow, Turkey Vulture, Black-capped Chickadee, Blue Jay, American Robin, Wild Turkey, Mourning Dove **Mammals:** White-tailed Deer, Raccoon **Lepidoptera:** Cabbage White, Red Admiral, Eastern Comma
		13-Oct-11	18-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type (southeast of Turbine 36)		1.4	Mid-age	The canopy layer in this mid-age swamp community consists of freeman's maple. Other species observed include shagbark hickory, black ash and white elm. The area exhibits evidence of seasonal flooding.	**Birds:** Song Sparrow, American Robin, Red-bellied Woodpecker, Northern Flicker, White-crowned Sparrow, Swamp Sparrow, American Crow, Killdeer, Song Sparrow, Turkey Vulture, Black-capped Chickadee, Blue Jay, Wild Turkey, Mourning Dove **Lepidoptera:** Cabbage White, Red Admiral, Eastern Comma **Herpetofauna:** Spring Peeper, Green Frog, Eastern Newt **Mammals:** White-tailed Deer, Gray Squirrel
		13-Oct-11	18-Apr-12	FOD9-4	Fresh - Moist Shagbark Hickory Deciduous Forest Type (southeast of Turbine 36)	SWD2a: Shagbark Hickory - Green Ash Deciduous Swamp Type MAM2-2: Reed-canary Grass Mineral Meadow Marsh Type	3.0	Mid-age	The canopy layer of this mid-age deciduous forest is dominated by shagbark hickory with small amounts of white elm within the sub-canopy. The shrub layer is dominated by shagbark hickory, while the herbaceous layer consists of herb-robert, running strawberry bush, tall white aster, immature white ash and garlic mustard.	**Birds:** Song Sparrow, Turkey Vulture, Blacked-capped Chickadee, Blue Jay, American Robin, Wild Turkey, Eastern Common, Mourning Dove **Mammals:** White-tailed Deer, Raccoon **Lepidoptera:** Cabbage White, Red Admiral
		21-Sep-11	18-Apr-12 19-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type (southeast of Turbine 37)		3.7	Mid-age	The canopy of this mid-age deciduous swamp is dominated by freeman's maple with lesser amounts of shagbark hickory. The sub-canopy is comprised of white elm and freeman's maple with lesser amounts of green ash. Dominant species observed within the herbaceous layer include hop sedge, fowl manna grass, rice cut grass and dwarf raspberry. Seasonal ponding was found throughout and the swamp appears to contain good amphibian breeding habitat.	**Birds:** Turkey Vulture, Downy Woodpecker, Black-capped Chickadee, Belted Kingfisher, Northern Flicker, Blue Jay, American Crow, White-Breasted Nuthatch, Common Yellowthroat, Eastern Wood-pewee, Hairy Woodpecker, **Herpetofauna:** Spring Peeper **Lepidoptera:** Monarch, Red Admiral, Cabbage White, Grey Comma **Mammals:** White-tailed Deer, Gray Squirrel **Odonata:** Common Green Darner
		13-Oct-11	18-Apr-12 4-July-12	FOD9b	Fresh - Moist Shagbark Hickory - White Ash - Beech Deciduous Forest Type (northeast of Turbine 36)	SAS1-3: Stonewort Submerged Shallow Aquatic Type	6.0	Mid-age	This mid-age deciduous forest has no clear dominant species observed within the canopy. Species observed include shagbark hickory, white ash, red oak and American beech. There is a small pond located at the edge of the forest. Water depth in the pond was approximately 1 m at the time of investigation although there had been recent rain.	**Birds:** Song Sparrow, Turkey Vulture, Black-capped Chickadee, Blue Jay, American Robin, Wild Turkey, Mourning Dove **Mammals:** White-tailed Deer, Raccoon **Herpetofauna**: Green Frog (abundant tadpoles) **Lepidoptera:** Cabbage White, Red Admiral, Eastern Comma
240	0.7	13-Dec-11	24-Apr-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type Surveyed from fence line		0.7	Mid-age	This mid-age deciduous forest is dominated by green ash with lesser amounts of bur oak, sugar maple and basswood. The sub-canopy is dominated by green ash. The shrub layer is dominated by choke cherry. There is no ground cover layer.	**Birds:** American Robin, Northern Flicker, Red-winged Blackbird, Brown-headed Cowbird
242	3.7	24-Apr-12		FOD6-1	Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type		3.7	Mature	The canopy layer within this mature forest is dominated by sugar maple with fewer green ash, white elm and basswood. The sub-canopy layer consists of bitternut hickory, sugar maple and green ash. Species within the shrub layer consist of choke cherry and sugar maple. The ground cover consists of spotted geranium, yellow trout lily, garlic mustard and toothwort.	**Birds:** Song Sparrow, American Robin, Savannah Sparrow, Vesper Sparrow, Blue Jay, American Goldfinch, Indigo Bunting, Eastern Wood-pewee, Gray Catbird, Northern Flicker, Downy Woodpecker, Hairy Woodpecker, Red-bellied Woodpecker, Red-winged Blackbird, Field Sparrow, Northern Cardinal **Herpetofauna:** Spring Peeper **Mammals:** Coyote, Mink, Raccoon, Gray Squirrel, White-tailed Deer
244	8.7	27-Apr-12		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type Surveyed from fence line		8.1	Mid-age	The canopy layer within this mid-age forest is dominated by sugar maple with fewer basswood and less white ash and shagbark hickory. The sub-canopy is dominated by sugar maple. Species within the shrub layer consist of white elm with less choke cherry. The ground cover consists of yellow trout lily with less spotted geranium.	**Birds:** Turkey Vulture, Brown Thrasher, Hairy Woodpecker, Yellow-bellied Sapsucker, Vesper Sparrow, White-breasted Nuthatch, Downy Woodpecker, Northern Flicker, Blue Jay, House Wren, American Crow, Brown-headed Cowbird
		27-Apr-12		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		0.6	Mid-age	The canopy cover within this mid-age swamp community is dominated by Freeman's maple with fewer green ash. The sub-canopy is dominated by Freeman's maple with fewer green ash. The shrub layer is dominated by white elm with fewer nannyberry. The ground cover consists of sedge species, with fewer reed canary grass.	**Birds:** Turkey Vulture, Brown Thrasher, Hairy Woodpecker, Yellow-bellied Sapsucker, Vesper Sparrow, White-breasted Nuthatch, Downy Woodpecker, Northern Flicker, Blue Jay, House Wren, American Crow, Brown-headed Cowbird

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
245	6.9	4-Oct-11	23-Apr-12	FOD6-4	Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type		2.0	Mid-age	The canopy layer within this mid-age deciduous forest consists of sugar maple and white elm with lesser amounts of basswood and shagbark hickory. The sub-canopy consists of white elm, sugar maple, white ash and blue beech. The shrub layer includes white ash, sugar maple, calico aster and blue beech. Species found within the herbaceous layer consist of running strawberry bush, position ivy, white ash and avens species.	**Birds:** Cedar Waxwing, Song Sparrow, Turkey Vulture, Killdeer, Eastern Phoebe, Black-capped Chickadee, Vesper Sparrow, Red-winged Blackbird, Song Sparrow, American Robin, Red-tailed Hawk, Blue Jay, Downy Woodpecker, Brown-headed Cowbird **Lepidoptera:** Red Admiral **Mammals:** Raccoon, White-tailed Deer
	6.9	23-Apr-12		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type		2.0	Mid-age	The canopy layer within this mid-age forest is mainly sugar maple with fewer white elm, less white ash and less bitternut hickory. The sub-canopy is dominated by sugar maple. The shrub layer is dominated by choke cherry with fewer sugar maple. The ground cover consists of spotted geranium, yellow trout lily, white trillium, and map apple.	**Birds:** Song sparrow, Turkey Vulture, Killdeer, Eastern Phoebe, Black-capped Chickadee, Vesper Sparrow, Red-winged Blackbird, Song Sparrow, American Robin, Red-Tailed Hawk, Blue Jay, Downey Woodpecker, Brown-headed Cowbird **Lepidoptera:** Red Admiral **Mammals:** Raccoon, White-tailed Deer
		8-Sep-11	9-Nov-11 23-Apr-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type CUP1c: Black Walnut - Red Oak Deciduous Plantation Type FOD5b: Dry - Fresh Sugar Maple - White Ash - Basswood Deciduous Forest Type FOD7e: Fresh - Moist Green Ash - White Elm Deciduous Forest Type SWD4a: Swamp Maple - Green Ash Deciduous Swamp Type	3.0	Mature	This mature community is a mosaic of deciduous forest and deciduous swamp communities. The canopy cover is dominated by green ash and freeman's maple with lesser amounts of bur oak and basswood. The sub-canopy layer consists of white elm. The shrub layer is dominated by choke cherry. The ground cover layer was mainly comprised of graceful sedge, tall white aster, running strawberry bush and herb-robert. Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) inclusions were found throughout. The canopy layer within the mid-age CUP1c inclusion consists of equal amounts of red oak and black walnut with lesser amounts of bur oak. The sub-canopy consists of equal amounts of sugar maple, basswood and white elm. Calico aster and sedge species were found within the herbaceous layer. The red oak and black walnut were likely planted as they are evenly aged however are not in rows and appear natural. The canopy within the mature FOD5b inclusion includes equal amounts of white ash and basswood with lesser amounts of sugar maple. The sub-canopy consists of equal amounts of sugar maple, basswood and white elm. The shrub layer consist of equal amounts of choke cherry and sugar maple. The canopy layer within the mid-age FOD7e inclusion is mainly green ash with fewer white elm. The sub-canopy layer is mainly white elm with less basswood and less sugar maple. There is no shrub layer. The ground cover consists of sedge species. The canopy within the mature SWD4a inclusion consists of equal amounts of Freeman's maple and green ash. The sub-canopy consists of equal amounts of freeman's maple and white elm.	**Birds:** Eastern Wood-pewee, White-breasted Nuthatch, House Wren, Red-eyed Vireo, American Goldfinch, American Robin, Song Sparrow, Turkey Vulture, Killdeer, Eastern Phoebe, Black-capped Chickadee, Vesper Sparrow, Red-winged Blackbird, Red-tailed Hawk, Blue Jay, Downy Woodpecker, Brown-headed Cowbird **Lepidoptera:** Red Admiral **Mammals:** Raccoon, White-tailed Deer
249	7.8	4-Jul-12		SWD2-2	Green Ash Deciduous Mineral Swamp Type Surveyed from fence line		0.6	Mid-age	The canopy within this mid-age swamp consists mainly of green ash with fewer white elm. The sub-canopy layer consists mainly of green ash with fewer white elm. There is no shrub layer. The ground cover consists of reed canary grass.	**Birds:** Red-winged Blackbird **Herpetofauna:** Green Frog
		27-Apr-12		OAO	Open Aquatic Surveyed from fence line		0.1	Mid-age	This is an open pond surrounded by a small treed area.	**Birds:** Horned Lark, Killdeer, Song Sparrow
250	10.6	10-Aug-11	18-May-12	FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type	CUM1-1: Dry - Moist Old Field Meadow Type	10.6	Young to Mid-age	This young to mid-age deciduous forest is dominated by sugar maple with lesser amounts of white elm, white ash and American beech. The sub-canopy is dominated by sugar maple. The shrub layer is dominated by sugar maple with less amounts of choke cherry. The ground cover consists of a violet species and yellow trout lily.	**Birds**: Turkey Vulture, Red-winged Blackbird, Song Sparrow, Blue Jay, Rose-breasted Grosbeak, Chipping Sparrow, American Crow, American Goldfinch, Yellow Warbler **Mammals:** White-tailed Deer **Herpetofauna:** Spring Peeper, Eastern Garter Snake

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
251	2.0	14-Oct-11		FOD5-7	Dry - Fresh Sugar Maple-Black Cherry Deciduous Forest Type		0.7	Mid-age	The canopy layer of this mid-age deciduous forest includes sugar maple and black cherry. The sub-canopy is dominated by sugar maple, while the shrub layer is dominated by red raspberry. The herbaceous layer consists of running strawberry bush and graceful sedge.	**Birds:** Northern Flicker, Red-bellied Woodpecker, Blue Jay, American Crow, Dark-eyed Junco, American Pipit
		14-Oct-11		FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type	FOD4-1: Dry - Fresh Beech Deciduous Forest Type	1.0	Mature	The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of bitternut hickory. The sub-canopy is dominated by sugar maple. The herbaceous layer consisted of running strawberry bush and garlic mustard. Dominant species observed within the canopy of the mature FOD4-1 inclusion include American beech, basswood, white ash and sugar maple. The sub-canopy includes sugar maple and iron wood. The shrub layer is dominated by American beech, and the herbaceous species observed include zig zag goldenrod and poison ivy.	**Birds:** Northern Flicker, Red-bellied Woodpecker, Blue Jay, American Crow, Dark-eyed Junco, American Pipit
255	138.5	9-May-12		FOM5-2	Dry - Fresh Poplar Mixed Forest Type Surveyed from roadside	CUM1-1: Dry - Moist Old Field Meadow Type OAO: Open Aquatic	36.9	Young	The canopy layer within this young forest community consists of trembling aspen and scots pine. The sub-canopy consists of trembling aspen and scots pine. The shrub layer is mainly nannyberry and gray dogwood. The ground cover consists of grasses.	**Birds:** Common Yellowthroat, Rose-breasted Grosbeak, Red-winged Blackbird, Black-capped Chickadee, American Crow, Horned Lark, Field Sparrow, Savannah Sparrow, Canada Goose, Northern Flicker, Wood Thrush, Brown-headed Cowbird, Blue Jay, Blue-winged Warbler, Chipping Sparrow, Ruby-throated Hummingbird, Baltimore Oriole, American Goldfinch **Lepidoptera:** Red Admiral **Mammals:** Gray Squirrel **Herpetofauna:** Spring Peeper
258	194.5	29-Nov-11	1-May-12	CUM1-1	Dry - Moist Old Field Meadow Type	CUP3: Coniferous Plantation Ecosite SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	0.5	Pioneer to Young	There is no canopy or sub-canopy within this pioneer to young meadow. The shrub layer consists of red-osier dogwood with fewer black raspberry and less nannyberry. The ground cover consists of tall goldenrod with fewer reed canary grass and less Canada blue grass. There is no canopy layer within the young to mid-age coniferous plantation inclusion. The sub-canopy consists of white spruce and scots pine. The shrub layer consists of white spruce and scots pine. The ground cover is dominated by common dandelion. The canopy within the mid-age swamp inclusion is dominated by Freeman's maple with less green ash. The sub-canopy layer is dominated by Freeman's maple. Species within the shrub layer consist of red-osier dogwood, choke cherry and common buckthorn. The ground cover is long-stalked sedge.	**Birds:** Field Sparrow, Turkey Vulture, Red-tailed Hawk, American Robin, Horn Lark, Song Sparrow, Mourning Dove, American Goldfinch, Brown-headed Cowbird, Black-capped Chickadee, Northern Flicker, White-throated Sparrow, Savannah Sparrow, American Crow, Chipping Sparrow
		21-Sep-11	25-Apr-12	FOD7-1	Fresh - Moist White Elm Lowland Deciduous Forest Type		8.7	Mature	The canopy layer of this mature deciduous forest is dominated by white elm with lesser amounts of white ash and basswood. Species observed within the sub-canopy consist of white ash, sugar maple and hawthorn. The herbaceous layer consists of garlic mustard, calico aster, wild black currant, poison ivy, running strawberry bush, yellow avens and wood nettle.	**Birds:** Pileated Woodpecker, American Robin, Killdeer, Blue Jay, Downy Woodpecker, Black-capped Chickadee, Yellow-bellied Sapsucker, Red-winged Blackbird, Brown-headed Cowbird, American Goldfinch **Herpetofauna:** Green Frog, Wood Frog **Mammals:** Eastern Chipmunk, White-tailed Deer **Lepidoptera:** Red Admiral, Cabbage White **Crustaceans:** Chimney Crayfish
		19-Jul-11	21-Sept-11 25-Apr-12	FOD9-4	Fresh - Moist Shagbark Hickory Deciduous Forest Type	SWD2-2: Green Ash Mineral Deciduous Swamp Type SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	82.7	Young to Mid-age	The canopy layer of this young to mid-age deciduous forest is dominated by sugar maple, shagbark hickory and white ash. The sub-canopy layer consists of sugar maple, bitternut hickory, blue beech and ironwood. The shrub layer is dominated by alternate-leaved dogwood, calico aster, swamp red currant, blackberry and northern lady fern. The herbaceous layer consists of sedge, blue violet, garlic mustard, common speedwell, poison ivy, drooping wood sedge and star-flowered solomon's seal. Portions of this community were young with lots of pole size trees. There is a stream located along the edge of the forest where there is a more disturbed open canopy.	**Birds:** Pileated Woodpecker, American Robin, Killdeer, Blue Jay, Downy Woodpecker, Black-capped Chickadee, Yellow-bellied Sapsucker, Red-winged Blackbird, Brown-headed Cowbird, American Goldfinch **Herpetofauna:** Green Frog, Wood Frog **Mammals:** Eastern Chipmunk, White-tailed Deer **Lepidoptera:** Red Admiral, Cabbage White **Crustaceans:** Chimney Crayfish

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
259	19.6	9-Sep-11		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type (north of Turbine 21)		0.5	Young	The canopy layer in this young deciduous forest is dominated by green ash with lesser amounts of shagbark hickory. The sub-canopy layer consists of green ash, white elm and hawthorn species. The herbaceous layer was mainly comprised of tall goldenrod, poison-ivy, white avens, graceful sedge, and Virginia strawberry.	**Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage White, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk
		9-Sep-11		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type (southwest of Turbine 66)		0.7	Young to Mid-age	The canopy layer of this young to mid-age deciduous forest is dominated by green ash with lesser amounts of trembling aspen. The sub-canopy layer consists of green ash and hawthorn species. The herbaceous layer was mainly comprised of enchanter's nightshade and tall white aster.	**Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage Looper, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk
		9-Sep-11		SWD2-2	Green Ash Mineral Deciduous Swamp Type		1.5	Mid-age	The canopy within this mid-age swamp consists of green ash with lesser amounts of shagbark hickory. The sub-canopy consists of green ash and white elm. The ground cover consists of fowl manna grass, sedge species and panicled aster.	**Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage White, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk
		9-Sep-11		FOD9-4	Fresh - Moist Shagbark Hickory Deciduous Forest Type	FOD7-2: Fresh - Moist Ash Lowland Deciduous Forest Type	1.9	Mid-age	The canopy of this mid-age deciduous forest is dominated by shagbark hickory with lesser amounts of bur oak. The sub-canopy layer consists of shagbark hickory, white elm, sugar maple and blue beech. The shrub layer is dominated by blue beech, choke cherry and green ash. The herbaceous layer was mainly comprised of Virginia strawberry, sedge species and running strawberry bush. Open canopy is present (50-60%) from selective cutting within past two years.	**Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage White, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk
		9-Sep-11		SWD4a	Swamp Maple - Green Ash Deciduous Swamp Type	FOD7-2: Fresh - Moist Ash Lowland Deciduous Forest Type	3.6	Mid-age	The canopy layer of this mid-age deciduous swamp is co-dominated by freeman's maple and green ash. The sub-canopy layer consists of white elm and freeman's maple. The shrub layer is dominated by white elm. The herbaceous layer was mainly comprised of sedge species, fowl meadow grass and tall white aster. There is a broken canopy (60% cover) from selective cutting. There is also strong evidence of seasonal flooding, although no water was present at the time of site investigation. There may be suitable amphibian breeding habitat.	**Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage White, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk **Hemiptera:** Annual Cicada
		9-Sep-11		FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type		4.7	Mature	The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of American basswood and white ash. The sub-canopy layer consists of sugar maple, blue beech, American basswood and shagbark hickory. The shrub layer is dominated by sugar maple with lesser amounts of choke cherry. The herbaceous layer is mainly comprised of running strawberry bush, zigzag goldenrod, sedge species, and calico aster.	**Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage White, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
261	9.9	7-Jun-12		FOD9a	Fresh - Moist Bitternut Hickory - Basswood - Ironwood - Bur Oak Deciduous Forest Type		0.8	Mid-age	The canopy of this mid-age forest consists of bitternut hickory, American basswood, ironwood and bur oak. The sub-canopy consists of bitternut hickory, shagbark hickory, sugar maple and green ash. The shrub layer consists of choke cherry and blue beech. The ground cover consists of climbing poison ivy, spotted geranium, tall goldenrod, and white avens.	**Birds:** Blue Jay, House Wren, American Crow, White-breasted Nuthatch, Great Crested Flycatcher, Baltimore Oriole, Eastern Wood-pewee
		30-Apr-12	7-Jun-12 29-Jun-12	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type Surveyed from fence line	SWD2-2: Green Ash Mineral Deciduous Swamp Type SWD4: Mineral Deciduous Swamp Ecosite SWD2-2: Green Ash Mineral Deciduous Swamp Type SWT2-9: Gray Dogwood Mineral Thicket Swamp Type	9.1	Mid-age	The canopy layer of this mid-age forest consists of sugar maple, white elm, ironwood, and American beech. The sub-canopy consists of sugar maple and ironwood. The shrub layer consists mainly of choke cherry with less blue beech, sugar maple, American beech and ironwood. The ground cover consists mainly of white trillium, with fewer yellow trout lily, less may apple and less Virginia water leaf. The canopy within the mid-age SWT2-9 inclusion consists of cottonwood, green ash and hybrid crack willow. The sub-canopy consists of green ash, white elm and American beech. The shrub layer consists of green ash with gray dogwood. The ground layer consists of wood nettle, calico aster and reed canary grass.	**Birds:** Downy Woodpecker, Northern Flicker, Blue Jay, Red-winged Blackbird, Horned Lark, Blue Jay, House Wren, American Crow, White-breasted Nuthatch, Great Crested Flycatcher, Baltimore Oriole, Eastern Wood-pewee **Mammals:** Red Fox
266	114.4	3-May-12		SWT2a	Russian Olive – Sandbar Willow – Gray Dogwood Mineral Thicket Swamp	CUP1c: Black Walnut - Red Oak Deciduous Plantation Type	0.8	Mid-age	The canopy of this mid-age swamp consists of green ash and Freeman's maple. There is no sub-canopy. The shrub layer consists of autumn olive, sandbar willow, and gray dogwood. The groundcover is dominated by reed canary grass with fewer common dandelion, sedge species, and clover.	**Birds:** Mallard, American Woodcock, Chipping Sparrow, Mourning Dove, Black-capped Chickadee, Eastern Wood-pewee, Ruffed Grouse, Downy Woodpecker, Blue Jay, Brown-headed Cowbird, Great Blue Heron, American Goldfinch **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** Wood Frog, American Toad **Mammals:** White-tailed Deer **Herpetofauna:** Eastern Garter Snake
		24-Apr-12		OAO	Open Aquatic		0.4	Mid-age	This is an open pond surrounded by a small treed area.	**Herpetofauna:** Spring Peeper
		3-May-12		CUP1b	Bur Oak Deciduous Plantation Type	SWT2a: Russian Olive – Sandbar Willow – Gray Dogwood Mineral Thicket Swamp	2.5	Mid-age	The canopy of this mid-age plantation is dominated by bur oak with less green ash. The sub-canopy layer consists of green ash and sugar maple. The shrub layer consists of mainly green ash with fewer tartarian honeysuckle and less autumn olive. The ground cover consists of common dandelion.	**Birds:** Mallard, American Woodcock, Chipping Sparrow, Mourning Dove, Black-capped Chickadee, Eastern Wood-pewee, Ruffed Grouse, Downy Woodpecker, Blue Jay, Brown-headed Cowbird, Great Blue Heron, American Goldfinch **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** Wood Frog, American Toad **Mammals:** White-tailed Deer **Herpetofauna:** Eastern Garter Snake
		7-Sep-11	24-Apr-12	CUP3-2	White Pine Coniferous Plantation Type Surveyed from roadside	CUM1-1: Dry - Moist Old Field Meadow Type CUT: Cultural Thicket	5.0	Young to Mid-age	The canopy layer of this young to mid-age coniferous plantation is dominated by eastern white pine with lesser amounts of white spruce. The cultural meadow inclusion is dominated by tall goldenrod, goldenrod species, wild carrot, and reed canary grass.	**Birds:** Great Blue Heron (fly over) **Herpetofauna:** Northern Leopard Frog **Mammals:** Red Fox
		3-May-12		CUP1a	Eastern Cottonwood Deciduous Plantation Type	CUP3e: White Pine - Red Pine - Norway Spruce - White Spruce Coniferous Plantation Type CUP1-7: Green Ash Deciduous Plantation Type	5.2	Mid-age	The canopy of this mid-age plantation is mainly eastern cottonwood with fewer basswood and much less white elm and shagbark hickory. The sub-canopy is dominated by green ash. The shrub layer is mainly green ash with fewer choke cherry and less tartarian honeysuckle. The ground cover consists of common dandelion, garlic mustard, wild strawberry, and graceful sedge. The canopy layer within the mid-age CUP3e inclusions consists of eastern white pine, red pine, Norway spruce, and white spruce. The sub-canopy layer consists of green ash. The shrub layer consists mainly of green ash with fewer choke cherry and less tartarian honeysuckle. The ground cover consists of common dandelion, garlic mustard, herb-robert and wild strawberry.	**Birds:** Mallard, American Woodcock, Chipping Sparrow, Mourning Dove, Black-capped Chickadee, Eastern Wood-pewee, Ruffed Grouse, Downy Woodpecker, Blue Jay, Brown-headed Cowbird, Great Blue Heron, American Goldfinch **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** Wood Frog, American Toad **Mammals:** White-tailed Deer **Herpetofauna:** Eastern Garter Snake

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		7-Sep-11	24-Apr-12	FOD4a	Dry - Fresh White Ash - Paper Birch - Cottonwood - White Cedar Deciduous Forest Type Surveyed from roadside		8.1	Young to Mid-age	The canopy layer of this young to mid-age deciduous forest consists of large-toothed aspen, white ash, sugar maple, paper birch, cottonwood and white cedar. The shrub layer is dominated by grey dogwood and sugar maple with fewer Freeman's maple and less large-toothed aspen, and the herbaceous layer includes goldenrod species, white trillium, yellow trout lily, common dandelion and aster species.	**Birds:** Great Blue Heron (fly over) **Herpetofauna:** Northern Leopard Frog **Mammals:** Red Fox
		n/a		SWM	Mixed Swamp Community Series		12.8	Unknown	This community was identified through air photo interpretation.	Not applicable.
267	5.1	14-Oct-11		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		5.1	Mid-age	Species observed within the canopy of this narrow band of mid-age deciduous forest include green ash with lesser amounts of white elm, bur oak, and shagbark hickory.	**Birds:** Red-tailed Hawk, American Robin, Blue Jay **Herpetofauna:** Spring Peeper **Mammals:** Gray Squirrel
269	3.7	18-Apr-12		FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type		2.0	Mature	The canopy layer within the mature forest consists mainly of sugar maple and American beech with fewer basswood and ironwood. The sub-canopy is comprised of equal amounts of sugar maple, American beech, and ironwood. Species found within the shrub layer include mainly blue beech with some choke cherry and less American beech. The ground cover is comprised of yellow trout lily, running strawberry bush, white trillium and spotted geranium. An abundance of downed woody debris was noted.	**Birds:** Downy Woodpecker, Gray Catbird, American Robin, Red-winged Blackbird, Song Sparrow, Black-capped Chickadee, Northern Flicker **Mammals:** White-tailed Deer **Lepidoptera:** Red Admiral
		18-Apr-12		SWD2-2	Green Ash Mineral Deciduous Swamp Type	FOD5-2: Dry - Fresh Sugar Maple - Beech Deciduous Forest Type	1.7	Mature	The canopy layer within this mature forest community consists mainly of green ash with a moderate amount Freeman's maple and fewer eastern cottonwood. The sub-canopy and shrub layers are comprised of Freeman's maple. The ground cover is comprised of mainly sedge species.	**Birds:** Downy Woodpecker, Gray Catbird, American Robin, Red-winged Blackbird, Song Sparrow, Black-capped Chickadee, Northern Flicker **Mammals:** White-tailed Deer **Lepidoptera:** Red Admiral
271	6.6	26-Apr-12		FOD6-4	Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type	CUM1-1: Dry - Moist Old Field Meadow Type	6.6	Mid-age	The canopy within this mid-age forest is mainly sugar maple with fewer white elm. The sub-canopy is dominated by sugar maple with less white elm. The shrub layer is mainly choke cherry with less white elm. The ground cover consists of yellow trout lily, spotted geranium and garlic mustard.	**Birds:** Yellow-bellied Sapsucker, Turkey Vulture
273	0.9	2-May-12		FOD8-1	Fresh - Moist Poplar Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	0.9	Young	The canopy within this young forest is dominated by trembling aspen with less basswood, white elm, and green ash. The sub-canopy consists of mainly white elm, with fewer blue beech, less Freeman's maple, and even less basswood. The shrub layer consists of chock cherry, blue beech, and wild black currant. The ground cover consists of false solomon's seal, garlic mustard, common dandelion, and goldenrod species.	**Birds:** American Robin, Red-winged Blackbird, Blue Jay, Song Sparrow, Brown-headed Cowbird **Lepidoptera:** Red Admiral, Cabbage White **Mammals:** White-tailed Deer
274	3.1	2-May-12		MAM3-2	Reed-canary Grass Organic Meadow Marsh Type Surveyed from roadside		0.5	Young	There is no canopy or sub-canopy within this young meadow marsh. The shrub layer is dominated by sandbar willow with less red-osier dogwood. The ground cover is dominated by reed canary grass with fewer goldenrod species and less aster species.	**Birds:** Red-winged Blackbird, American Robin, Blue Jay **Lepidoptera:** Cabbage White, Red Admiral
		2-May-12		SWD6-3	Swamp Maple Organic Deciduous Swamp Type Surveyed from roadside		2.6	Mid-age	The canopy within this mid-age swamp is dominated by Freeman's maple with fewer green ash and less basswood. There is no sub-canopy layer. The shrub layer consists of gray dogwood. There was no ground cover layer.	**Birds:** Red-winged Blackbird, American Robin, Blue Jay **Lepidoptera:** Cabbage White, Red Admiral
275	8.1	8-May-12		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type Surveyed from fence line		5.9	Mid-age	The canopy layer within this mid-age forest is mainly sugar maple with less basswood, American beech and white ash. The sub-canopy layer is mainly sugar maple with less basswood, American beech and white ash. The shrub layer is mainly blue beech with less choke cherry, shagbark hickory, and white ash. The ground cover consists of mainly spotted geranium, yellow trout lily, wild strawberry and false solomon's seal.	**Birds:** Song Sparrow, Savannah Sparrow, Rose-breasted Grosbeak, Canada Goose, Brown-headed Cowbird, Blue Jay, Mallard
		8-May-12		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		1.5	Mid-age to Mature	The canopy layer within this mid-age to mature forest is dominated by Freeman's maple with fewer green ash and less white elm. The sub-canopy layer is mainly white elm with less Freeman's maple and green ash. The shrub layer is dominated by green ash with fewer white elm and less Freeman's maple. The ground cover consists of moneywort, spotted geranium, and poison ivy.	**Birds:** Song Sparrow, Savannah Sparrow, Rose-breasted Grosbeak, Canada Goose, Brown-headed Cowbird, Blue Jay, Mallard

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
279	7.0	2-May-12		MAM3-2	Reed-canary Grass Organic Meadow Marsh Type Surveyed from roadside		0.8	Young	There is no canopy, sub-canopy or shrub layer within this young meadow marsh. The ground cover consists of mainly reed canary grass with fewer goldenrod species and aster species.	**Birds:** Song Sparrow, Killdeer, Red-winged Blackbird, Brown-headed Cowbird, Blue Jay, Northern Flicker, Rose-breasted Grosbeak **Lepidoptera:** Red Admiral **Herpetofauna:** Northern Leopard Frog **Mammals:** White-tailed Deer
		2-May-12		SWD6-3	Swamp Maple Organic Deciduous Swamp Type Surveyed from roadside		6.2	Mid-age	The canopy layer within this mid-age swamp is dominated by Freeman's maple with fewer green ash, less white elm, and even less eastern cottonwood. The sub-canopy layer is dominated by Freeman's maple with fewer green ash. The shrub layer consists of choke cherry and Freeman's maple. The ground cover consists of garlic mustard, spotted jewelweed, buttercup species, and violet species.	**Birds:** Song Sparrow, Killdeer, Red-winged Blackbird, Brown-headed Cowbird, Blue Jay, Northern Flicker, Rose-breasted Grosbeak **Lepidoptera:** Red Admiral **Herpetofauna:** Northern Leopard Frog **Mammals:** White-tailed Deer
280	90.3	21-Sep-11	24-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		1.3	Mid-age to Mature	This mid-age to mature deciduous swamp community is dominated by freeman's maple, green ash, paper birch and black ash. The sub-canopy is comprised of freeman's maple, blue beech, white elm and green ash, while spicebush dominates the shrub layer with fewer white elm. Herbaceous species recorded include wild lily-of-the-valley, sensitive fern, moonseed and tall white aster. Seasonal flooding is evident.	**Birds:** Common Grackle, Wild Turkey, American Crow, Blue Jay, Black-capped Chickadee, Northern Flicker, Hairy Woodpecker, American Robin, Great Blue Heron (fly over), Yellow-rumped Warbler, Red-eyed Vireo, White-breasted Nuthatch, Red-winged Blackbird, Turkey Vulture **Lepidoptera:** Clouded Sulphur, Cabbage White **Herpetofauna:** Spring Peeper, Wood Frog, Eastern Red-backed Salamander **Mammals:** White-tailed Deer, Eastern Chipmunk, Raccoon, Gray Squirrel
		24-Apr-12		CUP3-2	White Pine Coniferous Plantation Type		1.0	Mid-age	The canopy within this mid-age plantation is dominated by eastern white pine. The sub-canopy is dominated by white elm. The shrub layer is dominated by black raspberry. The ground cover is dominated by running strawberry bush.	**Birds:** American Crow, Downy Woodpecker, Northern Flicker, Turkey Vulture
		24-Apr-12		CUP3-1	Red Pine Coniferous Plantation Type		1.2	Young to Mid-age	The canopy layer within this young to mid-age plantation is dominated by red pine with less eastern white pine. The sub-canopy is dominated by white elm. There was no shrub layer or ground cover layer.	**Birds:** Turkey Vulture, Black-capped Chickadee
		24-Apr-12		FOD6-1	Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type (east of Turbine 23)	CUM1-1: Dry - Moist Old Field Meadow Type	1.3	Mid-age	The canopy layer within this mid-age forest consists of sugar maple, green ash, and white elm. The sub-canopy is mainly green ash with less white elm. The shrub layer is mainly choke cherry with fewer white elm and less spicebush. The ground cover consists mainly of yellow trout lily and star flowered solomon. The sub-canopy of the cultural meadow inclusion is dominated by trembling aspen. The shrub layer is mainly red-osier dogwood with less willow species. The ground cover consists mainly of grasses, with some tall goldenrod and garlic mustard.	**Birds:** Turkey Vulture, Black-capped Chickadee
		24-Apr-12		FOD6-1	Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type (southwest of Turbine 22)	FOD4d: Dry - Fresh Trembling Aspen Deciduous Forest Type	1.5	Mid-age	The canopy within this mid-age forest is mainly sugar maple with fewer white ash. The sub-canopy is similar. The shrub layer consists mainly of choke cherry and white elm with less nannyberry and less spicebush. The ground cover is mainly yellow trout lily with wood anemone. The canopy layer within the young forest inclusion consists mainly of trembling aspen with fewer green ash and much less white birch and eastern hemlock. The sub-canopy is mainly green ash with some trembling aspen. The shrub layer is mainly white elm with less nannyberry. The ground cover consists of wild black currant and wild strawberry.	**Birds:** American Crow, Downy Woodpecker, Northern Flicker, Turkey Vulture
		21-Sep-11	24-Apr-12	SWD4b	Green Ash - Trembling Aspen Mineral Deciduous Swamp Type (northeast corner of property)		4.3	Mid-age	This is a seasonally flooded mid-age deciduous swamp is co-dominated by green ash and trembling aspen in the canopy. Blue beech dominates the sub-canopy with lesser amounts of white elm, while the shrub layer is dominated by spicebush. The herbaceous layer is comprised of sensitive fern, sedges and dwarf raspberry. Evidence of seasonal flooding was noted however no water was present at the time of site investigation.	**Birds:** Common Grackle, Wild Turkey, American Crow, Blue Jay, Black-capped Chickadee, Northern Flicker, Hairy Woodpecker, American Robin, Great Blue Heron (fly over), Yellow-rumped Warbler, Red-eyed Vireo, White-breasted Nuthatch, Red-winged Blackbird, Turkey Vulture **Lepidoptera:** Clouded Sulphur, Cabbage White **Herpetofauna:** Spring Peeper, Wood Frog, Eastern Red-backed Salamander **Mammals:** White-tailed Deer, Eastern Chipmunk, Raccoon, Gray Squirrel

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		24-Apr-12		FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type		56.0	Mid-age to Mature	The canopy layer within this mid-age to mature forest consists of sugar maple, white ash, American beech, basswood and large tooth aspen. The sub-canopy is dominated by American beech with lesser amounts of sugar maple and white ash. The sub-canopy is mainly sugar maple with less white ash. The shrub layer includes white elm, American beech, maple-leaved viburnum, choke cherry and spicebush. The ground cover consists of yellow trout lily, star flowered solomon, sedges, white trillium and partridge-berry.	**Birds:** Common Grackle, Wild Turkey, American Crow, Blue Jay, Black-capped Chickadee, Northern Flicker, Hairy Woodpecker, American Robin, Great Blue Heron (fly over), Yellow-rumped Warbler, Red-eyed Vireo, White-breasted Nuthatch, Red-winged Blackbird, Turkey Vulture **Lepidoptera:** Clouded Sulphur, Cabbage White **Herpetofauna:** Spring Peeper, Wood Frog, Eastern Red-backed Salamander **Mammals:** White-tailed Deer, Eastern Chipmunk, Raccoon, Gray Squirrel
		24-Apr-12		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		3	Mid-age	The canopy within this mid-age forest is dominated by green ash with fewer eastern cottonwood and less Freeman's maple. The sub-canopy is mainly green ash with fewer Freeman's maple and less white elm. The shrub layer is mainly white ash with fewer nannyberry and less spicebush. The ground cover is mainly white avens and wild black currant.	**Birds:** American Crow, Downy Woodpecker, Northern Flicker, Turkey Vulture
		21-Sep-11	24-Apr-12	FOD4e	Dry - Fresh Large-tooth Aspen Deciduous Forest Type (east of Turbine 22)	SWD2-2: Green Ash Mineral Deciduous Swamp Type	3.5	Mid-age	The canopy of this mid-age forest is mainly large-tooth aspen with fewer green ash and much less white birch and less basswood. The sub-canopy layer is mainly green ash with less trembling aspen. The shrub layer consists of white elm with fewer nannyberry and less spicebush. The ground cover consists of mainly yellow trout lily with fewer wild black currant and less wild strawberry. The inclusions are mid-age green ash deciduous swamps with evidence of extensive flooding occurring up to 50 cm in depth.	**Birds:** Common Grackle, Wild Turkey, American Crow, Blue Jay, Black-capped Chickadee, Northern Flicker, Hairy Woodpecker, American Robin, Great Blue Heron (fly over), Yellow-rumped Warbler, Red-eyed Vireo, White-breasted Nuthatch, Red-winged Blackbird, Blue Jay, Black-capped Chickadee, American Crow, Turkey Vulture **Lepidoptera:** Clouded Sulphur, Cabbage White **Herpetofauna:** Spring Peeper, Wood Frog, Eastern Red-backed Salamander **Mammals:** Eastern Chipmunk, Raccoon, White-tailed Deer, Gray Squirrel
282	22.3	25-Apr-12		SWD2-2	Green Ash Mineral Deciduous Swamp Type		2.1	Mid-age	The canopy layer within this mid-age swamp is mainly green ash with less Freeman's maple. The sub-canopy is dominated by green ash. The shrub layer is mainly Freeman's maple with less white elm. The ground cover is dominated by dotted sedge.	**Birds:** Song Sparrow, Turkey Vulture, Red-bellied Woodpecker, Downy Woodpecker, Yellow-bellied Sapsucker, American Crow, Red-winged Blackbird, White-throated Sparrow, American Robin, Ruby-crowned Kinglet, Common Grackle **Lepidoptera:** Cabbage White, Red Admiral
		25-Apr-12		CUM1-1	Dry - Moist Old Field Meadow Type	FOD6-4: Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type	1.6	Pioneer	The canopy layer within this pioneer meadow is dominated by trembling aspen. There is no sub-canopy layer. The shrub layer is dominated by staghorn sumac. The ground cover is dominated by reed canary grass.	**Birds:** Song Sparrow, Turkey Vulture, Red-bellied Woodpecker, Downy Woodpecker, Yellow-bellied Sapsucker, American Crow, Red-winged Blackbird, White-throated Sparrow, American Robin, Ruby-crowned Kinglet, Common Grackle **Lepidoptera:** Cabbage White, Red Admiral
		25-Apr-12		FOD6-4	Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type		12.5	Mid-age	The canopy layer within this mid-age forest is dominated by sugar maple with fewer white ash and less white elm. The sub-canopy is mainly sugar maple with less white elm. The shrub layer is mainly choke cherry with less nannyberry. The ground cover is mainly yellow trout lily with some white trillium.	**Birds:** Song Sparrow, Turkey Vulture, Red-bellied Woodpecker, Downy Woodpecker, Yellow-bellied Sapsucker, American Crow, Red-winged Blackbird, White-throated Sparrow, American Robin, Ruby-crowned Kinglet, Common Grackle **Lepidoptera:** Cabbage White, Red Admiral
285	5.9	28-Jun-12		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		0.7	Mid-age	The canopy of this mid-age deciduous forest consists of green ash, white elm and trembling aspen. The sub-canopy consists of white elm and green ash. The shrub layer consists of spicebush with lesser amount of green ash. The ground layer consists of thicket creeper, enchanter's nightshade, black raspberry and white avens.	**Birds:** Wild Turkey, Black-capped Chickadee, Mourning Dove, Killdeer, Blue Jay
		28-Jun-12		CUP3-2	White Pine Coniferous Plantation Type	SWD4c: Cottonwood Mineral Deciduous Swamp Type CUM1-1: Dry - Moist Old Field Meadow Type	1.6	Mid-age	The canopy of this mid-age plantation consists of eastern white pine. There is also some planted white spruce and red pine, and some regeneration by green ash and white elm. The sub-canopy is comprised of white spruce. The shrub layer consists of green ash and spicebush. The ground cover consists of poison ivy and thicket creeper.	**Birds:** Wild Turkey, Black-capped Chickadee, Mourning Dove, Killdeer, Blue Jay

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
290	3.5	21-Sep-11	25-Apr-12	FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type		3.5	Mid-age	Co-dominant species observed within the canopy of this mid-age deciduous forest include sugar maple, basswood, white ash, and American beech while the sub-canopy is comprised of sugar maple and American beech. The shrub layer consists of choke cherry, American beech, sugar maple, and white ash. Dominant species recorded within the herbaceous layer include poison ivy, calico aster, running strawberry bush and white avens.	**Birds:** Red-tailed Hawk, Vesper Sparrow, Downy Woodpecker, Black-capped Chickadee, Red-winged Blackbird **Mammals:** White-tailed Deer, Raccoon **Lepidoptera:** Eastern Comma, Red Admiral
291	3.8	7-Nov-11	26-Apr-12	SWD4a	Swamp Maple - Green Ash Deciduous Swamp Type		1.0	Mid-age	Canopy species recorded within this mid-age deciduous swamp were green ash and freeman's maple while sub-canopy species included white elm, green ash and freeman's maple. The shrub layer consists of silky dogwood and freeman's maple and the herbaceous layer consists of fowl manna grass, sedge species and tall white aster. Seasonally flooded, no water present at time of site investigation. Variable canopy openings with evidence of selective cutting of larger swamp maple within last few years.	**Birds:** Hairy Woodpecker, Black-capped Chickadee, Downy Woodpecker, Northern Flicker, Wild Turkey, Red-winged Blackbird, Brown-headed Cowbird, Blue Jay, Killdeer, American Goldfinch **Mammals:** White-tailed Deer, Coyote
		7-Nov-11	26-Apr-12	FOD8-1	Fresh - Moist Poplar Deciduous Forest Type		2.9	Mid-age	Species observed within the canopy of this mid-age deciduous forest included trembling aspen and green ash while the sub-canopy consists of common buckthorn, white elm and green ash. Shrub layer species recorded include common buckthorn and choke cherry while species recorded within the herbaceous layer include white avens, tall white aster, running strawberry bush and poison ivy. This community has an undulating topography creating small areas of seasonal flooding throughout, with the low areas being swamp and slightly elevated areas forest.	**Birds:** Hairy Woodpecker, Black-capped Chickadee, Downy Woodpecker, Northern Flicker, Wild Turkey, Red-winged Blackbird, Brown-headed Cowbird, Blue Jay, Killdeer, American Goldfinch **Mammals:** White-tailed Deer, Coyote
300	73.1	7-Nov-11	26-Apr-12	CUM1-1	Dry - Moist Old Field Meadow Type		0.7	Young	This is a young cultural meadow community with scattered trees throughout consisting of common apple, white elm, green ash and Russian olive. Dominant species found within the herbaceous layer include awnless brome, orchard grass, Canada goldenrod and Kentucky bluegrass.	**Birds:** Blue Jay, Downy Woodpecker, American Goldfinch, Hairy Woodpecker, Wild Turkey (feather), Red-winged Blackbird, Blue Jay, Northern Flicker **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Meadow Vole
		21-Sep-11		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type (northwest of Turbine 32) Surveyed from roadside		5.6	Mature	The canopy layer of this mature deciduous swamp is dominated by Freeman's maple with a lesser amount of white elm. Other dominant species observed include jewelweed, panicled aster, and orchard grass.	No wildlife observed
		7-Nov-11	26-Apr-12 2-May-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	29.7	Mid-age	The canopy of this mid-age to mature deciduous forest is dominated by green ash with lesser amounts of basswood, Manitoba maple, white elm and Freeman's maple, while the sub-canopy consists of white elm. Spicebush dominates the shrub layer and the herbaceous layer is comprised of wild strawberry, white avens, sandbar willow and garlic mustard. Evidence of recent selective logging was observed.	**Birds:** Blue Jay, Downy Woodpecker, American Goldfinch, Hairy Woodpecker, Wild Turkey (feather), Red-winged Blackbird, Blue Jay, Northern Flicker, Song Sparrow **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Meadow Vole **Lepidoptera:** Red Admiral
		7-Nov-11	26-Apr-12	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type (west of Turbine 32)	FOD6-5: Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type	1.2	Mid-age	The canopy layer species recorded with this mid-age deciduous swamp include freeman's maple with some green ash, while the sub-canopy species recorded include white elm and freeman's maple. The herbaceous layer consists of black nightshade, pale smartweed, and sedge species. Seasonal flooding was apparent and areas in the northeast corner of the swamp had standing water at the time of site investigation. Recent selective cutting of larger maples was evident.	**Birds:** Blue Jay, Downy Woodpecker, American Goldfinch, Hairy Woodpecker, Wild Turkey (feather), Red-winged Blackbird, Northern Flicker **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Meadow Vole

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
309	19.7	3-Oct-11		FOD7-4	Fresh - Moist Black Walnut Lowland Deciduous Forest Type		3.3	Mid-age	The canopy of this mid-age deciduous forest is comprised of black walnut, Freeman's maple, white ash, and white elm. The sub-canopy is dominated by equal amounts of Freeman's maple and white ash with some choke cherry. Herbaceous species recorded within the shrub and herbaceous layers were calico aster, jewelweed, wild black currant, dame's rocket, garlic mustard, avens species, and running strawberry bush.	**Herpetofauna:** Gray Treefrog **Mammals:** Eastern Chipmunk
		3-Oct-11		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		5.4	Mature	The canopy layer of this mature deciduous swamp is dominated by Freeman's maple with lesser amounts of black walnut, white ash, and white elm. The sub-canopy consists of white ash, white elm, Freeman's maple and black walnut. The herbaceous layer is comprised by a variable mix of spotted jewelweed, garlic mustard, stinging nettle, tall meadow rue and running strawberry bush.	**Herpetofauna:** Gray Treefrog **Mammals:** Eastern Chipmunk
321	4.4	20-Jul-11	5-Oct-2011 23-Apr-2012	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	4.3	Mature	This mature deciduous forest is dominated by sugar maple with lesser amounts of beech and white ash. The sub-canopy is also dominated by sugar maple with lesser amounts of white ash, white elm and witch hazel. Species noted within shrub layer include black raspberry, sugar maple, calico aster, and mapleleaf viburnum. The herbaceous layer consisted of poison ivy, sugar maple and bearded shorthusk.	**Birds:** Song Sparrow, Red-winged Blackbird, American Robin, Chipping Sparrow, American Crow, Black-capped Chickadee, Common Grackle, American Goldfinch, Blue Jay, Downy Woodpecker, Wild Turkey **Mammals:** White-tailed Deer, Coyote, Eastern Cottontail, Woodchuck **Herpetofauna:** Spring Peeper, Eastern Garter Snake
326	8.3	22-Sep-11	26-Apr-12	FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type		3.0	Mature	This mature deciduous forest is dominated by basswood with lesser amounts of sugar maple, white ash, and American beech, while the sub-canopy is comprised of equal amounts of blue beech, white ash, and sugar maple. Other species observed in the ground layer include zigzag goldenrod, calico aster, blue cohosh, fowl manna grass, enchanter's nightshade, running strawberry bush, garlic mustard, and herb robert. The forest shows evidence of selective harvesting and appears to have been carefully managed.	**Birds:** Downy Woodpecker, Pileated Woodpecker (excavations), Cedar Waxwing, Red-winged Blackbird **Herpetofauna:** Wood Frog, Gray Treefrog, Spring Peeper
		22-Sep-11	20-Jul-11 26-Apr-12	FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type	CUP3c: Colorado Spruce Coniferous Plantation Type	5.3	Mature	The canopy layer within this mature forest is dominated by sugar maple with some American beech, basswood, and white ash. The sub-canopy is dominated by sugar maple with lesser amounts of white ash, red elderberry and blue beech. The shrub layer is mainly sugar maple with some choke cherry and less ironwood. The ground layer is yellow trout lily with a variety of other species that include yellow violet, calico aster, blue cohosh, zigzag goldenrod, jack-in-the-pulpit, enchanter's nightshade and running strawberry bush. The mid-age coniferous plantation inclusion is dominated by Colorado spruce with some white pine, white spruce, white ash and trembling aspen.	**Birds:** Canada Goose, American Crow, Red-bellied Woodpecker, Song Sparrow, Wood Thrush, Cedar Waxwing, Northern Flicker, American Robin, Indigo Bunting, Blue Jay, Gray Catbird, Baltimore Oriole, Great Crested Flycatcher, House Wren, Downy Woodpecker, Pileated Woodpecker (excavations), Red-winged Blackbird **Herpetofauna:** Wood Frog, Gray Treefrog, Spring Peeper
331	5.9	4-Jul-12		FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type Surveyed from fence line		5.3	Mid-age	The canopy layer within this mid-age forest consists of sugar maple and American beech. The sub-canopy layer consists of sugar maple and American beech. The shrub layer consists of blue beech, sugar maple and American beech. The ground cover consists of choke cherry, poison ivy, sugar maple and enchanters nightshade.	**Birds:** Red-tailed Hawk
339	13.0	7-Sep-11	8-Nov-11	SWD3-3	Swamp Maple Mineral Deciduous Swamp Type Surveyed from fence line	MAS2-2: Bulrush Mineral Shallow Marsh Type	0.6	Mid-age	This is a complex of deciduous swamp and marsh communities. The canopy of this mid-age deciduous swamp is dominated by freeman's maple with lesser amounts of green ash and trembling aspen. The sub-canopy layer consists of black ash and green ash. The ground layer is dominated by common reed, bulrush species and sedge species.	**Birds:** Eastern Wood-pewee, Mourning Dove, American Goldfinch, White-breasted Nuthatch, Cooper's Hawk, Downy Woodpecker, Wild turkey (feather), Blue Jay, Snow Bunting **Herpetofauna:** Spring Peeper

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		7-Sep-11	8-Nov-11	FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type Surveyed from fence line		6.2	Mature	The canopy layer of this mature forest is dominated by sugar maple and American beech with lesser amounts of basswood and white ash. The sub-canopy layer consists of American beech and sugar maple. The shrub layer is dominated by choke cherry. The herbaceous layer is mainly comprised of woodland strawberry, choke cherry, tall white aster and zigzag goldenrod. This forest exhibits evidence of selective cutting within the past few years.	**Birds:** Eastern Wood-pewee, Mourning Dove, American Goldfinch, White-breasted Nuthatch, Cooper's Hawk, Downy Woodpecker, Wild Turkey (feather), Blue Jay, Snow Bunting **Herpetofauna:** Spring Peeper
342	2.8	16-Aug-11		FOD5-5	Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type		2.8	Mature	The canopy layer of this mature deciduous forest is comprised of sugar maple, shagbark hickory, white ash, and American beech while the sub-canopy consists of sugar maple, white ash, shagbark hickory, and basswood. The shrub layer is dominated by sugar maple with lesser amounts of shagbark hickory and basswood. Species observed within the herbaceous layer include jack-in-the-pulpit, sugar maple, enchanter's nightshade and zigzag goldenrod.	**Birds:** Red-tailed Hawk (vocalization pair, agitated), Wild Turkey (feathers), Eastern Wood-pewee, White-breasted Nuthatch
346	1.2	12-Dec-11	3-Jul-12	FOD4g	Dry - Fresh Green Ash Deciduous Forest Type	CUP3-2: White Pine Coniferous Plantation Type CUM1-1: Dry - Moist Old Field Meadow Type	1.2	Mid-age	The canopy within this mid-age deciduous forest consists mainly of green ash with fewer white birch and white elm. The sub-canopy consists of green ash, white elm and white birch. The shrub layer consists mainly of spice bush with fewer green ash and witch hazel. The ground cover consists of wild red raspberry, enchanter's nightshade, thicket-creeper, poison ivy and yellow avens. The mid-age plantation inclusion consists of eastern white pine. The shrub layer consists of ash species. The ground cover consists of ash species. The canopy layer within the meadow inclusion consists mainly of green ash with fewer black walnut. There is no sub-canopy or shrub layer. The ground cover consists of reed canary grass.	**Birds:** Great Crested Flycatcher, Blue Jay, Song Sparrow, House Wren, Black-capped Chickadee
349	2.6	12-Dec-11	3-Jul-12	FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type		1.6	Mid-age	The canopy and sub-canopy of this mid-age deciduous forest was dominated by green ash with lesser amounts of white elm. The shrub layer was dominated by spice bush and common buckthorn. The ground cover was mainly yellow avens, poison ivy, and wild red raspberry.	**Birds:** Great Crested Flycatcher, Blue Jay, Song Sparrow, House Wren, Black-capped Chickadee
352	7.2	16-Aug-11		FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type Surveyed from fence line		7.2	Mature	The canopy of this mature deciduous forest is dominated by sugar maple and American beech with lesser amounts of white ash and basswood. The sub-canopy is dominated by sugar maple and with ash with lesser amounts of basswood and ironwood. The shrub layer consists of sugar maple with equal amounts of American beech and white ash and lesser amounts of choke cherry. Herbaceous layer species include immature white ash, immature sugar maple, jack-in-the-pulpit and enchanter's nightshade.	**Birds:** Great Crested Flycatcher, Cedar Waxwing, American Robin, Eastern Wood-pewee, Pileated Woodpecker, Yellow-throated Vireo **Lepidoptera:** Red-spotted Purple, Monarch
358	4.5	7-Sep-11 9-Nov-11		FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type Surveyed from fence line	MAM2-10: Forb Mineral Meadow Marsh Type	4.5	Mature	The canopy layer of this mature deciduous forest is dominated by American beech, sugar maple, ironwood and white ash. The sub-canopy layer consists of sugar maple and American beech. The shrub layer is dominated by American beech and white ash, while the herbaceous layer was mainly comprised of zigzag goldenrod, ironwood, poison ivy, tall white aster and wild leek. This meadow marsh inclusion is located along an intermittent channel within the deciduous forest potion of the feature. The sparse shrub layer consists of common elderberry. The herbaceous layer consists of jewelweed, pale smartweed, goldenrod species and bitterdock.	**Birds:** Wild Turkey, Turkey Vulture, Ruby-throated Hummingbird, American Goldfinch, Eastern Wood-pewee

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
361	2.5	12-Dec-11		CUW1b	Ash - Basswood Mineral Cultural Woodland Type		0.8	Young to Mid-age	The canopy of this young to mid-age deciduous forest is dominated by ash with lesser amounts of basswood. The sub-canopy also consists of ash. The shrub layer consists of winterberry, ash species and poison ivy. The herbaceous layer was dominated by avens species with lesser amounts of calico aster and Canada goldenrod.	**Birds:** Blue Jay, Downy Woodpecker, American Goldfinch
		3-Jul-12 12-Dec-11		FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type Surveyed from roadside and fence line		1.6	Mid-age	The canopy layer within this mid-age deciduous forest consists mainly of green ash with some basswood and Freeman's maple. The sub-canopy layer consists mainly of green ash and white elm. The shrub layer consists of green ash. The ground cover could not be seen.	No wildlife observed
362	2.0	7-Jun-12		FOD8-1	Fresh - Moist Poplar Deciduous Forest Type Surveyed from fence line		1.8	Mid-age	The canopy of this mid-age forest consists of trembling aspen, green ash, white elm and basswood. The sub-canopy consists of green ash, trembling aspen and white elm. The shrub layer consists of alternate-leaved dogwood and wild red raspberry. The ground cover consists of garlic mustard, goldenrod species, aster species and grasses.	**Birds:** Horned Lark, Brown Thrasher, House Wren, Vesper Sparrow, Rose-breasted Grosbeak
364	48.2	8-Sep-11		FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type		3.2	Mature	The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of white ash and American beech. The shrub layer consists of American beech, white ash and common elderberry. The ground layer was mainly comprised of zigzag goldenrod, Pennsylvania sedge, red baneberry, jack-in-the-pulpit and false solomon's seal. This forest exhibits evidence of logging; abundant stumps were present.	**Birds:** Wild Turkey **Herpetofauna:** Wood Frog
369	13.7	23-Sep-11		CUW1e	Sweet Cherry - White Elm Mineral Cultural Woodland Type		1.0	Mid-age	This mid-age cultural woodland is dominated by white elm, basswood and white ash. The sub-canopy is dominated by sweet cherry with lesser amount of white ash and white elm. The shrub and herbaceous layers consist of New England aster, hairy aster, garlic mustard, wild strawberry and poison ivy.	No wildlife observed
370	0.9	11-Jun-12		CUP2a	White Pine - Carolina Poplar Mixed Plantation Type Surveyed from fence line		0.9	Mid-age	The canopy within this mid-age plantation consists of Carolina poplar. The sub canopy consists of eastern white pine, white spruce and red cedar. The shrub layer consists of smooth brome.	No wildlife observed
372	4.0	30-May-11	26-Apr-12	FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type		4.0	Mid-age to Mature	The canopy layer within this mid-age to mature deciduous forest consists of basswood and sugar maple, with some white ash, black cherry and American beech. The sub-canopy is dominated by sugar maple. The shrub layer consists of choke cherry and running strawberry bush with lesser amounts of American beech and white elm. The ground cover consists of toothwort, yellow trout lily, jack-in-the-pulpit, red trillium, false solomon's seal and herb robert.	**Birds:** Red-winged Blackbird, Ruby-crowned Kinglet, Vesper Sparrow **Herpetofauna:** Wood Frog
373	1.7	27-Sep-11		CUM1-1	Dry - Moist Old Field Meadow Type		0.8	Young	This community is located along a dredged stream. The species observed include orchard grass, Canada goldenrod, tall white aster, reed canary grass, and wild carrot.	**Birds:** Black-capped Chickadee, American Goldfinch, Blue Jay, Song Sparrow **Herpetofauna:** American Toad **Lepidoptera:** Monarch, Clouded Sulphur, Eastern Comma, Orange Sulphur
		27-Sep-11		CUW1h	White Elm Mineral Cultural Woodland Type		0.9	Young	Dominant species observed include white elm, basswood, and black cherry within the canopy of this young cultural woodland, and the sub-canopy included apple and basswood. Species recorded within the herbaceous layer include white avens, red raspberry, and tall goldenrod.	**Birds:** Black-capped Chickadee, American Goldfinch, Blue Jay, Song Sparrow **Herpetofauna:** American Toad **Lepidoptera:** Monarch, Clouded Sulphur, Eastern Comma, Orange Sulphur
375	20.6	12-Dec-11		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		1.8	Mid-age	The canopy layer within this mid-age deciduous swamp is dominated by Freeman's maple with some green ash. The sub-canopy consists of Freeman's maple, white elm, and basswood. Species observed within the shrub layer include white elm with equal amounts of green ash, basswood, and choke cherry. The herbaceous layer is comprised of buttonbush, with equal amounts of choke cherry, sensitive fern, and spinulose wood fern.	**Birds:** White-breasted Nuthatch, Black-capped Chickadee, Blue Jay, Hairy Woodpecker, Downy Woodpecker **Mammals:** Eastern Cottontail

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Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		5-Oct-11		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (east of Turbine 4)		2.1	Mid-age	The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of American beech, shagbark hickory and white ash. The sub-canopy consists of blue beech, sugar maple, spicebush and common elderberry. The shrub layer includes zig-zag goldenrod, fowl manna grass, northern lady fern and wild black currant, while the herbaceous layer includes false nettle, false solomon's seal, calico aster and Christmas fern.	**Birds:** Downy Woodpecker, Blue Jay, American Goldfinch, Northern Flicker, American Crow, Black-capped Chickadee, White-breasted Nuthatch **Herpetofauna:** Spring Peeper
		29-Nov-11		FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type		2.2	Mid-age	This mid-age deciduous forest is dominated by sugar maple with lesser amounts of American beech, basswood and poplar species.	No wildlife observed
		5-Oct-11		MAM2a	Missouri Willow Mineral Meadow Marsh Type		2.3	Young	The canopy of this young meadow marsh is dominated by Missouri willow with lesser amounts of Bebb willow. The sub-canopy is dominated by common reed with lesser amounts of broad-leaved cattail and reed canary grass. The lower ground is variable and includes panicled aster, path rush, marsh fern, northern water-horehound, meadow horsetail and others.	No wildlife observed
		5-Oct-11	1-May-12	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (northeast of Turbine 72)		3.0	Mid-age	The canopy layer of this mid-age deciduous forest consists of sugar maple with basswood and white ash, and lesser amounts of American beech. The sub-canopy consists of sugar maple, basswood, American beech, white elm, blue beech, spice bush and choke cherry. The shrub layer consists of sugar maple, calico aster, false solomon's seal, black raspberry and choke cherry, white elm and running strawberry bush, while the herbaceous layer consists of poison ivy, wild leek, yellow trout lily, garlic mustard and white trillium.	**Birds:** Gray Catbird, White-breasted Nuthatch, American Robin **Herpetofauna:** Spring Peeper
		5-Oct-11		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (northwest of Turbine 5)	FOM6-1: Fresh-Moist Sugar Maple - Hemlock Mixed Forest Type	8.8	Mid-age	The canopy of this mid-age deciduous forest is dominated by sugar maple, basswood, white ash, American beech and ironwood. The sub-canopy consists of trembling aspen, blue beech, sweet cherry and silky dogwood. The shrub layer includes calico aster, wild black currant and fly honeysuckle, and the herbaceous layer was dominated by poison ivy with lesser amounts of large bellwort and woodland strawberry.	**Birds:** White-breasted Nuthatch, Black-capped Chickadee, Blue Jay, Hairy Woodpecker, Downy Woodpecker **Herpetofauna:** Spring Peeper **Mammals:** Eastern Cottontail
379	352.7	27-Sep-11	8-Nov-11 24-Apr-12	CUP3-1	Red Pine Coniferous Plantation Type	MAM2-2: Reed-canary Grass Mineral Meadow Marsh Type	6.7	Mature	The canopy layer within this mature plantation is dominated by red pine with fewer eastern white pine, less white spruce and even less white ash. The sub-canopy is mainly white ash with fewer eastern white pine and less white spruce and sweet cherry. The shrub layer is dominated by white ash with fewer choke cherry, common buckthorn and wild red raspberry. The ground cover consists of garlic mustard, herb-robert, bittersweet nightshade, immature white ash, poison ivy and avens species. The meadow marsh inclusion is associated with an intermittent drainage feature. Scattered trees consisting of willow and Manitoba maple were observed throughout with some red-osier dogwood. The community is dominated by reed canary grass.	**Birds:** Blue Jay, American Crow, Northern Flicker, Red-winged Blackbird, Song Sparrow, Downy Woodpecker, Brown-headed Cowbird, Black-capped Chickadee, Warbler Species **Herpetofauna:** Spring Peeper **Mammals:** White-tailed Deer, Raccoon
392	11.8	12-Dec-11		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		0.7	Mid-age	The canopy layer within this mid-age deciduous forest consists of freeman's maple, and green ash, while species within the sub-canopy include freeman's maple, green ash, and poison ivy. The shrub layer consists of equal amounts of freeman's maple and green ash while the ground cover layer is comprised of red-osier dogwood with lesser amounts of poison ivy and sensitive fern.	**Birds:** Mourning Dove, Blue Jay, Black-capped Chickadee, American Crow, White-breasted Nuthatch, American Goldfinch, Yellow-bellied Sapsucker (holes in tree)
		2-Jun-11	15-Aug-11 12-Dec-11 23-Apr-12	FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	8.9	Mid-age	Species observed within the canopy of this mid-age deciduous forest include sugar maple and American beech, with some white ash, basswood and black cherry. The sub-canopy is dominated sugar maple with lesser amounts of American beech, ironwood, and white elm. Species recorded in the shrub layer include white ash, American beech, choke cherry and ironwood, while the herbaceous layer includes large flowered bellwort, thicket creeper, poison ivy, yellow avens, yellow trout lily, basswood, garlic mustard, and common blue violet.	**Birds:** Wood Duck, Song Sparrow, Red-winged Blackbird, Downy Woodpecker, Mourning Dove, Blue Jay, Black-capped Chickadee, American Crow, White-breasted Nuthatch, American Goldfinch, Yellow-bellied Sapsucker (holes in tree) **Herpetofauna:** Wood Frog **Mammals:** Raccoon, White-tailed Deer

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Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
609	49.1	31-May-12		SWD2-2	Green Ash Mineral Deciduous Swamp Type Surveyed from fence line	CUP3: Coniferous Plantation Ecosite SWT2-2: Willow Mineral Thicket Swamp Type	2.3	Mid-age	The canopy layer of this mid-age deciduous swamp community consists of green ash and Freeman's maple. The sub-canopy layer consists of Freeman's maple and green ash. The shrub layer consists of wild red raspberry, Freeman's maple and green ash. The ground cover consists of wood nettle, goldenrod species, spotted jewelweed and blue flag iris.	**Birds:** Baltimore Oriole, Brown-headed Cowbird, Red-winged Blackbird, American Robin, Magnolia Warbler, Song Sparrow, Turkey Vulture, American Godlfinch, Woodpecker Species, Rose-breasted Grosbeak, Eastern Wood-pewee, Great Crested Flycatcher, Chipping Sparrow, White-throated Sparrow **Crustaceans:** Chimney Crayfish **Herpetofauna:** Northern Leopard Frog, Green Frog **Lepidoptera:** Monarch, Cabbage White, Milbert's Tortoiseshell
		31-May-12		SWT2-2	Willow Mineral Thicket Swamp Type Surveyed from fence line	OAO: Open Aquatic SWD2-2: Green Ash Mineral Deciduous Swamp Type	4.3	Mid-age	The canopy within this mid-age thicket swamp community consists of crack willow and green ash. There is no sub-canopy. The shrub layer consists of sandbar willow, alternate-leaved dogwood and red-osier dogwood. The ground cover consists of reed canary grass, wood nettle, spotted jewelweed and goldenrod species.	**Birds:** Baltimore Oriole, Brown-headed Cowbird, Red-winged Blackbird, American Robin, Magnolia Warbler, Song Sparrow, Turkey Vulture, American Godlfinch, Woodpecker Species, Rose-breasted Grosbeak, Eastern Wood-pewee, Great Crested Flycatcher, Chipping Sparrow, White-throated Sparrow **Crustaceans:** Chimney Crayfish **Herpetofauna:** Northern Leopard Frog, Green Frog **Lepidoptera:** Monarch, Cabbage White, Milbert's Tortoiseshell
611	2.7	13-Jun-12	12-Jul-12	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type		2.7	Mid-age	The canopy of this mid-age deciduous forest consists of American basswood, sugar maple and American beech. The sub-canopy consists of American basswood, sugar maple and white elm. The shrub layer consists of choke cherry, blue beech and white ash. The ground layer consists of poison ivy, thicket creeper, avens species and enchanter's nightshade.	**Birds:** Red-tailed Hawk, Song Sparrow, House Wren, Eastern Wood-pewee, Common Grackle, Black-capped Chickadee, American Robin, Northern Flicker **Lepidoptera:** Cabbage White, Orange Sulphur
635	9.3	5-Jun-12		CUM1-1	Dry - Moist Old Field Meadow Type Surveyed from roadside	CUT1j: Hawthorn - Apple - Buckthorn Mineral Cultural Thicket Type	3.1	Young	There is no canopy, sub-canopy, or shrub layer within this young meadow. The ground cover consists of reed canary grass, goldenrod species, aster species and dame's rocket. This young to mid-age thicket contains a tall shrub layer consisting of hawthorns, common apple and common buckthorn. A partial lower shrub layer of smooth rose is present. The ground cover consists of a goldenrod species, aster species and reed canary grass.	**Birds:** Field Sparrow, Song Sparrow, Red-winged Blackbird, Northern Flicker, Common Yellowthroat, Vesper Sparrow, American Robin, Killdeer, Horned Lark
636	25.6	3-May-12		CUM1-1	Dry - Moist Old Field Meadow Type		2.7	Pioneer	This pioneer meadow consists mainly of grasses, with a few bittersweet nightshade and aster species.	**Birds:** Red-winged Blackbird **Mammals:** White-tailed Deer **Lepidoptera:** Eastern Comma, Cabbage White **Herpetofauna:** Green Frog **Crustaceans:** Chimney Crayfish
637	2.7	31-May-12		CUP3a	Scots Pine - White Pine Coniferous Plantation Type		0.6	Young	The canopy of this young plantation consists of a mix of planted scots pine, eastern white pine, black walnut and eastern cottonwood. The shrub layer consists of green ash. The ground cover consists of wild carrot and grasses.	**Birds:** Red-winged Blackbird, Field Sparrow, Black-capped Chickadee, Great Blue Heron, American Robin, Baltimore Oriole, American Goldfinch, Song Sparrow, Red-tailed Hawk, Killdeer **Crustaceans:** Chimney Crayfish **Herpetofauna:** Green Frog **Mammals:** White-tailed Deer
		31-May-12		CUM1-1	Dry - Moist Old Field Meadow Type		1.6	Young	The canopy within this young meadow consists of green ash and crack willow. The shrub layer consists of gray dogwood, hawthorn and common apple. The ground cover consists of goldenrod, reed canary grass, bird's foot trefoil, and wild mint.	**Birds:** Red-winged Blackbird, Field Sparrow, Black-capped Chickadee, Great Blue Heron, American Robin, Baltimore Oriole, American Goldfinch, Song Sparrow, Red-tailed Hawk, Killdeer **Crustaceans:** Chimney Crayfish **Herpetofauna:** Green Frog **Mammals:** White-tailed Deer
648	8.0	5-Jun-12		FOD9a	Fresh - Moist Bitternut Hickory - Basswood - Ironwood - Bur Oak Deciduous Forest Type	FOD8-1: Fresh-Moist Poplar Deciduous Forest Type CUP3: Coniferous Plantation Ecosite	2.8	Mid-age	The canopy within this mid-age forest consists of bitternut hickory, white elm, ironwood and trembling aspen. The sub-canopy consists of bitternut hickory, ironwood, and white elm. The shrub layer consists of English hawthorn, white elm, bitternut hickory and wild red raspberry. The ground layer consists of garlic mustard, yellow avens, thicket creeper and violet species.	**Birds:** Common Yellowthroat, Eastern Wood-pewee, Baltimore Oriole, House Wren, Brown-headed Cowbird, Song Sparrow, Turkey Vulture, Great Crested Flycatcher, American Goldfinch **Mammals:** White-tailed Deer, Raccoon.

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
		5-Jun-12	28-Jun	CUM1-1	Dry - Moist Old Field Meadow Type	CUT1: Mineral Cultural Thicket Ecosite	5.0	Young	The canopy within this meadow consists of green ash and white elm. There is no sub-canopy layer. The shrub layer consists of English hawthorn with equal parts of common apple and common buckthorn. The ground layer consists of reed canary grass, a goldenrod species, an aster species and garlic mustard. The canopy of this young cultural meadow consists of common apple with lesser amounts of white elm. There is no sub-canopy layer. The shrub layer is dominated by English hawthorn. The ground cover consists of reed canary grass.	**Birds:** Common Yellowthroat, Eastern Wood-pewee, Baltimore Oriole, House Wren, Brown-headed cowbird, Song Sparrow, Turkey Vulture, Great Crested Flycatcher, American Goldfinch, Turkey Vulture, Red-winged Blackbird, Killdeer **Mammals:** White-tailed Deer, Raccoon.
661	1.6	5-Jun-12		FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest Type		1.5	Young	The canopy of this young forest is dominated by sugar maple, with some white ash, American basswood and ironwood. The sub-canopy consists of bitternut hickory, American basswood and sugar maple. The shrub layer consists of sugar maple, bitternut hickory, and white ash. The ground cover consists of wild leek, herb robert, yellow avens and white trillium.	**Birds:** American Robin, Red-winged Blackbird, Northern Cardinal, Great Crested Flycatcher, Northern Flicker, Killdeer, European Starling **Herpetofauna:** Spring Peeper, Green Frog
662	4.4	31-May-12		FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type		4.4	Young	The canopy within this young forest consists of basswood and sugar maple, with some red maple and white elm. The sub-canopy consists of sugar maple and basswood. The shrub layer consists of wild red raspberry, white ash and blue beech. The ground cover consists of starry false solomon and spotted geranium.	**Birds:** Baltimore Oriole, Song Sparrow, Great Crested Flycatcher, Eastern Wood-pewee, Brown-headed Cowbird, House Wren
695	5.8	3-May-12		FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type		2.4	Young to Mid-age	The canopy layer within this young to mid-age forest community consists mainly of basswood with less bur oak. The sub-canopy is mainly sugar maple with some white elm. The shrub layer consists of nannyberry, choke cherry, and common buckthorn. The ground cover consists of yellow trout lily, Canada anemone, and spotted geranium.	**Birds:** Red-winged Blackbird, Turkey Vulture, Horned Lark, House Wren, Great Crested Flycatcher, Brown-headed Cowbird, Brown Thrasher, Song Sparrow **Mammals:** Raccoon, White-tailed Deer **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** American Toad
701	14.6	4-Jul-12		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		3.7	Mid-age to Mature	The canopy layer within this mid-age to mature swamp community consists mainly of Freeman's maple with less green ash. The sub-canopy consists of Freeman's maple and green ash. The shrub layer is mainly white elm with fewer blue beech and black ash. The ground cover consists of white avens, spotted geranium and false solomon's seal.	**Birds:** Blue Jay, Gray Catbird, Red-eyed Vireo, Great Crested Flycatcher
		3-May-12	4-Jul-12	FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type		9.6	Mid-age	The canopy within this mid-age forest consists mainly of sugar maple, white ash and American beech. The sub-canopy layer is manly sugar maple with fewer white ash. The shrub layer is mainly sugar maple, American beech and white elm. The ground layer consists mainly of sugar maple, spotted geranium, garlic mustard and false solomon's seal.	**Birds:** Gray Catbird, Red-eyed Vireo, House Wren, Blue Jay, American Robin, Ovenbird, Brown-headed Cowbird, Wood Thrush, Black-capped Chickadee, Great Crested Flycatcher, Song Sparrow, Chipping Sparrow **Lepidoptera:** Monarch
702	8.9	8-May-12		FOD9-1	Fresh - Moist Oak - Sugar Maple Deciduous Forest Type Surveyed from fence line		8.9	Mid-age	The canopy layer within this mid-age forest consist of white oak, sugar maple, basswood, and bitternut hickory. The sub-canopy layer is dominated by sugar maple. The shrub layer consists of common buckthorn and choke cherry. The ground cover consists of spotted geranium, yellow trout lilly, false solomon's seal and white trillium.	**Birds:** Blue Jay, Song Sparrow **Lepidoptera:** Red Admiral, Cabbage White
720	2.7	7-May-12		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type	CUM1-1: Dry - Moist Old Field Meadow Type FOD7f: Fresh - Moist Basswood - White Elm - Freeman's Maple - Green Ash Lowland Deciduous Swamp Type OAO: Open Aquatic	2.7	Young to Mid-age	The canopy layer in this young to mid-age forest community is mainly sugar maple with fewer white elm, white ash and green ash. The sub-canopy consists of sugar maple, white elm, bitternut hickory and ironwood. The shrub layer consists of sugar maple, white ash and green ash. The ground cover consists mainly of garlic mustard with fewer spotted geranium, yellow trout lily and wild strawberry.	**Birds:** Blue Jay, White-breasted Nuthatch, Song Sparrow, Horned Lark, Grosbeak Species, Brown-headed Cowbird, American Robin, Red-winged Blackbird, Hairy Woodpecker, Baltimore Oriole, Red-headed Woodpecker **Lepidoptera:** Red Admiral **Herpetofauna:** Spring Peeper

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
721	4.8	6-Jun-12		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type	SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	1.1	Mid-age	The canopy within this mid-age forest consists of sugar maple, blue beech, ironwood and white ash. The sub canopy consists of sugar maple, blue beech and ironwood. The shrub layer consists of blue beech, white ash and sugar maple. The ground cover consists of yellow avens, poison ivy, spotted geranium and tall meadow-rue.	**Birds:** Song Sparrow, Tree Swallow, Great Crested Flycatcher, Vesper Sparrow, Eastern Wood-pewee, Baltimore Oriole, Rose-breasted Grosbeak **Lepidoptera:** Eastern Comma
		6-Jun-12		FOD7-1	Fresh - Moist White Elm Lowland Deciduous Forest Type		3.7	Mid-age	The canopy within this mid-age forest consists of white elm, green ash, ironwood and basswood. The sub-canopy consists of white elm, basswood and green ash. The shrub layer consists of white elm, basswood and green ash. The ground cover consists of yellow avens, thicket creeper, poison ivy and white avens.	**Birds:** Song Sparrow, Tree Swallow, Great Crested Flycatcher, Vesper Sparrow, Eastern Wood-pewee, Baltimore Oriole, Rose-breasted Grosbeak **Lepidoptera:** Eastern Comma
722	0.7	29-Jun-12		SWD3-3	Swamp Maple Mineral Deciduous Swamp Type		0.7	Mid-age	The canopy of this mid-age swamp consists of Freeman's maple with a lesser amount of white elm. The sub-canopy layer consists of Freeman's maple, white elm and green ash. The shrub layer consists of white elm, green ash, choke cherry, and common buckthorn. The ground cover consists of green ash, enchanter's nightshade and white avens.	**Birds:** Gray Catbird, Field Sparrow, American Crow
723	19.6	6-Jun-12		FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type Surveyed from fence line		18.6	Mid-age	The canopy within this mid-age forest consists of sugar maple, common buckthorn, basswood and white elm. The sub-canopy consists of sugar maple, white ash, basswood and white elm. The shrub layer consists of hawthorn species and alternate-leaved dogwood. The ground cover consists of garlic mustard, goldenrod species, spotted geranium and yellow avens.	**Birds:** Northern Harrier **Lepidoptera:** Monarch, Eastern Tiger Swallowtail **Mammals:** White-tailed Deer
738	9.5	3-Jul-12		CUT1k	Hawthorn Mineral Cultural Thicket Type		0.6	Young	Occasional tall eastern cottonwoods are present in the canopy of this young mineral cultural thicket. The shrub layer consists of hawthorns and common apple. The ground cover consists mainly of yellow avens with some bittersweet nightshade.	**Birds:** Red-winged Blackbird, Eastern Wood-pewee, Blue Jay, Gray Catbird, Song Sparrow **Herpetofauna:** Green Frog **Lepidoptera:** Cabbage White **Odonates:** Ebony Jewelwing
		3-Jul-12		FOD5-6	Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type		0.6	Mid-age	The canopy and sub-canopy layers within this mid-age deciduous forest are dominated by basswood with some sugar maple. The shrub layer is mainly a hawthorn species with fewer choke cherry and gray dogwood. The ground cover consists mainly of yellow avens, common blackberry and wild strawberry.	**Birds:** Red-winged Blackbird, Eastern Wood-pewee, Blue Jay, Gray Catbird, Song Sparrow **Herpetofauna:** Green Frog **Lepidoptera:** Cabbage White **Odonates**: Ebony Jewelwing
		3-Jul-12		SWD4-1	Willow Mineral Deciduous Swamp Type	MAM2-2: Reed-canary Grass Mineral Meadow Marsh Type	1.0	Mid-age	The canopy layer within this mid-age swamp is dominated by hybrid crack willow. There is no sub-canopy layer. The shrub layer is dominated by alternate-leaved dogwood. The ground cover consists of reed-canary grass and spotted jewelweed.	**Birds:** Red-winged Blackbird, Eastern Wood-pewee, Blue Jay, Gray Catbird, Song Sparrow **Herpetofauna:** Green Frog **Lepidoptera:** Cabbage White **Odonates:** Ebony Jewelwing
		3-Jul-12		CUM1-1	Dry - Moist Old Field Meadow Type		1.1	Pioneer	There is no canopy, sub-canopy or shrub layer within this pioneer meadow. The ground cover is mainly tall goldenrod and reed-canary grass.	**Birds:** Red-winged Blackbird, Eastern Wood-pewee, Blue Jay, Gray Catbird, Song Sparrow **Herpetofauna:** Green Frog **Lepidoptera:** Cabbage White **Odonates:** Ebony Jewelwing
		3-Jul-12		FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type		1.6	Mid-age	The canopy layer within this mid-age deciduous forest consists mainly of white ash with fewer sugar maple. The sub-canopy consists of sugar maple. The shrub layer consists mainly of sugar maple, choke cherry and common buckthorn. The ground cover consists mainly of sugar maple, jack-in-the-pulpit.	**Birds:** Red-winged Blackbird, Eastern Wood-pewee, Blue Jay, Gray Catbird, Song Sparrow **Herpetofauna:** Green Frog **Lepidoptera:** Cabbage White **Odonates:** Ebony Jewelwing
739	48.9	3-May-12	5-Jul-12	MAM2-2	Reed-canary Grass Mineral Meadow Marsh Type		2.5	Young	The canopy within this young meadow contains scattered hybrid crack willow. The partial shrub layer contains tartirian honeysuckle and red-osier dogwood. The ground cover is dominated by dense reed canary grass.	**Birds:** Brown-headed Cowbird, Horned Lark, Turkey Vulture, Red-bellied Woodpecker, American Robin, Northern Cardinal **Lepidoptera:** Cabbage White
754	0.3	2-May-12		SWT2b	Grey Dogwood - Red Osier Dogwood - Sandbar Willow Mineral Thicket Swamp Type	SWD4-1: Willow Mineral Deciduous Swamp Type	0.3	Mid-age	The canopy within this mid-age thicket swamp consists of cottonwood with lesser amounts of green ash. There is no sub-canopy. The shrub layer consists of gray dogwood, red-osier dogwood and sandbar willow. The ground cover consists of common dandelion, garlic mustard, an avens species and Virginia strawberry.	**Birds:** Song Sparrow, Killdeer, Red-winged Blackbird, Brown-headed Cowbird, Blue Jay, Northern Flicker, Rose-breasted Grosbeak **Lepidoptera:** Red Admiral **Herpetofauna:** Northern Leopard Frog **Mammals:** White-tailed Deer

Table 3.3 Vegetation Communities Identified in or Within the 120 m Area of Investigation

Natural Area	Total Size of Natural Area (ha)	Date of Site Investigation[3]	Date Re-visited (if applicable)	ELC Code	ELC Name	Inclusions (if applicable)	Area (ha)	Community Age	Vegetation Composition	Incidental Wildlife Observed
756	0.3	n/a		MAS	Shallow Marsh Ecosite		0.3	Unknown	This community was identified through air photo interpretation.	Not applicable.
757	11.7	25-Apr-12		SWD2-2	Green Ash Mineral Deciduous Swamp Type		1.5	Mid-age	The canopy within this mid-age layer consists of green ash with lesser amounts of basswood. The sub-canopy is dominated by green ash. The shrub layer consists of spice bush with lesser amounts of green ash. The ground cover consists largely of green ash seedlings.	**Birds:** Ovenbird, Great Crested Flycatcher, Yellow-throated Vireo, Blue Jay, Black-capped Chickadee, Horned Lark, Song Sparrow, Brown Thrasher, White-breasted Nuthatch, Vesper Sparrow, Brown-headed Cowbird, Red-bellied Woodpecker, Northern Flicker, Hairy Woodpecker, Wood Duck, American Goldfinch, Wild Turkey **Herpetofauna:** Green Frog
		1-Jun-11	25-Apr-12	FOD6-5	Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type		10.1	Mid-age to Mature	The canopy layer of this mid-age to mature deciduous forest is dominated by sugar maple with lesser amounts of blue beech, basswood and ironwood. The shrub layer is dominated by spicebush with some black raspberry, blackberry and prickly gooseberry. The herbaceous layer is dominated by jack-in-the-pulpit with lesser amounts of false solomon's seal, false miterwort and cream violet. Undulating topography was noted.	**Birds:** Ovenbird, Great Crested Flycatcher, Yellow-throated Vireo, Blue Jay, Black-capped Chickadee, Horned Lark, Song Sparrow, Brown Thrasher, White-breasted Nuthatch, Vesper Sparrow, Brown-headed Cowbird, Red-bellied Woodpecker, Northern Flicker, Hairy Woodpecker, Wood Duck, American Goldfinch, Wild Turkey **Herpetofauna:** Green Frog
759	0.7	20-Jul-11	23-Apr-12	CUP3-1	Red Pine Coniferous Plantation Type	OAO: Open Aquatic	0.7	Young	This young coniferous plantation is dominated by red pine with lesser amounts of Austrian pine, white spruce, and blue spruce. Species observed within the shrub layer includes white ash, pussy willow and sandbar willow, while the ground layer contains field species such as smooth brome, orchard grass, white heath aster, black-eyed susan, bird's foot trefoil, self heal, and red clover. A dug pond inclusion is located within the plantation, and a second open aquatic community is located to the east of the plantation and north of the deciduous forest of natural area 321.	**Birds:** Song Sparrow, Red-winged Blackbird, American Robin, Chipping Sparrow, American Crow, Black-capped Chickadee, Common Grackle, American Goldfinch **Mammals:** White-tailed Deer, Coyote, Woodchuck, Eastern Cottontail **Herpetofauna:** Eastern Garter Snake

Table 3.4 Total Area of ELC Communities Observed in or within the 120 m Area of Investigation

Community Series Name	Size (ha)	Ecosite Name	Size (ha)
Cultural Communities			
CUM: Cultural Meadow	27.6	CUM1: Mineral Cultural Meadow	27.6
CUP: Cultural Plantation	35.2	CUP1: Deciduous Plantations	7.5
		CUP2: Mixed Plantations	1.3
		CUP3: Coniferous Plantations	26.4
CUT: Cultural Thicket	4.3	CUT1: Mineral Cultural Thicket Ecosite	4.3
CUW: Cultural Woodland	11.8	CUW1: Mineral Cultural Woodland Ecosite	11.8
		Total Hectares for Cultural Communities	**78.9**
Forest Communities			
FOD: Deciduous Forest	581.8	FOD2: Dry-Fresh Oak-Maple-Hickory Deciduous Forest Ecosite	0.4
		FOD3: Dry-Fresh Poplar-White Birch Deciduous Forest Ecosite	1.8
		FOD4: Dry-Fresh Deciduous Forest Ecosite	23.3
		FOD5: Dry-Fresh Sugar Maple Deciduous Forest Ecosite	167.7
		FOD6: Fresh-Moist Sugar Maple Deciduous Forest Ecosite	115.4
		FOD7: Fresh-Moist Lowland Deciduous Forest Ecosite	119.3
		FOD8: Fresh-Moist Poplar-Sassafras Deciduous Forest Ecosite	5.9
		FOD9: Fresh-Moist Oak-Maple-Hickory Deciduous Forest Ecosite	148.0
FOM: Mixed Forest	37.4	FOM5: Dry-Fresh White Birch-Poplar-Conifer Mixed Ecosite	36.3
		FOM6: Dry-Moist Hemlock Mixed Forest Ecosite	1.1
		Total Hectares for Forest Communities	**619.3**
Swamp Communities			
SWD: Deciduous Swamp	80.4	SWD2: Ash Mineral Deciduous Swamp Ecosite	27.4
		SWD3: Maple Mineral Deciduous Swamp Ecosite	34.1
		SWD4: Mineral Deciduous Swamp Ecosite	10.1
		SWD6: Maple Organic Deciduous Swamp Ecosite	8.8
SWM: Mixed Swamp	12.8	SWM: Mixed Swamp	12.8
SWT: Thicket Swamp	6.0	SWT2: Mineral Thicket Swamp Ecosite	6.0
		Total Hectares for Swamp Communities	**99.2**
Marsh Communities			
MAM: Meadow Marsh	7.7	MAM2: Mineral Meadow Marsh Ecosite	6.5
		MAM3: Organic Meadow Marsh Ecosite	1.3
MAS: Shallow Marsh	0.3	MAS: Shallow Marsh	0.3
		Total Hectares for Marsh Communities	**8.1**
Open Water Communities			
OAO: Open Aquatic	7.3	n/a	7.3
		Total Hectares for Open Water Communities	**7.3**
		Total:	**812.7**

3.3.2 Vascular Plant Inventory

A total of 368 vascular plant species were observed in natural areas occurring in or within the 120 m Area of Investigation. Of these, 278 (76%) are native and 90 (24%) are exotic. This level of species diversity is indicative of the high number of naturally occurring vegetation communities present within the Project Study Area. The co-efficient of conservatism (CC) is used as a standardized numerical measure of habitat quality which describes the ecological sensitivity or propensity of individual plants to occur in areas disturbed by humans (Bried *et al.,* 2012). Of the species observed, the majority (56%) had a moderate coefficient of conservatism (CC) (between 4 and 6). Species with this range of CC are associated with a specific community (e.g., deciduous forest, meadow marsh, etc.) but can tolerate moderate disturbance. Twenty-nine percent (29%) of the species observed are ranked as having

the lowest sensitivity (between 1 and 3) and these are species that can be found on a variety of sites including disturbed sites. Fourteen percent (14 %) of species have a high CC rank (between 7 and 8). These species are associated with a mature community, and are tolerant of only minor disturbances. While less than 2% of the species rank the highest CC (9 and 10); these species can only tolerate undisturbed and high quality native habitat.

A complete list of plant species observed in each natural area is presented in Appendix H. The rarity of each species was determined using Appendices J and M of the SWHTG and the Natural Heritage Information Centre (MNR, 2011a). Of the species recorded during site investigations, 253 are ranked as S5 (Secure) and 14 are ranked as S4 (Apparently Secure). Five provincially rare (S1-S3) species were observed during site investigations:

- Field Thistle (*Cirsium discolor*) ranks as S3 (Vulnerable) and was observed in natural area 198 which is located along South Road and west of Mollard Line;
- Burning Bush (*Euonymus atropurpurea*) ranks as S3 and was observed in natural area 326 located east if Bronson Line and North of Dashwood Road;
- Cream Violet (*Viola striata*) ranks as S3 (Vulnerable) and was observed in natural area 757 north of Pepper Road and east of Goshen Line;
- Narrow-leaved Sedge (*Carex amphibola*) ranks as S2 (Imperiled) and was observed in natural area 189 located south of South Road and west of Grand Bend Line; and,
- Perfoliate Bellwort (*Uvularia perfoliata*) ranks as S1 (Critically Imperiled) and was observed within natural area 375 located north of Pepper Road and east of Goshen Line.

No other plant Species of Conservation Concern were observed in or within the 120 m Area of Investigation during site investigations. All suitable ELC polygons in the natural areas where rare species were observed were carried forward to the Evaluation of Significance as described in Section 3.3.6.4 below.

3.3.3 Wetlands

A total of 1355.1 ha of wetland was observed within the Project Study Area, through a combination of aerial photography interpretation and site investigations. Of this, 173.4 ha or 12% of wetlands observed are located in or within the 120 m Area of Investigation of which 165.8 ha or 96% are classified as swamp wetland type. The remaining 7.6 ha or 4% are classified as marsh wetland type. Each of these wetlands can be further divided into riverine or palustrine site types.

Following the Ministry of Natural Resources Wetland Evaluation complexing rules, a total of fourteen (14) wetland units were identified as being at least partially located in or within the 120 m Area of Investigation through the Records Review and site investigation process. Figure 3.3 shows the location of these identified units. A detailed description of the attributes, composition, and function of each wetland unit is presented in Table 3.5 below.

All 14 wetland complexes were carried forward to the Evaluation of Significance phase of this Natural Heritage Assessment.

Table 3.5 Wetland Features Identified Through the Records Review and Site Investigations

Wetland ID	Natural Area(s)	Minimum Distance from Project Location[4]	Attributes			Composition	Function
			Total Size (ha)	Wetland Type	Site Type		
WET-006	177, 178, 180	>0.1 m (access road)	25.0	Swamp	Palustrine, Riverine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated green ash, freeman's maple, and white elm. The sub-canopy is comprised of white elm, green ash, and hawthorn species. The shrub layer is mainly dominated by American prickly ash, nannyberry, common buckthorn, and currant species while the ground cover consists of wild strawberry, dog violet, sedge species, and tall agrimony. Wetland vegetation communities located outside of the 120 m Area of investigation include Lowland Forest (FOD7-2).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-008	192, 215	38 m (collection line)	6.6	Swamp	Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Swamp Maple Deciduous Swamp (SWD3-3): The canopy is dominated by freeman's maple and green ash. The sub-canopy is dominated by Freeman's maple and green ash. Species present in the ground layer include a variable mix of sensitive fern, false nettle, lady fern, fowl manna grass, woodland strawberry, northern dewberry and bladder sedge Wetland vegetation communities located outside of the 120 m Area of investigation include Deciduous Swamp (SWD) and Meadow Marsh (MAM).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-009	200, 217	100 m (collection line)	3.3	Swamp	Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated by green ash, white elm, ironwood and basswood. The sub-canopy is mainly hawthorn species with red maple and white elm. Species within the shrub layer consist mainly of choke cherry with fewer red maple. The ground cover consists of yellow trout lily, white trillium, garlic mustard and spotted geranium. Wetland vegetation communities located outside of the 120 m Area of investigation include Deciduous Swamp (SWD).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-010	185, 187, 188, 191, 194, 195, 196, 203, 209, 225, 236, 241	3 m (collection line)	78.6	Swamp, Marsh	Palustrine, Riverine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Green Ash Mineral Deciduous Swamp (SWD2-2): The canopy is dominated by green ash. • Reed-canary Grass Mineral Meadow Marsh (MAM2-2): Dominated by reed canary grass. • Swamp Maple Mineral Deciduous Swamp (SWD3-3): The community is dominated by Freeman's maple, black ash and shagbark hickory. The sub-canopy consists of Freeman's maple and white elm. The ground layer consists of fowl manna grass hop sedge, rice cut grass and dwarf raspberry. • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated by green ash. • Submerged Shallow Marsh (SAS1-3): Community dominated by stonewort. • Mineral Thicket Swamp (SWT2): Community is dominated by spicebush. Wetland vegetation communities located outside of the 120 m Area of investigation include Swamp Thicket (SWT), Deciduous Swamp (SWD), Mixed Swamp (SWM), Coniferous Swamp (SWC), Meadow Marsh (MAM), Shallow Marsh (MAS) and Submerged Aquatic (SAS).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna

4. Reflects distance between feature and disturbance area associated with project infrastructure unless otherwise stated.

Table 3.5 Wetland Features Identified Through the Records Review and Site Investigations

Wetland ID	Natural Area(s)	Minimum Distance from Project Location[4]	Attributes			Composition	Function
			Total Size (ha)	Wetland Type	Site Type		
WET-011	213, 221, 230, 235, 245	>0.1 m (access road)	18.6	Swamp	Riverine, Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Swamp Maple Mineral Deciduous Swamp (SWD3-3): This community is dominated by freeman's maple with some green ash. • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated by green ash and freeman's maple, bur oak and basswood. The sub-canopy layer consists of white elm. The shrub layer is dominated by choke cherry. The ground cover layer is comprised of graceful sedge, tall white aster, running strawberry bush and herb-robert. • Swamp Maple/Green Ash Mineral Deciduous Swamp (SWD4a): The canopy consists of Freeman's maple and green ash while the sub-canopy consists of freeman's maple and white elm. Wetland vegetation communities located outside of the 120 m Area of investigation include Deciduous Swamp (SWD), and Shallow Marsh (MAS).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-012 Natural Area(s)	321, 325, 347, 348, 350, 379, 381, 385, 393, 395, 404, 413, 416, 420, 421, 422, 424, 604, 605, 607, 609, 614, 616, 624, 626, 627, 632, 633	>0.1 m (transmission line)	238.8	Swamp	Riverine, Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Green Ash Mineral Deciduous Swamp (SWD2-2): The canopy and sub-canopy layers consist of green ash and freeman's maple. The shrub layer consists of wild red raspberry, freeman's maple and green ash. The ground cover consists of wood nettle, goldenrod species, spotted jewelweed and blue flag iris. • Willow Mineral Thicket Swamp (SWT2-2): The canopy consists of crack willow and green ash. There is no sub-canopy. The shrub layer consists of sandbar willow, alternate-leaved dogwood and red-osier dogwood. The ground cover consists of reed canary grass, wood nettle, spotted jewelweed and goldenrod species. • Swamp Maple Mineral Deciduous Swamp (SWD3-3): The canopy is dominated by freeman's maple. • Reed Canary Grass Mineral Meadow Marsh (MAM2-2): The canopy includes scattered trees consisting of willow and Manitoba maple with some red-osier dogwood. The community is dominated by reed canary grass Wetland vegetation communities located outside of the 120 m Area of investigation Meadow Marsh (MAM), Shallow Marsh (MAS), Swamp Thicket (SWT), Deciduous Swamp (SWD), and Coniferous Swamp (SWC).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-014	179, 181, 183, 184, 189, 193, 198, 201, 204, 208, 210, 211, 212, 216, 219, 227, 232, 233, 234, 239, 243, 253, 254, 255, 256, 258, 268, 276, 286	>0.1 m (collection line)	204.5	Swamp	Riverine, Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Fresh - Moist White Elm Lowland Deciduous Forest Type (FOD7-1): The canopy layer of this mature deciduous forest is dominated by Freeman's maple with lesser amounts of white elm, white ash and black walnut. Species observed within the sub canopy include white ash, hawthorn, and prickly ash. Species observed within the shrub layer include black raspberry, and prickly-ash. The herbaceous layer consists of garlic mustard, wood nettle, poison ivy, thicket creeper, and yellow avens. • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy consists of green ash, freeman's maple and white elm. The sub-canopy consists of Manitoba maple, hawthorn species and green ash. The shrub layer is mainly comprised of a hawthorn species with red-osier dogwood and willows. The ground cover consists of smooth brome grass with fewer garlic mustard, wild madder common dandelion, and wild strawberry. • Green Ash Mineral Deciduous Swamp (SWD2-2): The canopy is dominated by green ash with some white elm, shagbark hickory and bitternut hickory associates. The sub-canopy layer consists of white elm and green ash. The shrub layer consists of white elm, bitternut hickory and green ash. The ground cover consists of green ash, moneywort and poison ivy.	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna

Table 3.5 Wetland Features Identified Through the Records Review and Site Investigations

Wetland ID	Natural Area(s)	Minimum Distance from Project Location[4]	Attributes			Composition	Function
			Total Size (ha)	Wetland Type	Site Type		
						• Swamp Maple Mineral Deciduous Swamp (SWD3-3): The canopy is dominated by Freeman's maple and green ash. The sub-canopy layer is dominated by freeman's maple. Species within the shrub layer consist of red-osier dogwood, choke cherry and common buckthorn. The ground cover is long-stalked sedge. Wetland vegetation communities located outside of the 120 m Area of investigation include Meadow Marsh (MAM) and Shallow Marsh (MAS), Swamp Thicket (SWT), Deciduous Swamp (SWD), and Mixed Swamp (SWM).	
WET-019 Natural Area(s)	266, 280, 285, 287, 295, 305	>0.1 m (collection line)	56.3	Swamp	Riverine, Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Russian Olive – Sandbar Willow – Gray Dogwood Mineral Thicket Swamp (SWT2a): The canopy of this mid-age swamp consists of green ash and Freeman's maple. The shrub layer consists of autumn olive, sandbar willow, and gray dogwood. The groundcover is dominated by reed canary grass, common dandelion, sedge species, and clover. • Swamp Maple Mineral Deciduous Swamp (SWD3-3): The canopy is dominated by freeman's maple, green ash, paper birch and black ash. The sub-canopy is comprised of freeman's maple, blue beech, white elm and green ash, while spicebush dominates the shrub layer with some white elm. Herbaceous species recorded include wild lily-of-the-valley, sensitive fern, moonseed and tall white aster. • Green Ash - Trembling Aspen Mineral Deciduous Swamp (SWD4b): The canopy is co-dominated by green ash and trembling aspen. The canopy is dominated by blue beech with some white elm, while the shrub layer is dominated by spicebush. The ground cover layer consists of sensitive fern, sedges and dwarf raspberry. • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated by green ash, cottonwood, trembling aspen, white elm and freeman's maple. The sub-canopy is mainly green ash with some freeman's maple and white elm. The shrub layer is mainly white ash with some nannyberry and spicebush and green ash. The ground cover is dominated by white avens, wild black currant thicket creeper, enchanter's nightshade, and black raspberry. • Green Ash Mineral Deciduous Swamp (SWD2-2): The canopy is dominated by green ash. • Cottonwood Mineral Deciduous Swamp (SDW4c): Community is dominated by cottonwood. Wetland vegetation communities located outside of the 120 m Area of investigation include Meadow Marsh (MAM), Swamp thicket (SWT), Deciduous Swamp (SWD), and Mixed Swamp (SWM).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-021	262, 265, 270, 273, 274, 279, 291, 298, 300, 309, 317, 318, 754, 756	>0.1 m (collection line)	117.4	Marsh, Swamp	Riverine, Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Reed Canary Grass Organic Meadow Marsh (MAM3-2): The shrub layer is dominated by sandbar willow and red-osier dogwood. The ground cover is dominated by reed canary grass, goldenrod species and aster species. • Swamp Maple Organic Deciduous Swamp (SWD6-3): The canopy is dominated by Freeman's maple, green ash, cottonwood and basswood. The shrub layer is dominated by gray dogwood. The ground cover consists of garlic mustard, spotted jewelweed, buttercup species, and violet species. • Swamp Maple - Green Ash Deciduous Swamp (SWD4a): Canopy is dominated by green ash and freeman's maple while sub-canopy species included white elm, green ash and freeman's maple. The shrub layer consists of silky dogwood and freeman's maple and the herbaceous layer consists of fowl manna grass, sedge species and tall white aster. • Swamp Maple Mineral Deciduous Swamp (SWD3-3): The canopy layer is dominated by freeman's maple, green ash, white elm and some black walnut. The herbaceous layer consisted of include jewelweed, panicled aster, orchard grass, black nightshade, pale smartweed, sedge species, garlic mustard, stinging nettle, tall meadow rue and running strawberry bush.	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna

Table 3.5 Wetland Features Identified Through the Records Review and Site Investigations

Wetland ID	Natural Area(s)	Minimum Distance from Project Location[4]	Attributes			Composition	Function
			Total Size (ha)	Wetland Type	Site Type		
						• Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated by green ash and basswood, while the sub-canopy consists of white elm. The shrub layer is dominated my spicebush while the herbaceous layer is comprised of wild strawberry and white avens. • Grey Dogwood-Red Osier Dogwood-Sandbar Willow Mineral Thicket Swamp (SWT2b): The canopy consists of cottonwood and green ash. The shrub layer consists of gray dogwood, red-osier dogwood and sandbar willow. The ground cover consists of common dandelion, garlic mustard, avens species and Virginia strawberry. • Willow Mineral Deciduous Swamp (SWD4-1): The canopy is dominated by willow. Wetland vegetation communities located outside of the 120 m Area of investigation include Meadow Marsh (MAM), Mineral Shallow Marsh (MAS), Meadow Marsh (MAM), Deciduous Swamp (SWD), and Mixed Swamp (SWM).	
WET-025	375, 392	16 m (access road)	5.3	Marsh, Swamp	Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Swamp Maple Mineral Deciduous Swamp (SWD3-3): The canopy is dominated by freeman's maple and green ash. The sub-canopy consists of freeman's maple, white elm, green ash and basswood. Species observed within the shrub layer include white elm, red-osier dogwood, green ash, basswood, poison ivy, and choke cherry. The herbaceous layer is comprised of buttonbush, choke cherry, sensitive fern, and spinulose wood fern. • Missouri Willow Mineral Meadow Marsh (MAM2a): The canopy is dominated by Missouri willow and bebb's willow. The sub-canopy is dominated by common reed grass, broad-leaved cattail and reed canary grass. The ground cover is comprised of panicled aster, path rush, marsh fern, northern water-horehound, meadow horsetail and others. Wetland vegetation communities located outside of the 120 m Area of investigation include Deciduous Swamp (SWD).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-032	244, 249, 259, 267, 282, 283, 286, 292, 296, 301, 307, 311, 315, 320, 322, 327, 333, 338, 340, 351, 353, 354, 359, 368, 374, 380, 382, 384, 387, 388, 397, 602, 603	>0.1 m (collection line)	549.8	Swamp	Riverine, Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Green Ash Mineral Deciduous Swamp (SWD2-2): The canopy consists of green ash, white elm and shagbark hickory. The sub-canopy layer consists of green ash and white elm. The ground cover consists of reed canary grass, fowl manna grass, sedge species and panicled aster. • Green Ash Lowland Deciduous Forest (FOD7-2): The canopy is dominated by green ash, trembling aspen, bur oak, and shagbark hickory. The sub-canopy layer consists of green ash, white elm and hawthorn species. The herbaceous layer is comprised of tall goldenrod, poison-ivy, white avens, graceful sedge, enchanter's nightshade, tall white aster and Virginia strawberry. • Swamp Maple - Green Ash Deciduous Swamp (SWD4a): The canopy is co-dominated by freeman's maple and green ash. The sub-canopy layer consists of white elm and freeman's maple while the shrub layer is dominated by white elm. The herbaceous layer was mainly comprised of sedge species, fowl meadow grass and tall white aster. Wetland vegetation communities located outside of the 120 m Area of investigation include Meadow Marsh (MAM), Shallow Marsh (MAS), Deciduous Swamp (SWD), Coniferous Swamp (SWC), and Mixed Swamp (SWM).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna

Table 3.5 Wetland Features Identified Through the Records Review and Site Investigations

Wetland ID	Natural Area(s)	Minimum Distance from Project Location[4]	Attributes			Composition	Function
			Total Size (ha)	Wetland Type	Site Type		
WET-038	700, 701	114 m (transmission line)	4.2	Swamp	Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Swamp Maple Mineral Deciduous Swamp (SWD3-3): The canopy and sub-canopy layers consist of freeman's maple and green ash. The shrub layer is dominated by white elm, blue beech and black ash while the ground cover consists of white avens, spotted geranium and false solomon's seal. Wetland vegetation communities located outside of the 120 m Area of investigation include Deciduous Swamp (SWD).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-049	364, 757	13 m (turbine construction footprint)	26.2	Swamp	Palustrine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Green Ash Mineral Deciduous Swamp (SWD2-2): The canopy layer consists of green ash and basswood while the sub-canopy is dominated by green ash. The shrub layer consists of spicebush and green ash. The ground cover is dominated by green ash seedlings. Wetland vegetation communities located outside of the 120 m Area of investigation include Meadow Marsh (MAM), Shallow Marsh (MAS), and Deciduous Swamp (SWD).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna
WET-053	738, 739, 740, 741, 742, 750	>0.1 m (transmission line)	20.3	Swamp, Marsh	Riverine	Wetland vegetation communities and species composition within the 120 m Area of Investigation is as follows: • Willow Mineral Deciduous Swamp (SWD4-1): The canopy layer is dominated by hybrid crack willow while the shrub layer is dominated by alternate-leaved dogwood. The ground cover consists of reed-canary grass and spotted jewelweed. • Reed Canary Grass Mineral Meadow Marsh (MAM2-2): The canopy consists of scattered hybrid crack willow. The partial shrub layer contains tartarian honeysuckle and red-osier dogwood. The ground cover is dominated by dense reed canary grass. Wetland vegetation communities located outside of the 120 m Area of investigation include Meadow Marsh (MAM), Swamp Thicket (SWT) and Deciduous Swamp (SWD).	• Flood attenuation • Water quality improvement • Habitat and resources for wetland flora and fauna

3.3.4 Woodlands

A total of 75 woodlands were identified in or within the 120 m Area of Investigation through the Records Review and site investigation. The boundaries of these woodland units are shown on Figure 3.4. A description of the attributes, composition, and function of each woodland, as well as the distance from each woodland to the nearest project component, is provided in Table 3.6 below. All of these woodlands were carried forward to the Evaluation of Significance phase of this Natural Heritage Assessment.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-001	177	>0.1 m (access road)	17.4	Deciduous Forest	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): This mid-age to mature forest has a broken canopy allowing for dense shrub layer growth. Species observed within the canopy include green ash, Freeman's maple, and white elm. The sub-canopy is comprised of white elm, green ash, and hawthorn species. The shrub layer is mainly dominated by American prickly ash, nannyberry, common buckthorn, and currant species. The ground cover consists of wild strawberry, dog violet, sedge species, and tall agrimony.	Provides habitat for the following species: **Birds:** Song Sparrow, Canada Goose, Downy Woodpecker, Turkey Vulture, Red-tailed Hawk, Indigo Bunting, White-breasted Nuthatch, Killdeer, Northern Flicker **Lepidoptera:** Monarch, Red-spotted Purple, Giant Swallowtail **Odonata:** Yellow-legged Meadowhawk **Mammals:** White-tailed Deer
WOD-012	189	7 m (turbine construction footprint)	63.4	Deciduous Forest	Young, Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Bitternut Hickory Deciduous Forest Type (FOD9-5): The canopy within this mature deciduous forest is dominated by bitternut hickory with equal amounts of shagbark hickory and ironwood. The sub-canopy is dominated by equal amounts of beaked hazelnut and blue beech with some black cherry. The ground layer is dominated by poison ivy with some clearweed and narrow-leaved sedge species. • Fresh - Moist Shagbark Hickory Deciduous Forest Type (FOD9-4) Surveyed from fence line: The canopy within this mature forest is dominated by shagbark hickory with fewer American beech, sugar maple and green ash associates. The sub-canopy is mainly sugar maple with some green ash. The shrub layer is dominated by choke cherry. The ground cover consists of yellow trout lily and white trillium. • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer within this mid-age to mature deciduous forest is dominated by sugar maple, basswood, shagbark hickory, and ironwood. The ground cover layer is comprised of herb robert, spotted geranium, and false solomon's seal. • Fresh - Moist White Elm - Ash - Hawthorn Deciduous Forest Type (FOD7d): Species observed within this young to mid-age forest include white elm, green ash, and basswood, while the sub-canopy layer consists mainly of hawthorn with some common apple. The herbaceous layer consists of a mixture of white avens, Canada blue-joint grass, garlic mustard, and graceful sedge. This community is an early successional forest occurring on moist level ground.	Provides habitat for the following species: **Birds:** American Crow, Great Blue Heron, Northern Flicker, American Goldfinch, Wild Turkey, Northern Cardinal, Turkey Vulture, Woodpecker Species, Red-tailed Hawk, Black-billed Cuckoo, Song Sparrow, Eastern Wood-pewee, Black-capped Chickadee **Mammals:** Gray Squirrel, Raccoon, White-tailed Deer

5. Reflects distance between feature and disturbance area associated with project infrastructure unless otherwise stated.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-018	198	>0.1 m (collection line)	7.1	Deciduous Forest	Young to Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy within this young to mid-age forest is dominated by green ash with fewer Freeman's maple. The sub-canopy consists of Manitoba maple. The shrub layer is mainly comprised of a hawthorn species with fewer red-osier dogwood and willows. The ground cover is mainly smooth brome grass with fewer garlic mustard and less wild madder. Vegetation communities outside the 120 m Area of Investigation consist of small cultural meadow and open aquatic ecosystems.	Provides habitat for the following species: **Birds:** Turkey Vulture, Song Sparrow, American Crow, House Wren, American Goldfinch, Yellow Warbler, Downy Woodpecker, American Robin **Mammals:** White-tailed Deer **Lepidoptera:** Monarch
WOD-023	203	>0.1 m (collection line)	39.9	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Bur Oak Deciduous Forest Type (FOD9-3): The canopy layer of this mid-age forest is dominated by bur oak with some shagbark hickory and less green ash and white elm associates. The sub-canopy layer consists mainly of white elm with fewer green ash and less ironwood. Species within the shrub layer are mainly bitternut hickory with fewer choke cherry. The ground cover consists of spotted geranium with some yellow trout lily and less violet species and sedge species.	Provides habitat for the following bird species: **Birds:** Killdeer, Red-winged Blackbird
WOD-026	206	21 m (turbine blade tip)	11.2	Cultural Woodland and Deciduous Forest	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash - Apple - Hawthorn Mineral Cultural Woodland Type (CUW1c): The relatively open canopy layer of this mid-age deciduous forest is dominated by green ash, apple, and cockspur hawthorn. The shrub layer consists of staghorn sumac and grey dogwood. The ground cover layer consists of Canada goldenrod and tall goldenrod, with some tall white aster and New England aster. • Fresh - Moist Shagbark Hickory Deciduous Forest Type (FOD9-4): The canopy layer of this mature deciduous forest is dominated by shagbark hickory, green ash, bur oak and bitternut hickory. The sub-canopy layer consists of shagbark hickory and green ash, and the shrub layer is dominated by green ash. The ground cover layer consists of spotted geranium, green ash and running strawberry bush.	Provides habitat for the following species: **Birds:** Red-tailed Hawk, Great Blue Heron (fly-by) **Herpetofauna:** Wood Frog, American Toad
WOD-028	209	8 m (collection line)	12.6	Coniferous Plantation and Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Shagbark Hickory - Sugar Maple - American Beech - Blue Beech Deciduous Forest Type (FOD9e): The canopy layer of this mid-age forest consists of shagbark hickory, sugar maple, American beech and red maple. The sub-canopy consists of American beech and blue beech. Species within the shrub layer are mainly spicebush with fewer blue beech, gray dogwood, and choke cherry associates. The ground cover consists of yellow trout lily, spotted geranium, jack-in-the-pulpit, and false solomon's seal. • White Pine Coniferous Plantation Type (CUP3-2): The canopy layer of this mid-age forest is dominated by eastern white pine. The sub-canopy layer consists of	Provides habitat for the following species: **Birds:** Red-winged Blackbird, Black-capped Chickadee, Song Sparrow, Northern Flicker, Blue Jay, Canada Goose, White-throated Sparrow, Chipping Sparrow, American Crow, Northern Cardinal **Mammals:** White-tailed Deer

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						eastern white pine and green ash. The shrub layer is dominated by choke cherry. The ground cover consists of wild strawberry, spotted geranium, and avens species. There are several small polygons (inclusions) associated with the deciduous forest: • Thicket swamp (SWT2) dominated by spice bush • Plantation (CUP3d) consisting of eastern white pine, red pine, scots pine, and balsam fir. The sub-canopy is dominated by green ash. The shrub layer is dominated by choke cherry. The ground cover consists of Virginia strawberry, spotted geranium, buttercup species, and avens species. • Dry to fresh oak-red maple deciduous forest (FOD2-1). • Fresh to moist poplar deciduous forest (FOD8-1). There are several small polygons (inclusions) associated with the plantation: • Pond, open aquatic (OAO). • White Pine - White Ash - Trembling Aspen Mixed Plantation Type (CUP2b). The canopy layer of this plantation consists mainly of eastern white pine with fewer amounts of white ash and trembling aspen. The sub-canopy consists mainly of eastern white pine with fewer amounts of white ash and trembling aspen. The shrub layer consists of choke cherry and tartarian honeysuckle. The ground cover consists of giant goldenrod, choke cherry and thimbleweed. • Mineral Cultural Thicket Ecosite (CUT1).	
WOD-032	190, 210	>0.1 m (collection line)	46.9	Deciduous Forest and Cultural Woodland	Young, Mid-age, and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash - Hawthorn Mineral Cultural Woodland Type (CUW1m): The canopy of this mid-age cultural woodland is dominated by green ash with hawthorn and common apple found throughout. The ground cover is comprised mainly of garlic mustard with lesser amounts of poison ivy. • Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8): This mid-age community is located on a small valley slope. Canopy species within this dry-fresh deciduous forest include white ash and sugar maple while the sub-canopy is dominated mainly by sugar maple with some white ash. The shrub layer consists of equal amounts of grey dogwood and sugar maple. • Fresh - Moist White Elm Lowland Deciduous Forest Type (FOD7-1): The canopy layer of this mature deciduous forest is dominated by Freeman's maple with lesser amounts of white elm, white ash and black walnut. Species observed within the sub canopy include white ash, hawthorn, and prickly ash. Species observed within the shrub layer include black raspberry, and prickly-ash. The herbaceous layer consists of garlic mustard, wood nettle, poison ivy, thicket creeper, and yellow avens. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy within this young to mid-age forest consists of green ash, Manitoba maple and white elm. The sub-canopy consists of a hawthorn species, green ash, and Manitoba maple. The ground cover consists of common dandelion, garlic mustard, Manitoba maple and wild strawberry.	Provides habitat for the following species: **Birds:** Eastern Phoebe, American Goldfinch, Killdeer, Vesper Sparrow, Horned Lark, Downy Woodpecker, Black-capped Chickadee, Black-billed Cuckoo **Lepidoptera:** Red Admiral **Mammals:** White-tailed Deer

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Dry - Fresh White Ash-White Elm Deciduous Forest Type (FOD4-2): The canopy layer within this mid-age deciduous forest is dominated by white ash and white elm with lesser amounts of sugar maple, while the sub-canopy consists of hawthorn, white ash, and choke cherry. The shrub layer consists of yellow avens, red currant, may apple and tall buttercup, and the herbaceous layer consists of poison ivy, thicket creeper, and running strawberry bush.	
WOD-033	215	>0.1 m (collection line)	12.5	Deciduous Forest and Deciduous Swamp	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer of this mature deciduous forest is dominated by basswood with equal amounts of sugar maple, beech and shagbark hickory. The sub-canopy consists of blue beech with equal amounts of sugar maple and American beech and some choke cherry. The shrub layer consists of prickly gooseberry and black raspberry, and the herbaceous layer contains running strawberry bush, false solomon's seal, yellow avens and Virginia waterleaf. • Dry - Fresh White Ash - Basswood Deciduous Forest Type (FOD4f): Dominant species observed within the canopy of this mid-age deciduous forest include white ash, basswood, and lesser amounts of white elm. The sub-canopy is dominated by basswood with equal amounts of bitternut hickory, and sugar maple. The shrub layer consists of choke cherry, white ash and basswood, and the herbaceous layer is comprised of poison ivy, white avens, and calico aster. This forest includes a cultural meadow forest type as an inclusion. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy within this mature deciduous swamp is dominated by freeman's maple with lesser amounts of green ash. The sub-canopy is dominated by Freeman's maple with lesser amounts of green ash. Species present in the ground layer include a variable mix of sensitive fern, false nettle, lady fern, fowl manna grass, woodland strawberry, northern dewberry and bladder sedge.	Provides habitat for the following species: **Birds:** Wild Turkey, American Crow, Blue Jay, American Goldfinch, Downy Woodpecker **Mammals:** White-tailed Deer, Gray Squirrel **Herpetofauna:** Spring Peeper
WOD-034	216	>0.1 m (collection line)	25.0	Cultural Woodland and Deciduous Forest	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Black Walnut Mineral Cultural Woodland Type (CUW1d): The canopy layer in this mid-age cultural woodland is dominated by black walnut, white ash and white pine. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy layer of this mid-age deciduous forest is dominated by green ash and white ash. The sub-canopy layer consists of green ash, pin cherry and staghorn sumac. The shrub layer is dominated by grey dogwood. The ground cover layer is mainly comprised of giant ragweed, Canada goldenrod and alternate-leaved dogwood. • Fresh - Moist Oak - Maple Deciduous Forest Type (FOD9-2): The canopy layer of this mature deciduous forest consists of bur oak, shagbark hickory and green ash. The sub-canopy consists of equal amounts of bur oak and shagbark hickory with lesser amounts of green ash and white elm. The shrub layer consists of bitternut hickory and basswood with equal amounts of green ash and bur oak, while the herbaceous layer consists of graceful sedge, avens species and choke cherry.	Provides habitat for the following species: **Birds:** Wild Turkey, Gray Catbird, White-breasted Nuthatch, Tundra or Trumpeter Swan (fly over) **Lepidoptera:** Monarch **Mammals:** Eastern Cottontail, White-tailed Deer **Odonata:** Common Green Darner

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						Two small vegetation communities (inclusions) are associated with this forest polygon: • Mineral Thicket Swamp (SWT2) • Dry - Moist Old Field Meadow Type (CUM1-1)	
WOD-035	217	100 m (collection line)	1.3	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy layer of this mid-age forest is dominated by green ash with fewer white elm, ironwood and basswood. The sub-canopy is mainly hawthorn species with fewer red maple and less white elm. Species within the shrub layer consist mainly of choke cherry with fewer red maple. The ground cover consists of yellow trout lily, white trillium, garlic mustard and spotted geranium.	Provides habitat for the following species: **Birds:** Red-winged Blackbird, Downy Woodpecker **Mammals:** Coyote, Red Fox
WOD-042	225	7 m (collection line)	3.5	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Shagbark Hickory - Green Ash Deciduous Forest Type (FOD9d): Canopy species recorded in this mid-age deciduous forest include equal amounts of shagbark hickory, and green ash while sub-canopy species include equal amounts of sugar maple, hawthorn, white elm and green ash. The herbaceous layer includes running strawberry bush, sedge species and white avens. • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy layer of this mid-age deciduous swamp is dominated by green ash. One inclusion is associated with this forest habitat: • Reed-canary Grass Mineral Meadow Marsh Type (MAM2-2)	Provides habitat for the following species: **Birds:** Black-capped Chickadee, Mourning Dove, Eastern Phoebe, Song Sparrow, Red-winged Blackbird, Yellow-bellied Sapsucker, Red-tailed Hawk, Northern Flicker **Crustaceans:** Chimney Crayfish
WOD-044	236	30 m (collection line)	0.4	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash Mineral Deciduous Swamp Type (east of Turbine 37) (SWD2-2): This mid-age deciduous swamp is dominated by green ash.	Provides habitat for the following species: **Birds:** American Crow, American Pipit, Killdeer, American Robin, White-breasted Nuthatch, Turkey Vulture, Downy Woodpecker, Black-capped Chickadee, Belted Kingfisher, Northern Flicker, Blue Jay **Mammals:** White-tailed Deer, Gray Squirrel **Lepidoptera:** Red Admiral, Cabbage White, Clouded Sulphur, Grey Comma **Herpetofauna:** Green Frog, Eastern Newt, Spring Peeper

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-047	229	>0.1 m (access road)	4.3	Deciduous Forest	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6): The canopy of this mature deciduous forest consists of equal amounts of sugar maple and basswood with lesser amounts of white ash and American beech. The sub-canopy consists of sugar maple, ironwood and American beech. The shrub layer consists of sugar maple with some choke cherry, while the herbaceous layer consists of white avens, zigzag goldenrod and calico aster. There is a small hedgerow inclusion wherein the canopy layer is dominated by basswood with equal amounts of white elm, bitternut hickory, and white ash. The sub-canopy consists of grey dogwood, white elm and common apple. Species observed within the shrub layer include red raspberry, and the herbaceous layer includes garlic mustard, white avens and tall white aster.	Provides habitat for the following species: **Birds:** Song Sparrow, American Goldfinch, American Robin, Red-winged Blackbird, Brown-headed Cowbird, American Pipit, American Goldfinch, Northern Flicker, Blue Jay, White-crowned Sparrow **Lepidoptera:** Monarch **Mammals:** Coyote
WOD-049	232	>0.1 m (collection line)	118.0	Deciduous Forest, Deciduous Swamp, Cultural Plantation, Mixed Forest	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8): The canopy species of this mid-age deciduous forest include white ash and sugar maple with some paper birch. The sub-canopy is dominated by sugar maple. Shrub layer species observed include spicebush, black cherry and sugar maple, while the herbaceous layer consists of running strawberry bush and creeping partridge berry. • White Pine Coniferous Plantation Type (CUP3-2): The canopy and sub-canopy of this mid-age to mature coniferous plantation is dominated by white pine with some deciduous regeneration including white ash and sugar maple. Species observed within the shrub layer include white ash and sugar maple. The herbaceous layer consists of poison ivy, herb-robert, garlic mustard and calico aster. • Dry - Fresh White Ash - Paper Birch Deciduous Forest Type (FOD4c): Species observed within the canopy of this mid-age deciduous forest include white ash, paper birch, sugar maple, and basswood. The sub-canopy consists of equal amounts of basswood and sugar maple. The shrub layer is dominated by sugar maple, spicebush, and blackberry while dominant species in the herbaceous layer include running strawberry bush and violet species. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy of this mid-age deciduous forest is dominated by green ash with lesser amounts of basswood and white elm, while the sub-canopy consists of sugar maple and blue beech. Dominant species observed within the shrub layer are multiflora rose, grey dogwood, immature sugar maple, and red raspberry. The herbaceous layer includes species such as white avens, herb robert, running strawberry bush, Virginia strawberry and graceful sedge. The community had evidence of selective logging and was somewhat disturbed. A Swamp Maple Deciduous Swamp (SWD3-3) inclusion was found within the community as well as a drainage ditch.	Provides habitat for the following species: **Birds:** Red-tailed Hawk, American Crow, White-throated Sparrow, White-crowned Sparrow, Blue Jay, Hairy Woodpecker, Song Sparrow, White-breasted Nuthatch, Mourning Dove **Mammals:** Eastern Chipmunk, Raccoon.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type (FOD5-5): The canopy within this mid-age forest is mainly shagbark hickory with fewer sugar maple. The sub-canopy layer is dominated by sugar maple. Species within the shrub layer consist of nannyberry and choke cherry. The ground cover consists of running strawberry bush with fewer yellow trout lily. • Dry - Fresh Poplar Deciduous Forest Type (FOD3-1): Dominant species within the canopy of this mid-age deciduous forest include white ash, trembling aspen, cottonwood and sugar maple. The sub-canopy consists of hawthorn, white ash, witch hazel and blue beech. The sparse shrub layer contains black currant, while the herbaceous layer consists of running strawberry bush, Canada may flower, fowl manna grass and jack-in-the-pulpit. There are three small vegetative communities included in FOD4c polygon: • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1) • Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type (FOM6-1) • Dry - Fresh White Cedar - Poplar Deciduous Forest Type (FOD4-2)	
WOD-053	235	>0.1 m (turbine construction footprint)	1.6	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Bitternut Hickory - Basswood Deciduous Forest Type (FOD9c): This is a small woodland. Dominant species observed within the canopy of this mid-age deciduous forest include basswood, bitternut hickory and equal amounts of white elm and green ash. The sub-canopy species include equal amounts of white elm and ironwood. Species observed within the herbaceous layer include poison ivy, tall white aster and some zigzag goldenrod. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): This community is located in the southern portion of the feature and is dominated by freeman's maple with some green ash. There is evidence of seasonal flooding, likely brief in duration.	Provides habitat for the following species: **Birds:** American Crow, Red-winged Blackbird, Cowbird, White-breasted Nuthatch, Downy Woodpecker, Northern Flicker, Mallard, Song Sparrow **Mammals:** White-tailed Deer **Herpetofauna:** Spring Peeper **Lepidoptera:** Clouded Sulphur, Orange Sulphur, Red Admiral, Cabbage White, Eastern Comma **Odonata:** Common Green Darner.
WOD-054	236	>0.1 m (collection line)	28.4	Deciduous Forest, Deciduous Swamp, Mixed Forest	Young, Mid-age, Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Shagbark Hickory Deciduous Forest Type (FOD9-4) (southeast of Turbine 36): The canopy layer of this mid-age deciduous forest is dominated by shagbark hickory with small amounts of white elm within the sub-canopy. The shrub layer is dominated by shagbark hickory, while the herbaceous layer consists of herb-robert, running strawberry bush, tall white aster, immature white ash and garlic mustard. • Dry - Fresh White Ash Deciduous Forest Type (FOD4-2): This mid-age to mature deciduous forest community is dominated by white ash with small amounts of American beech, sugar maple and ironwood. The sub-canopy contains equal amounts of sugar maple and ironwood. The shrub layer consist of American beech and ironwood while the ground cover is dominated by Canada goldenrod, radiate sedge, zig zag goldenrod and white avens. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) (north of Turbine 36): This mid-age swamp community is dominated by freeman's maple.	Provides habitat for the following species: **Birds:** Red-eyed Vireo, Eastern Wood Peewee, White-breasted Nuthatch, Black-capped Chickadee, Song Sparrow, American Robin, Red-bellied Woodpecker, Blue Jay, Northern Flicker, White-crowned Sparrow, Swamp Sparrow, American Crow, Killdeer, American Goldfinch, Turkey Vulture, Belted Kingfisher **Herpetofauna:** Spring Peeper, Green Frog, Eastern Newt **Mammals:** White-tailed Deer, Grey Squirrel, Eastern Cottontail, Raccoon **Leptidoptera:** Red Admiral, White

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Green Ash Mineral Deciduous Swamp Type (SWD2-2) (east of Turbine 37): This mid-age deciduous swamp is dominated by green ash. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): This mid-age deciduous forest is dominated by green ash. • Fresh - Moist Shagbark Hickory - White Ash - Beech Deciduous Forest Type (FOD9b) (northeast of Turbine 37): The canopy within this mid-age forest consists of shagbark hickory, bur oak, and white ash. The sub-canopy consists of sugar maple and white elm. The ground cover consists of sedge species and white avens. • Fresh - Moist Shagbark Hickory - White Ash - Beech Deciduous Forest Type (FOD9b) (northeast of Turbine 36): This mid-age deciduous forest has no clear dominant species observed within the canopy. Species observed include shagbark hickory, white ash, red oak and American beech. There is a small pond located at the edge of the forest. Water depth in the pond was approximately 1 m at the time of investigation although there had been recent rain. There is one inclusion associated with this forested feature: • Stonewort Submerged Shallow Aquatic Type (SAS1-3).	Cabbage, Grey Comma **Odonata:** Common Green Darner.
WOD-056	240	18 m (access road)	0.7	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): This mid-age deciduous forest is dominated by green ash with lesser amounts of bur oak, sugar maple and basswood. The sub-canopy is dominated by green ash. The shrub layer is dominated by choke cherry. The ground layer is dominated by grass species.	Provides habitat for the following species: **Birds:** American Robin, Northern Flicker, Red-winged Blackbird, Brown-headed Cowbird.
WOD-060	242	>0.1 m (access road)	3.7	Deciduous Forest	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type (FOD6-1): The canopy layer within this mid-age forest is dominated by sugar maple with fewer green ash, white elm and basswood. The sub-canopy layer consists of bitternut hickory, sugar maple and green ash. Species within the shrub layer consist of choke cherry and sugar maple. The ground cover consists of spotted geranium, yellow trout lily, garlic mustard and toothwort.	Provides habitat for the following species: **Birds:** Song Sparrow, American Robin, Savannah Sparrow, Vesper Sparrow, Blue Jay, American Goldfinch, Indigo Bunting, Eastern Wood-pewee, Gray Catbird, Northern Flicker, Downy Woodpecker, Hairy Woodpecker, Red-bellied Woodpecker, Red-winged Blackbird, Field Sparrow, Northern Cardinal **Herpetofauna:** Spring Peeper **Mammals:** Coyote, Mink, Raccoon, Gray Squirrel, White-tailed Deer.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-063	244	68 m (turbine construction footprint)	8.7	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer within this mid-age forest is dominated by sugar maple with fewer basswood and less white ash and shagbark hickory. The sub-canopy is dominated by sugar maple. Species within the shrub layer consist of white elm with less choke cherry. The ground cover consists of yellow trout lily with less spotted geranium. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy cover within this mid-age swamp community is dominated by Freeman's maple with fewer green ash. The sub-canopy is dominated by Freeman's maple with fewer green ash. The shrub layer is dominated by white elm with fewer nannyberry. The ground cover consists of sedge species, with fewer reed canary grass.	Provides habitat for the following bird species: **Birds:** Turkey Vulture, Brown Thrasher, Hairy Woodpecker, Yellow-bellied Sapsucker, Vesper Sparrow, White-breasted Nuthatch, Downy Woodpecker, Northern Flicker, Blue Jay, House Wren, American Crow, Brown-headed Cowbird.
WOD-064	245	>0.1 m (access road)	6.9	Deciduous Forest	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer within this mid-age forest is mainly sugar maple with fewer white elm, less white ash and less bitternut hickory. The sub-canopy is dominated by sugar maple. The shrub layer is dominated by choke cherry with fewer sugar maple. The ground cover consists of spotted geranium, yellow trout lily, white trillium, and may apple. • Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type (FOD6-4): The canopy layer within this mid-age deciduous forest consists of sugar maple and white elm with lesser amounts of basswood and shagbark hickory. The sub-canopy consists of white elm, sugar maple, white ash and blue beech. The shrub layer includes white ash, sugar maple, calico aster and blue beech. Species found within the herbaceous layer consist of running strawberry bush, poison ivy, white ash and avens species. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): This mature community is a mosaic of deciduous forest and deciduous swamp communities. The canopy cover is dominated by green ash and freeman's maple with lesser amounts of bur oak and basswood. The sub-canopy layer consists of white elm. The shrub layer is dominated by choke cherry. The ground cover layer was mainly comprised of graceful sedge, tall white aster, running strawberry bush and herb-robert. Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) inclusions were found throughout. • There are several small inclusions in the mosaic forest polygon. The canopy layer within the mid-age CUP1c inclusion consists of equal amounts of red oak and black walnut with lesser amounts of bur oak. The sub-canopy consists of equal amounts of sugar maple, basswood and white elm. Calico aster and sedge species were found within the herbaceous layer. The red oak and black walnut were likely planted as they are evenly aged however are not in rows and appear natural.	Provides habitat for the following species: **Birds:** Eastern Wood-pewee, White-breasted Nuthatch, House Wren, Red-eyed Vireo, American Goldfinch, American Robin, Song Sparrow, Turkey Vulture, Killdeer, Eastern Phoebe, Black-capped Chickadee, Vesper Sparrow, Red-winged Blackbird, Red-tailed Hawk, Blue Jay, Downy Woodpecker, Brown-headed Cowbird, Cedar Waxwing **Lepidoptera:** Red Admiral **Mammals:** Raccoon, White-tailed Deer.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• The canopy within the mature FOD5b inclusion includes equal amounts of white ash and basswood with lesser amounts of sugar maple. The sub-canopy consists of equal amounts of sugar maple, basswood and white elm. The shrub layer consists of equal amounts of choke cherry and sugar maple. • The canopy layer within the mid-age FOD7e inclusion is mainly green ash with fewer white elm. The sub-canopy layer is mainly white elm with less basswood and less sugar maple. There is no shrub layer. The ground cover consists of sedge species. The canopy within the mature SWD4a inclusion consists of equal amounts of Freeman's maple and green ash. The sub-canopy consists of equal amounts of freeman's maple and white elm.	
WOD-068	249	67 m (access road)	7.8	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash Deciduous Mineral Swamp (SWD2-2) The canopy within this mid-age swamp consists mainly of green ash with fewer white elm. The sub-canopy layer consists mainly of green ash with fewer white elm. There is no shrub layer. The ground cover consists of reed canary grass.	Provides habitat for the following species: **Birds:** Red-winged Blackbird **Herpetofauna:** Green Frog
WOD-070	250	52 m (access road)	10.3	Deciduous Forest	Young to Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): This young to mid-age deciduous forest is dominated by sugar maple with lesser amounts of white elm, white ash and American beech. The sub-canopy is dominated by sugar maple. The shrub layer is dominated by sugar maple with less amounts of choke cherry. The ground cover consists of a violet species and yellow trout lily.	Provides habitat for the following species: **Birds:** Turkey Vulture, Red-winged Blackbird, Song Sparrow, Blue Jay, Rose-breasted Grosbeak, Chipping Sparrow, American Crow, American Goldfinch, Yellow Warbler **Mammals:** White-tailed Deer **Herpetofauna:** Spring Peeper, Eastern Garter Snake
WOD-076	251	116 m (turbine construction footprint)	2.0	Deciduous Forest	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple-Black Cherry Deciduous Forest Type (FOD5-7): The canopy layer of this mid-age deciduous forest includes sugar maple and black cherry. The sub-canopy is dominated by sugar maple, while the shrub layer is dominated by red raspberry. The herbaceous layer consists of running strawberry bush and graceful sedge. • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of bitternut hickory. The sub-canopy is dominated by sugar maple. The herbaceous layer consisted of running strawberry bush and garlic mustard. Dominant species observed within the canopy of a mature FOD4-1 inclusion associated with this forest include American beech, basswood, white ash and sugar maple. The sub-canopy includes sugar maple and ironwood. The shrub layer is dominated by American beech, and the herbaceous species observed include zig zag goldenrod and poison ivy.	Provides habitat for the following species: **Birds:** Northern Flicker, Red-bellied Woodpecker, Blue Jay, American Crow, Dark-eyed Junco, American Pipit

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-087	259	>0.1 m (collection line)	19.6	Deciduous Forest and Deciduous Swamp	Young, Mid-age, Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2) (north of Turbine 21): The canopy layer in this young deciduous forest is dominated by green ash with lesser amounts of shagbark hickory. The sub-canopy layer consists of green ash, white elm and hawthorn species. The herbaceous layer was mainly comprised of tall goldenrod, poison-ivy, white avens, graceful sedge, and Virginia strawberry. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2) (southwest of Turbine 66): The canopy layer of this young to mid-age deciduous forest is dominated by green ash with lesser amounts of trembling aspen. The sub-canopy layer consists of green ash and hawthorn species. The herbaceous layer was mainly comprised of enchanter's nightshade and tall white aster. • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy within this mid-age swamp consists of green ash with lesser amounts of shagbark hickory. The sub-canopy consists of green ash and white elm. The ground cover consists of fowl manna grass, sedge species and panicled aster. • Swamp Maple - Green Ash Deciduous Swamp Type (SWD4a): The canopy layer of this mid-age deciduous swamp is co-dominated by freeman's maple and green ash. The sub-canopy layer consists of white elm and freeman's maple. The shrub layer is dominated by white elm. The herbaceous layer was mainly comprised of sedge species, fowl meadow grass and tall white aster. There is a broken canopy (60% cover) from selective cutting. There is also strong evidence of seasonal flooding, although no water was present at the time of site investigation. There may be suitable amphibian breeding habitat. • Fresh - Moist Shagbark Hickory Deciduous Forest Type (FOD9-4): The canopy of this mid-age deciduous forest is dominated by shagbark hickory with lesser amounts of bur oak. The sub-canopy layer consists of shagbark hickory, white elm, sugar maple and blue beech. The shrub layer is dominated by blue beech, choke cherry and green ash. The herbaceous layer was mainly comprised of Virginia strawberry, sedge species and running strawberry bush. Open canopy is present (50-60%) from selective cutting within past two years. • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of American basswood and white ash. The sub-canopy layer consists of sugar maple, blue beech, American basswood and shagbark hickory. The shrub layer is dominated by sugar maple with lesser amounts of choke cherry. The herbaceous layer is mainly comprised of running strawberry bush, zigzag goldenrod, sedge species, and calico aster. There are two small Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2) inclusions in this forest polygon.	Provides habitat for the following species: **Birds:** Blue Jay, American Crow, Red-winged Blackbird, House Wren, Black-capped Chickadee, American Robin, Eastern Wood-pewee, White-breasted Nuthatch, American Goldfinch, Northern Flicker, Downy Woodpecker, White-throated Sparrow, Black-and-white Warbler, Blackpoll Warbler, Red-eyed Vireo **Lepidoptera:** Appalachian Brown, Cabbage White, Monarch, Red-spotted Purple **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Gray Squirrel, Eastern Chipmunk.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-093	261	>0.1 m (transmission line and substation)	9.5	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Bitternut Hickory - Basswood - Ironwood - Bur Oak Deciduous Forest Type (FOD9a): The canopy of this mid-age forest consists of bitternut hickory, American basswood, ironwood and bur oak. The sub-canopy consists of bitternut hickory, shagbark hickory, sugar maple and green ash. The shrub layer consists of choke cherry and blue beech. The ground cover consists of climbing poison ivy, spotted geranium, tall goldenrod, and white avens. • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer of this mid-age forest consists of sugar maple, white elm, ironwood, and American beech. The sub-canopy consists of sugar maple and ironwood. The shrub layer consists mainly of choke cherry with less blue beech, sugar maple, American beech and ironwood. The ground cover consists mainly of white trillium, with fewer yellow trout lily, less may apple and less Virginia water leaf. There are four small inclusions associated with this forest polygon, they include: • Two Green Ash Mineral Deciduous Swamps (SWD2-2). • Grey Dogwood Mineral Thicket Swamp (SWT2-9). The sparse canopy within this mid-age inclusion consists of cottonwood, green ash and hybrid crack willow. The sub-canopy consists of green ash, white elm and American beech. The shrub layer consists of green ash with gray dogwood. The ground layer consists of wood nettle, calico aster and reed canary grass. • Mineral Deciduous Swamp (SWD4).	Acts as a buffer for wetland ecosystems and provides habitat for the following species: **Birds:** Downy Woodpecker, Northern Flicker, Blue Jay, Red-winged Blackbird, Horned Lark, Blue Jay, House Wren, American Crow, White-breasted Nuthatch, Great-crested Flycatcher, Baltimore Oriole, Eastern Wood-pewee **Mammals:** Red Fox.
WOD-101	267	>0.1 m (collection line)	5.1	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): Species observed within the canopy of this narrow band of mid-age deciduous forest include green ash with lesser amounts of white elm, bur oak, and shagbark hickory.	Provides habitat for the following species: **Birds:** Red-tailed Hawk, American Robin, Blue Jay **Herpetofauna:** Spring Peeper **Mammals:** Gray Squirrel.
WOD-103	269	>0.1 m (substation)	3.7	Deciduous Forest and Deciduous Swamp	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2): The canopy layer within the mature forest consists mainly of sugar maple and American beech with fewer basswood and ironwood. The sub-canopy is comprised of equal amounts of sugar maple, American beech, and ironwood. Species found within the shrub layer include mainly blue beech with some choke cherry and less American beech. The ground cover is comprised of yellow trout lily, running strawberry bush, white trillium and spotted geranium. An abundance of downed woody debris was noted. • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy layer within this mature forest community consists mainly of green ash with a moderate amount Freeman's maple and fewer eastern cottonwood. The sub-canopy and shrub layers are comprised of Freeman's maple. The ground cover is comprised of mainly sedge species. There is a small inclusion associated with this polygon: • Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2).	Provides habitat for the following species: **Birds:** Downy Woodpecker, Gray Catbird, Robin, Red-winged Blackbird, Song Sparrow, Black-capped Chickadee, Northern Flicker **Mammals:** White-tailed Deer **Lepidoptera:** Red Admiral.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-104	609	>0.1 m (transmission line)	1.0	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy layer of this mid-age deciduous swamp community consists of green ash and Freeman's maple. The sub-canopy layer consists of Freeman's maple and green ash. The shrub layer consists of wild red raspberry, Freeman's maple and green ash. The ground cover consists of wood nettle, goldenrod species, spotted jewelweed and blue flag iris.	Provides habitat for the following species: **Birds:** Baltimore Oriole, Brown-headed Cowbird, Red-winged Blackbird, American Robin, Magnolia Warbler, Song Sparrow, Turkey Vulture, American Goldfinch, Woodpecker Species, Rose-breasted Grosbeak, Eastern Wood-pewee, Great-crested Flycatcher, Chipping Sparrow, White-throated Sparrow **Crustaceans:** Chimney Crayfish **Herpetofauna:** Leopard Frog, Green Frog **Lepidoptera:** Monarch, Cabbage White, Milbert's Tortoiseshell
WOD-106	271	37 m (turbine construction footprint)	6.2	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type (FOD6-4): The canopy within this mid-age forest is mainly sugar maple with fewer white elm. The sub-canopy is dominated by sugar maple with less white elm. The shrub layer is mainly choke cherry with less white elm. The ground cover consists of yellow trout lily, spotted geranium and garlic mustard. There is a small cultural meadow ecosystem associated with this forest as an inclusion.	Provides habitat for the following species: **Birds:** Yellow-bellied Sapsucker, Turkey Vulture
WOD-109	609	>0.1 m (transmission line)	45.1	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy layer of this mid-age deciduous swamp community consists of green ash and Freeman's maple. The sub-canopy layer consists of Freeman's maple and green ash. The shrub layer consists of wild red raspberry, Freeman's maple and green ash. The ground cover consists of wood nettle, goldenrod species, spotted jewelweed and blue flag iris.	Provides habitat for the following species: **Birds:** Baltimore Oriole, Brown-headed Cowbird, Red-winged Blackbird, American Robin, Magnolia Warbler, Song Sparrow, Turkey Vulture, American Godlfinch, Woodpecker Species, Rose-breasted Grosbeak, Eastern Wood-pewee, Great-crested Flycatcher, Chipping Sparrow, White-throated Sparrow **Crustaceans:** Chimney Crayfish **Herpetofauna:** Leopard Frog, Green Frog **Lepidoptera:** Monarch, Cabbage White, Milbert's Tortoiseshell

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-112	637	77 m (transmission line)	1.1	Coniferous Cultural Plantation and Old Field / Meadow	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Scots Pine - White Pine Coniferous Plantation Type (CUP3a): The canopy of this young plantation consists of a mix of planted scots pine, eastern white pine, black walnut and eastern cottonwood. The shrub layer consists of green ash. The ground cover consists of wild carrot and grasses. Dry - Moist Old Field Meadow Type (CUM1-1): The canopy within this young meadow consists of green ash and crack willow. The shrub layer consists of gray dogwood, hawthorn and common apple. The ground cover consists of goldenrod, reed canary grass, bird's foot trefoil, and wild mint.	Provides habitat for the following species: **Birds:** Red-winged Blackbird, Field Sparrow, Black-capped Chickadee, Great Blue Heron, American Robin, Baltimore Oriole, American Goldfinch, Song Sparrow, Red-tailed Hawk, Killdeer **Crustaceans:** Chimney Crayfish **Herpetofauna:** Green Frog **Mammals:** White-tailed Deer
WOD-113	611	24 m (transmission line)	4.5	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5): The canopy of this mid-age deciduous forest consists of American basswood, sugar maple and American beech. The sub-canopy consists of American basswood, sugar maple and white elm. The shrub layer consists of choke cherry, blue beech and white ash. The ground layer consists of poison ivy, thicket creeper, avens species and enchanter's nightshade.	Provides habitat for the following species: **Birds:** Red-tailed hawk, Song Sparrow, House Wren, Eastern Wood-pewee, Common Grackle, Black-capped Chickadee, American Robin, Northern Flicker **Lepidoptera:** Cabbage white, Orange Sulphur
WOD-114	273	11 m (collection line)	0.9	Deciduous Forest	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Poplar Deciduous Forest Type (FOD8-1): The canopy within this young forest is dominated by trembling aspen with less basswood, white elm, and green ash. The sub-canopy consists of mainly white elm, with fewer blue beech, less Freeman's maple, and even less basswood. The shrub layer consists of chock cherry, blue beech, and wild black currant. The ground cover consists of false solomon's seal, garlic mustard, common dandelion, and goldenrod species. A small Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) inclusion is associated with this forest polygon.	Provides habitat for the following species: **Birds:** American Robin, Red-winged Blackbird, BlueJay, Song Sparrow, Brown-headed Cowbird **Lepidoptera:** Red Admiral, Cabbage White **Mammals:** White-tailed Deer
WOD-117	255, 258	13 m (turbine construction footprint)	455.3	Deciduous Forest and Mixed Forest	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Poplar Mixed Forest Type (FOM5-2): The canopy layer within this young forest community consists of trembling aspen and scots pine. The sub-canopy consists of trembling aspen and scots pine. The shrub layer is mainly nannyberry and gray dogwood. The ground cover consists of grasses. • Fresh - Moist Shagbark Hickory Deciduous Forest Type (FOD9-4): The canopy layer of this young to mature deciduous forest is dominated by sugar maple, shagbark hickory and white ash. The sub-canopy layer consists of sugar maple, bitternut hickory, blue beech and ironwood. The shrub layer is dominated by alternate-leaved dogwood, calico aster, swamp red currant, blackberry and northern lady fern. The herbaceous layer consists of sedge, blue violet, garlic mustard, common speedwell, poison ivy, drooping wood sedge and star-flowered solomon's seal. Portions of this community are young with many pole size trees. There is a stream located along the edge of the forest where there is a more disturbed open canopy.	Provides habitat for the following species: **Birds:** Common Yellowthroat, Rose-breasted Grosbeak, Red-winged Blackbird, Black-capped Chickadee, American Crow, Horned Lark, Field Sparrow, Savannah Sparrow, Canada Goose, Northern Flicker, Wood Thrush, Brown-headed Cowbird, Blue Jay, Blue-winged Warbler, Chipping Sparrow, Ruby-throated Hummingbird, Baltimore Oriole, American Goldfinch, Turkey Vulture, Red-tailed Hawk, Mourning Dove, American Crow **Lepidoptera:** Red Admiral, Cabbage White

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Fresh - Moist White Elm Lowland Deciduous Forest Type (FOD7-1): The canopy layer of this mature deciduous forest is dominated by white elm with lesser amounts of white ash and basswood. Species observed within the sub-canopy consist of white ash, sugar maple and hawthorn. The herbaceous layer consists of garlic mustard, calico aster, wild black currant, poison ivy, running strawberry bush, yellow avens and wood nettle. Five inclusions are associated with this forest, including: • Coniferous Plantation Ecosite (CUP3) • Two Swamp Maple Mineral Deciduous Swamp Types (SWD3-3) • Two Green Ash Mineral Deciduous Swamp Types (SWD2-2)	**Mammals:** Gray Squirrel, Eastern Chipmunk, White-tailed Deer **Herpetofauna:** Spring Peeper **Crustaceans:** Chimney Crayfish
WOD-118	275	4 m (collection line)	8.1	Deciduous Forest and Deciduous Swamp	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer within this mid-age forest is mainly sugar maple with less basswood, American beech and white ash. The sub-canopy layer is mainly sugar maple with less basswood, American beech and white ash. The shrub layer is mainly blue beech with less choke cherry, shagbark hickory, and white ash. The ground cover consists of mainly spotted geranium, yellow trout lily, wild strawberry and false solomon's seal. • Swamp Maple Mineral Deciduous Swamp Type: (SWD3-3): The canopy layer within this mid-age to mature forest is dominated by Freeman's maple with fewer green ash and less white elm. The sub-canopy layer is mainly white elm with less Freeman's maple and green ash. The shrub layer is dominated by green ash with fewer white elm and less Freeman's maple. The ground cover consists of moneywort, spotted geranium, and poison ivy.	Provides habitat for the following species: **Birds**: Song Sparrow, Savannah Sparrow, Rose-breasted Grosbeak, Canada Goose, Brown-headed Cowbird, Blue Jay, Mallard
WOD-120	648	0 m (transmission line)	2.8	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh-Moist Bitternut Hickory - Basswood - Ironwood - Bur Oak Deciduous Forest Type (FOD9a): The canopy within this mid-age forest consists of bitternut hickory, white elm, ironwood and trembling aspen. The sub-canopy consists of bitternut hickory, ironwood, and white elm. The shrub layer consists of English hawthorn, white elm, bitternut hickory and wild red raspberry. The ground layer consists of garlic mustard, yellow avens, thicket creeper and violet species. Two inclusions are present in the forest polygon: • Fresh-Moist Poplar Deciduous Forest Type (FOD8-1) • Coniferous Plantation Ecosite (CUP3)	Provides habitat for the following species: **Birds:** Common Yellowthroat, Eastern Wood-pewee, Baltimore Oriole, House Wren, Brown-headed Cowbird, Song Sparrow, Turkey Vulture, Great-crested Flycatcher, American Goldfinch **Mammals:** White-tailed Deer, Raccoon.

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-129	279, 274	>0.1 m (collection line)	8.8	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: There are two separate Swamps of the same type with slightly different compositions. • Swamp Maple Organic Deciduous Swamp Type (SWD 6-3): The canopy layer within this mid-age swamp is dominated by Freeman's maple with fewer green ash, less white elm, and even less eastern cottonwood. The sub-canopy layer is dominated by Freeman's maple with fewer green ash. The shrub layer consists of choke cherry and Freeman's maple. The ground cover consists of garlic mustard, spotted jewelweed, buttercup species, and violet species. • Swamp Maple Organic Deciduous Swamp Type (SWD6-3): The canopy within this mid-age swamp is dominated by Freeman's maple with fewer green ash and less basswood. There is no sub-canopy layer. The shrub layer consists of gray dogwood. There was no ground cover layer at the time of site investigation.	Provides habitat for the following species: **Birds:** Song Sparrow, Killdeer, Red-winged Blackbird, Brown-headed Cowbird, Blue Jay, Northern Flicker, Rose-breasted Grosbeak, American Robin **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** Leopard Frog **Mammals:** White-tailed Deer
WOD-130	701	11 m (transmission line)	14.4	Deciduous Forest and Deciduous Swamp	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8): The canopy within this mid-age forest consists mainly of sugar maple, white ash and American beech. The sub-canopy layer is manly sugar maple with fewer white ash. The shrub layer is mainly sugar maple, American beech and white elm. The ground layer consists mainly of sugar maple, spotted geranium, garlic mustard and false solomon's seal. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy layer within this mid-age to mature swamp community consists mainly of Freeman's maple with less green ash. The sub-canopy consists of Freeman's maple and green ash. The shrub layer is mainly white elm with fewer blue beech and black ash. The ground cover consists of white avens, spotted geranium and false solomon's seal.	Provides habitat for the following species: **Birds:** Gray Catbird, Red-eyed Vireo, House Wren, Blue Jay, American Robin, Ovenbird, Brown-headed Cowbird, Wood Thrush, Black-capped Chickadee, Great-crested Flycatcher, Song Sparrow, Chipping Sparrow **Lepidoptera:** Monarch
WOD-131	266, 280	>0.1 m (collection line)	199.8	Cultural Plantation, Deciduous Swamp, Deciduous Forest	Young, Mid-age, Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Eastern Cottonwood Deciduous Plantation Type (CUP1a): The canopy of this mid-age plantation is mainly eastern cottonwood with fewer basswood and much less white elm and shagbark hickory. The sub-canopy is dominated by green ash. The shrub layer is mainly green ash with fewer choke cherry and less tartarian honeysuckle. The ground cover consists of common dandelion, garlic mustard, wild strawberry, and graceful sedge. • Bur Oak Deciduous Plantation Type (CUP1b): The canopy of this mid-age plantation is dominated by bur oak with less green ash. The sub-canopy layer consists of green ash and sugar maple. The shrub layer consists of mainly green ash with fewer tartarian honeysuckle and less autumn olive. The ground cover consists of common dandelion.	Provides habitat for the following species: **Birds:** Mallard, American Woodcock, Chipping Sparrow, Mourning Dove, Black-capped Chickadee, Eastern Wood-pewee, Ruffed Grouse, Downy Woodpecker, Blue Jay, Brown-headed Cowbird, Great Blue Heron, American Goldfinch **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** Wood Frog, American Toad, Leopard Frog, Eastern Red-backed Salamander

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Dry - Fresh White Ash - Paper Birch - Cottonwood - White Cedar Deciduous Forest Type (FOD4a): The canopy layer of this young to mid-age deciduous forest consists of large-toothed aspen, white ash, sugar maple, paper birch, cottonwood and white cedar. The shrub layer is dominated by grey dogwood and sugar maple with fewer Freeman's maple and less large-toothed aspen, and the herbaceous layer includes goldenrod species, white trillium, yellow trout lily, common dandelion and aster species. • Mixed Swamp Community Series (SWM): This community was identified through air photo interpretation. • Red Pine Coniferous Plantation Type (CUP3-1): The canopy layer within this young to mid-age plantation is dominated by red pine with less eastern white pine. The sub-canopy is dominated by white elm. There is no shrub layer or ground cover layer. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): This mid-age to mature deciduous swamp community is dominated by freeman's maple, green ash, paper birch and black ash. The sub-canopy is comprised of freeman's maple, blue beech, white elm and green ash, while spicebush dominates the shrub layer with fewer white elm. Herbaceous species recorded include wild lily-of-the-valley, sensitive fern, moonseed and tall white aster. Seasonal flooding is evident. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy within this mid-age forest is dominated by green ash with fewer eastern cottonwood and less Freeman's maple. The sub-canopy is mainly green ash with fewer Freeman's maple and less white elm. The shrub layer is mainly white ash with fewer nannyberry and less spicebush. The ground cover is mainly white avens and wild black currant. • Dry - Fresh Large-tooth Aspen Deciduous Forest Type (FOD) (east of Turbine 22): The canopy of this mid-age forest is mainly large-tooth aspen with fewer green ash and much less white birch and less basswood. The sub-canopy layer is mainly green ash with less trembling aspen. The shrub layer consists of white elm with fewer nannyberry and less spicebush. The ground cover consists of mainly yellow trout lily with fewer wild black currant and less wild strawberry. • White Pine Coniferous Plantation Type (CUP3-2): The canopy within this mid-age plantation is dominated by eastern white pine. The sub-canopy is dominated by white elm. The shrub layer is dominated by black raspberry. The ground cover is dominated by running strawberry bush. • Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type FOD6-1) (east of Turbine 23): The canopy layer within this mid-age forest consists of sugar maple, green ash, and white elm. The sub-canopy is mainly green ash with less white elm. The shrub layer is mainly choke cherry with fewer white elm and less spicebush. The ground cover consists mainly of yellow trout lily and star-flowered solomon.	**Mammals:** White-tailed Deer, Red Fox, Eastern Chipmunk, Raccoon, Gray Squirrel **Herpetofauna:** Eastern Garter Snake

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Green Ash - Trembling Aspen Mineral Deciduous Swamp Type (SWD4b) (northeast corner of property): This seasonally flooded mid-age deciduous swamp is co-dominated by green ash and trembling aspen in the canopy. Blue beech dominates the sub-canopy with lesser amounts of white elm, while the shrub layer is dominated by spicebush. The herbaceous layer is comprised of sensitive fern, sedges and dwarf raspberry. Evidence of seasonally flooding was noted however no water was present at the time of site investigation. • Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8): The canopy layer within this mid-age to mature forest consists of sugar maple, white ash, American beech, basswood and large tooth aspen. The sub-canopy is dominated by American beech with lesser amounts of sugar maple and white ash. The sub-canopy is mainly sugar maple with less white ash. The shrub layer includes white elm, American beech, maple-leaved viburnum, choke cherry and spicebush. The ground cover consists of yellow trout lily, false solomon's seal, sedges, white trillium and partridge-berry. Seven inclusions are associated with the forest: • Two Green Ash Mineral Deciduous Swamp Types (SWD2-2) • Dry - Fresh Trembling Aspen Deciduous Forest Type (FOD4d) • Two White Pine - Red Pine - Norway Spruce - White Spruce Coniferous Plantation Types (CUP3e) • Green Ash Deciduous Plantation Type (CUP1-7) • Black Walnut - Red Oak Deciduous Plantation Type (CUP1c)	
WOD-133	282	>0.1 m (collection line)	20.6	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type (FOD6-4): The canopy layer within this mid-age forest is dominated by sugar maple with fewer white ash and less white elm. The sub-canopy is mainly sugar maple with less white elm. The shrub layer is mainly choke cherry with less nannyberry. The ground cover is mainly yellow trout lily with some white trillium. • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy layer within this mid-age swamp is mainly green ash with less Freeman's maple. The sub-canopy is dominated by green ash. The shrub layer is mainly Freeman's maple with less white elm. The ground cover is dominated by dotted sedge.	Provides habitat for the following species: **Birds:** Song Sparrow, Turkey Vulture, Red-bellied Woodpecker, Downy Woodpecker, Yellow-bellied Sapsucker, American Crow, Red-winged Blackbird, White-throated Sparrow, American Robin, Ruby-crowned Kinglet, Common Grackle **Lepidoptera:** Cabbage White, Red Admiral
WOD-134	662	0 m (transmission line)	4.4	Deciduous Forest	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD6-5): The canopy within this young forest consists of basswood and sugar maple, with some red maple and white elm. The sub-canopy consists of sugar maple and basswood. The shrub layer consists of wild red raspberry, white ash and blue beech. The ground cover consists of false solomon's seal and spotted geranium.	Provides habitat for the following species: **Birds:** Baltimore Oriole, Song Sparrow, Great-crested Flycatcher, Eastern Wood-pewee, Brown-headed Cowbird, House Wren

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-135	661	94 m (transmission line)	1.5	Deciduous Forest	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): The canopy of this young forest is dominated by sugar maple, with some white ash, American basswood and ironwood. The sub-canopy consists of bitternut hickory, American basswood and sugar maple. The shrub layer consists of sugar maple, bitternut hickory, and white ash. The ground cover consists of wild leek, herb robert, yellow avens and white trillium.	Provides habitat for the following species: **Birds:** American Robin, Red-winged Blackbird, Northern Cardinal, Great-crested Flycatcher, Northern Flicker, Killdeer, European Starling **Herpetofauna:** Spring Peeper, Green Frog
WOD-136	695	115 m (transmission line)	5.4	Deciduous Forest	Young to Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6): The canopy layer within this young to mid-age forest community consists mainly of basswood with less bur oak. The sub-canopy is mainly sugar maple with some white elm. The shrub layer consists of nannyberry, choke cherry, and common buckthorn. The ground cover consists of yellow trout lily, Canada anemone, and spotted geranium.	Provides habitat for the following species: **Birds:** Red-winged Blackbird, Turkey Vulture, Horned Lark, House Wren, Great-crested Flycatcher, Brown-headed Cowbird, Brown Thrasher, Song Sparrow **Mammals:** Raccoon, White-tailed Deer **Lepidoptera:** Red Admiral, Cabbage White **Herpetofauna:** American Toad
WOD-137	285	49 m (turbine construction footprint)	5.8	Deciduous Forest and Coniferous Plantation	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy of this mid-age deciduous forest consists of green ash, white elm and trembling aspen. The sub-canopy consists of white elm and green ash. The shrub layer consists of spicebush with lesser amount of green ash. The ground layer consists of thicket creeper, enchanter's nightshade, black raspberry and white avens. • White Pine Coniferous Plantation Type (CUP3-2): The canopy of this mid-age plantation consists of eastern white pine. There is also some planted white spruce and red pine, and some regeneration by green ash and white elm. The sub-canopy is comprised of white spruce. The shrub layer consists of green ash and spicebush. The ground cover consists of poison ivy and thicket creeper. There are two small inclusions associated with the White Pine plantation: • Cottonwood Mineral Deciduous Swamp Type (SWD4c) • Dry - Moist Old Field Meadow Type (CUM1-1)	Provides habitat for the following species: **Birds:** Wild Turkey, Black-capped Chickadee, Mourning Dove, Killdeer, Blue Jay
WOD-145	702	40 m (transmission line)	8.9	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Oak - Sugar Maple Deciduous Forest Type (FOD 9-1): The canopy layer within this mid-age forest consist of white oak, sugar maple, basswood, and bitternut hickory. The sub-canopy layer is dominated by sugar maple. The shrub layer consists of common buckthorn and choke cherry. The ground cover consists of spotted geranium, yellow trout lily, false solomon's seal and white trillium.	Provides habitat for the following species: **Birds:** Blue Jay, Song Sparrow **Lepidoptera:** Red Admiral, Cabbage White

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-146	290	11 m (turbine construction footprint)	3.5	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD 5-6): Co-dominant species observed within the canopy of this mid-age deciduous forest include sugar maple, basswood, white ash, and American beech while the sub-canopy is comprised of sugar maple and American beech. The shrub layer consists of choke cherry, American beech, sugar maple, and white ash. Dominant species recorded within the herbaceous layer include poison ivy, calico aster, running strawberry bush and white avens.	Provides habitat for the following species: **Birds:** Red-tailed Hawk, Vesper Sparrow, Downy Woodpecker, Black-capped Chickadee, Red-winged Blackbird **Mammals:** White-tailed Deer, Raccoon **Lepidoptera:** Eastern Comma, Red Admiral
WOD-149	291	9 m (access road)	3.8	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6): Co-dominant species observed within the canopy of this mid-age deciduous forest include sugar maple, basswood, white ash, and American beech while the sub-canopy is comprised of sugar maple and American beech. The shrub layer consists of choke cherry, American beech, sugar maple, and white ash. Dominant species recorded within the herbaceous layer include poison ivy, calico aster, running strawberry bush and white avens.	Provides habitat for the following species: **Birds:** Red-tailed Hawk, Vesper Sparrow, Downy Woodpecker, Black-capped Chickadee, Red-winged Blackbird **Mammals:** White-tailed Deer, Raccoon **Lepidoptera:** Eastern Comma, Red Admiral
WOD-154	723	>0.1 m (transmission line)	18.6	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD 6-5): The canopy within this mid-age forest consists of sugar maple, common buckthorn, basswood and white elm. The sub-canopy consists of sugar maple, white ash, basswood and white elm. The shrub layer consists of hawthorn species and alternate-leaved dogwood. The ground cover consists of garlic mustard, goldenrod species, spotted geranium and yellow avens.	Provides habitat for the following species: **Birds:** Northern Harrier **Lepidoptera:** Monarch, Eastern Tiger Swallowtail **Mammals:** White-tailed Deer
WOD-158	300	36 m (access road)	46.7	Deciduous Forest and Deciduous Swamp	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy of this mid-age to mature deciduous forest is dominated by green ash with lesser amounts of basswood, Manitoba maple, white elm and Freeman's maple, while the sub-canopy consists of white elm. Spicebush dominates the shrub layer and the herbaceous layer is comprised of wild strawberry, white avens, sandbar willow and garlic mustard. Evidence of recent selective logging was observed. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) (northwest of Turbine 32): The canopy layer of this mature deciduous swamp is dominated by Freeman's maple with a lesser amount of white elm. Other dominant species observed include jewelweed, panicled aster, and orchard grass. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) (west of Turbine 32): The canopy layer species recorded with this mid-age deciduous swamp include freeman's maple with some green ash, while the sub-canopy species recorded include white elm and freeman's maple. The herbaceous layer consists of black	Provides habitat for the following species: **Birds:** Blue Jay, Downy Woodpecker, American Goldfinch, Hairy Woodpecker, Wild Turkey (feather), Red-winged Blackbird, Blue Jay, Northern Flicker, Song Sparrow **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Meadow Vole **Lepidoptera:** Red Admiral

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						nightshade, pale smartweed, and sedge species. Seasonal flooding was apparent and areas in the northeast corner of the swamp had standing water at the time of site investigation. Recent selective cutting of larger maples was evident. Three inclusions are associated with the forest polygon: • Two Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5)	
WOD-164	722	0 m (transmission line)	0.7	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy of this mid-age swamp consists of Freeman's maple with a lesser amount of white elm. The sub-canopy layer consists of Freeman's maple, white elm and green ash. The shrub layer consists of white elm, green ash, choke cherry, and common buckthorn. The ground cover consists of green ash, enchanter's nightshade and white avens.	Provides habitat for the following species: **Birds:** Gray Catbird, Field Sparrow, American Crow
WOD-176	300	47 m (collection line)	5.6	Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3) (west of Turbine 32): The canopy layer species recorded with this mid-age deciduous swamp include freeman's maple with some green ash, while the sub-canopy species recorded include white elm and freeman's maple. The herbaceous layer consists of black nightshade, pale smartweed, and sedge species. Seasonal flooding was apparent and areas in the northeast corner of the swamp had standing water at the time of site investigation. Recent selective cutting of larger maples was evident.	Provides habitat for the following species: **Birds:** Blue Jay, Downy Woodpecker, American Goldfinch, Hairy Woodpecker, Wild Turkey (feather), Red-winged Blackbird, Northern Flicker **Herpetofauna:** Wood Frog, Spring Peeper **Mammals:** Raccoon, Meadow Vole
WOD-180	721	0 m (transmission line)	4.8	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy within this mid-age forest consists of sugar maple, blue beech, ironwood and white ash. The sub canopy consists of sugar maple, blue beech and ironwood. The shrub layer consists of blue beech, white ash and sugar maple. The ground cover consists of yellow avens, poison ivy, spotted geranium and tall meadow-rue. • Fresh - Moist White Elm Lowland Deciduous Forest Type (FOD7-1): The canopy within this mid-age forest consists of white elm, green ash, ironwood and basswood. The sub-canopy consists of white elm, basswood and green ash. The shrub layer consists of white elm, basswood and green ash. The ground cover consists of yellow avens, thicket creeper, poison ivy and white avens.	Provides habitat for the following species: **Birds:** Song Sparrow, Tree Swallow, Great-crested Flycatcher, Vireo Sparrow, Eastern Wood-pewee, Baltimore Oriole, Rose-breasted Grosbeak **Lepidoptera:** Eastern Comma

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-191	309	>0.1 m (collection line)	8.7	Deciduous Forest and Deciduous Swamp	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Black Walnut Lowland Deciduous Forest Type (FOD7-4): The canopy of this mid-age deciduous forest is comprised of black walnut, Freeman's maple, white ash, and white elm. The sub-canopy is dominated by equal amounts of Freeman's maple and white ash with some choke cherry. Herbaceous species recorded within the shrub and herbaceous layers were calico aster, jewelweed, wild black currant, dame's rocket, garlic mustard, avens species, and running strawberry bush. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy layer of this mature deciduous swamp is dominated by Freeman's maple with lesser amounts of black walnut, white ash, and white elm. The sub-canopy consists of white ash, white elm, Freeman's maple and black walnut. The herbaceous layer is comprised by a variable mix of spotted jewelweed, garlic mustard, stinging nettle, tall meadow rue and running strawberry bush.	Provides habitat for the following species: **Herpetofauna:** Gray Treefrog **Mammals:** Eastern Chipmunk
WOD-200	720	0 m (transmission line)	2.3	Deciduous Forest	Young to Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer in this young to mid-age forest community is mainly sugar maple with fewer white elm, white ash and green ash. The sub-canopy consists of sugar maple, white elm, bitternut hickory and ironwood. The shrub layer consists of sugar maple, white ash and green ash. The ground cover consists mainly of garlic mustard with fewer spotted geranium, yellow trout lily and wild strawberry. This forest polygon includes three inclusions: • Two Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Types (FOD6-5) • Fresh - Moist Basswood - White Elm - Freeman's Maple - Green Ash Lowland Deciduous Forest Type (FOD7f)	Provides habitat for the following species: **Birds:** Blue Jay, White-breasted Nuthatch, Song Sparrow, Horned Lark, Rose-breasted Grosbeak, Brown-headed Cowbird, American Robin, Red-winged Blackbird, Hairy Woodpecker, Baltimore Oriole **Lepidoptera:** Red Admiral **Herpetofauna:** Spring Peeper
WOD-210	738	>0.1 m (transmission line)	3.2	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Willow Mineral Deciduous Swamp Type (SWD4-1): The canopy layer within this mid-age swamp is dominated by hybrid crack willow. There is no sub-canopy layer. The shrub layer is dominated by alternate-leaved dogwood. The ground cover consists of reed-canary grass and spotted jewelweed. • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6): The canopy and sub-canopy layers within this mid-age deciduous forest are dominated by basswood with some sugar maple. The shrub layer is mainly a hawthorn species with fewer choke cherry and gray dogwood. The ground cover consists mainly of yellow avens, common blackberry and wild strawberry. • Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8): The canopy layer within this mid-age deciduous forest consists mainly of white ash with fewer sugar maple. The sub-canopy consists of sugar maple. The shrub layer consists mainly of sugar maple, choke cherry and common buckthorn. The ground cover consists mainly of sugar maple, jack-in-the-pulpit. One inclusions is associated with this forest: • Reed-canary Grass Mineral Meadow Marsh Type (MAM2-2).	Provides habitat for the following species: **Birds:** Red-winged Blackbird, Eastern Wood-pewee, Blue Jay, Gray Catbird, Song Sparrow **Herpetofauna:** Green Frog **Lepidoptera:** Cabbage White, **Odonata:** Ebony Jewelwing

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-227	321	>0.1 m (collection line)	4.4	Deciduous Forest	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): This mature deciduous forest is dominated by sugar maple with lesser amounts of beech and white ash. The sub-canopy is also dominated by sugar maple with lesser amounts of white ash, white elm and witch hazel. Species noted within shrub layer include black raspberry, sugar maple, calico aster, and maple-leaved viburnum. The herbaceous layer consisted of poison ivy, sugar maple and bearded shorthusk. There are five inclusions associated with this forest of the same type: Swamp Maple Mineral Deciduous Swamp Type (SWD3-3).	Provides habitat for the following species: **Birds:** Song Sparrow, Red-winged Blackbird, American Robin, Chipping Sparrow, American Crow, Black-capped Chickadee, Common Grackle, American Goldfinch, Blue Jay, Downy Woodpecker, Wild Turkey **Mammals:** White-tailed Deer, Coyote, Cottontail, Woodchuck **Herpetofauna:** Spring Peeper, Eastern Garter Snake
WOD-231	759	4 m (access road)	0.6	Coniferous Plantation	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Red Pine Coniferous Plantation Type (CUP3-1): This young coniferous plantation is dominated by red pine with lesser amounts of Austrian pine, white spruce, and blue spruce. Species observed within the shrub layer includes white ash, pussy willow and sandbar willow, while the ground layer contains field species such as smooth brome, orchard grass, white heath aster, black-eyed susan, bird's foot trefoil, self heal, and red clover. A dug pond inclusion is located within the plantation, and a second open aquatic community is located to the east of the plantation and north of the deciduous forest of natural area 321.	Provides habitat for the following species: **Birds:** Song Sparrow, Red-winged Blackbird, American Robin, Chipping Sparrow, American Crow, Black-capped Chickadee, Common Grackle, American Goldfinch **Mammals:** White-tailed Deer, Coyote, Woodchuck, Cottontail **Herpetofauna:** Eastern Garter Snake
WOD-251	326, 331	>0.1 m (access road)	14.3	Deciduous Forest and Coniferous Plantation	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6): This mature deciduous forest is dominated by basswood with lesser amounts of sugar maple, white ash, and American beech, while the sub-canopy is comprised of equal amounts of blue beech, white ash, and sugar maple. Other species observed in the ground layer include zigzag goldenrod, calico aster, blue cohosh, fowl manna grass, enchanter's nightshade, running strawberry bush, garlic mustard, and herb robert. The forest shows evidence of selective harvesting and appears to have been carefully managed. • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): The canopy layer within this mature forest is dominated by sugar maple with some American beech, basswood, and white ash. The sub-canopy is dominated by sugar maple with lesser amounts of white ash, red elderberry and blue beech. The shrub layer is mainly sugar maple with some choke cherry and less ironwood. The ground layer is yellow trout lily with a variety of other species that include yellow violet, calico aster, blue cohosh, zigzag goldenrod, jack-in-the-pulpit, enchanter's nightshade and running strawberry bush.	Provides habitat for the following species: **Birds:** Canada Goose, American Crow, Red-Bellied Woodpecker, Song Sparrow, Wood Thrush, Cedar Waxwing, Northern Flicker, American Robin, Indigo Bunting, Blue Jay, Gray Catbird, Baltimore Oriole, Great-crested Flycatcher, House Wren, Downy Woodpecker, Pileated Woodpecker (excavations), Red-winged Blackbird, Red Tail Hawk **Herpetofauna:** Wood Frog, Gray Treefrog, Spring Peeper

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						• Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2): The canopy layer within this mid-age forest consists of sugar maple and American beech. The sub-canopy layer consists of sugar maple and American beech. The shrub layer consists of blue beech, sugar maple and American beech. The ground cover consists of choke cherry, poison ivy, sugar maple and enchanters nightshade. One Colorado Spruce Cultural Plantation (CUP 3c) is present. This Mid-age plantation is dominated by Colorado spruce with some white pine, white spruce, white ash and trembling aspen.	
WOD-278	339, 342	>0.1 m (collection line)	15.8	Deciduous Forest and Deciduous Swamp	Mid-age and Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2): The canopy layer of this mature forest is dominated by sugar maple and American beech with lesser amounts of basswood and white ash. The sub-canopy layer consists of American beech and sugar maple. The shrub layer is dominated by choke cherry. The herbaceous layer is mainly comprised of woodland strawberry, choke cherry, tall white aster and zigzag goldenrod. This forest exhibits evidence of selective cutting within the past few years. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): This is a complex of deciduous swamp and marsh communities. The canopy of this mid-age deciduous swamp is dominated by freeman's maple with lesser amounts of green ash and trembling aspen. The sub-canopy layer consists of black ash and green ash. The ground layer is dominated by common reed, bulrush species and sedge species. • Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type (FOD5-5): The canopy layer of this mature deciduous forest is comprised of sugar maple, shagbark hickory, white ash, and American beech while the sub-canopy consists of sugar maple, white ash, shagbark hickory, and basswood. The shrub layer is dominated by sugar maple with lesser amounts of shagbark hickory and basswood. Species observed within the herbaceous layer include jack-in-the-pulpit, sugar maple, enchanter's nightshade and zigzag goldenrod.	Provides habitat for the following species: **Birds:** Red-tailed Hawk (vocalization pair, agitated), Wild Turkey (feathers), Eastern Wood-pewee, White-breasted Nuthatch, Mourning Dove, American Goldfinch, Cooper's Hawk, Downy Woodpecker, Wild turkey (feather), Blue Jay, Snow Bunting **Herpetofauna:** Spring Peeper
WOD-286	349, 346	16 m (collection line)	3.5	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Green Ash Deciduous Forest Type (FOD4g): The canopy within this mid-age deciduous forest consists mainly of green ash with fewer white birch and white elm. The sub-canopy consists of green ash, white elm and white birch. The shrub layer consists mainly of spice bush with fewer green ash and witch hazel. The ground cover consists of wild red raspberry, enchanter's nightshade, thicket-creeper, poison ivy and yellow avens. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy and sub-canopy of this mid-age deciduous forest was dominated by green ash with lesser amounts of white elm. The shrub layer was dominated by spice bush and common buckthorn. The ground cover was mainly yellow avens, poison ivy, and wild red raspberry.	Provides habitat for the following species: **Birds:** Great-crested Flycatcher, Blue Jay, Song Sparrow, House Wren, Black-capped Chickadee

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						One inclusion is associate with this forest: White Pine Coniferous Plantation (CUP3-2): The mid-age plantation inclusion consists of eastern white pine. The shrub layer consists of ash species. The ground cover consists of ash species.	
WOD-289	352	21 m (access road)	7.2	Deciduous Forest	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2): The canopy of this mature deciduous forest is dominated by sugar maple and American beech with lesser amounts of white ash and basswood. The sub-canopy is dominated by sugar maple and with ash with lesser amounts of basswood and ironwood. The shrub layer consists of sugar maple with equal amounts of American beech and white ash and lesser amounts of choke cherry. Herbaceous layer species include immature white ash, immature sugar maple, jack-in-the-pulpit and enchanter's nightshade.	Provides habitat for the following species: **Birds:** Great-crested Flycatcher, Cedar Waxwing, American Robin, Eastern Wood-pewee, Pileated Woodpecker, Yellow-throated Vireo **Lepidoptera:** Red-spotted Purple, Monarch
WOD-295	358	>0.1 m (collection line)	4.1	Deciduous Forest	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2): The canopy layer of this mature deciduous forest is dominated by American beech, sugar maple, ironwood and white ash. The sub-canopy layer consists of sugar maple and American beech. The shrub layer is dominated by American beech and white ash, while the herbaceous layer was mainly comprised of zigzag goldenrod, ironwood, poison ivy, tall white aster and wild leek.	Provides habitat for the following species: **Birds:** Wild Turkey, Turkey Vulture, Ruby-throated Hummingbird, American Goldfinch, Eastern Wood-pewee
WOD-299	362	118 m (collection line)	2.0	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Poplar Deciduous Forest Type (FOD 8-1): The canopy of this mid-age forest consists of trembling aspen, green ash, white elm and basswood. The sub-canopy consists of green ash, trembling aspen and white elm. The shrub layer consists of alternate-leaved dogwood and wild red raspberry. The ground cover consists of garlic mustard, goldenrod species, aster species and grasses.	Provides habitat for the following species: **Birds:** Horned lark, Brown Thrasher, House Wren, Vesper Sparrow, Rose-breasted Grosbeak
WOD-300	757	10 m (turbine construction footprint)	11.7	Deciduous Forest	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy within this mid-age layer consists of green ash with lesser amounts of basswood. The sub-canopy is dominated by green ash. The shrub layer consists of spice bush with lesser amounts of green ash. The ground cover consists largely of green ash seedlings. • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5): The canopy layer of this mid-age to mature deciduous forest is dominated by sugar maple with lesser amounts of blue beech, basswood and ironwood. The shrub layer is dominated by spicebush with some black raspberry, blackberry and prickly gooseberry. The herbaceous layer is dominated by jack-in-the-pulpit with lesser amounts of false solomon's seal, false miterwort. Undulating topography was noted.	Provides habitat for the following species: **Birds:** Ovenbird, Great-crested Flycatcher, Yellow-throated Vireo, Blue Jay, Black-capped Chickadee, Horned Lark, Song Sparrow, Brown Thrasher, White-breasted Nuthatch, Vesper Sparrow, Brown-headed Cowbird, Red-bellied Woodpecker, Northern Flicker, Hairy Woodpecker, Wood Duck, American Goldfinch, Wild Turkey **Herpetofauna:** Green Frog

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-301	361	8 m (collection line)	2.5	Deciduous Woodland and Deciduous Forest	Young to Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Ash - Basswood Mineral Cultural Woodland Type (CUW1b): The canopy of this young to mid-age deciduous forest is dominated by ash with lesser amounts of basswood. The sub-canopy also consists of ash. The shrub layer consists of winterberry, ash species and poison ivy. The herbaceous layer was dominated by avens species with lesser amounts of calico aster and Canada goldenrod. • Fresh - Moist Ash Lowland Deciduous Forest Type (FOD7-2): The canopy layer within this mid-age deciduous forest consists mainly of green ash with some basswood and Freeman's maple. The sub-canopy layer consists mainly of green ash and white elm. The shrub layer consists of green ash. The ground cover could not be seen.	Provides habitat for the following species: **Birds:** Blue Jay, Downy Woodpecker, American Goldfinch
WOD-303	364	5 m (collection line)	9.6	Deciduous Forest	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): The canopy layer of this mature deciduous forest is dominated by sugar maple with lesser amounts of white ash and American beech. The shrub layer consists of American beech, white ash and common elderberry. The ground layer was mainly comprised of zigzag goldenrod, Pennsylvania sedge, red baneberry, jack-in-the-pulpit and false solomon's seal. This forest exhibits evidence of logging; abundant stumps were present.	Provides habitat for the following species: **Birds:** Wild Turkey **Herpetofauna:** Wood Frog
WOD-306	369	27 m (turbine construction footprint)	13.7	Cultural Woodland	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Sweet Cherry - White Elm Mineral Cultural Woodland Type (CUW1e): This mid-age cultural woodland is dominated by white elm, basswood and white ash. The sub-canopy is dominated by sweet cherry with lesser amount of white ash and white elm. The shrub and herbaceous layers consist of New England aster, hairy aster, garlic mustard, wild strawberry and poison ivy.	No wildlife were observed, but this area is suitable for many of the species observed in other cultural woodlands.
WOD-307	370	102 m (access road)	1.4	Mixed Plantation	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • White Pine - Carolina Poplar Mixed Plantation Type (CUP2a): The canopy within this mid-age plantation consists of Carolina poplar. The sub canopy consists of eastern white pine, white spruce and red cedar. The shrub layer consists of smooth brome.	No wildlife were observed, but this area is suitable for many of the species observed in other plantations.
WOD-309	372	49 m (turbine construction footprint)	4.0	Deciduous Forest	Mid-age to Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6): The canopy layer within this mid-age to mature deciduous forest consists of basswood and sugar maple, with some white ash, black cherry and American beech. The sub-canopy is dominated by sugar maple. The shrub layer consists of choke cherry and running strawberry bush with lesser amounts of American beech and white elm. The ground cover consists of toothwort, yellow trout lily, jack-in-the-pulpit, red trillium, false solomon's seal and herb robert.	Provides habitat for the following species: **Birds:** Red-winged Blackbird, Ruby-crowned Kinglet, Vesper Sparrow **Herpetofauna:** Wood Frog

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
WOD-310	375	12 m (collection line)	3.0	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5) (northeast of Turbine 72): The canopy layer of this mid-age deciduous forest consists of sugar maple with basswood and white ash, and lesser amounts of American beech. The sub-canopy consists of sugar maple, basswood, American beech, white elm, blue beech, spice bush and choke cherry. The shrub layer consists of sugar maple, calico aster, false solomon's seal, black raspberry and choke cherry, white elm and running strawberry bush, while the herbaceous layer consists of poison ivy, wild leek, yellow trout lily, garlic mustard and white trillium.	Provides habitat for the following species: **Birds:** Gray Catbird, White-breasted Nuthatch, American Robin **Herpetofauna:** Spring Peeper
WOD-311	373	97 m (turbine construction footprint)	0.9	Cultural Woodland	Young	Vegetation community and species composition within the 120 m Area of Investigation as follows: • White Elm Mineral Cultural Woodland Type (CUW1h): Dominant species observed include white elm, basswood, and black cherry within the canopy of this young cultural woodland, and the sub-canopy included apple and basswood. Species recorded within the herbaceous layer include white avens, red raspberry, and tall goldenrod.	Provides habitat for the following species: **Birds:** Black-capped Chickadee, American Goldfinch, Blue Jay, Song Sparrow **Herpetofauna:** American Toad **Lepidoptera:** Monarch, Common Sulphur, Eastern Comma, Alfalfa Butterfly
WOD-312	375	29 m (access road)	2.1	Deciduous Forest	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5) (east of Turbine 4): The canopy layer of this Mid-age deciduous forest is dominated by sugar maple with lesser amounts of American beech, shagbark hickory and white ash. The sub-canopy consists of blue beech, sugar maple, spicebush and common elderberry. The shrub layer includes zig-zag goldenrod, fowl manna grass, northern lady fern and wild black currant, while the herbaceous layer includes false nettle, false solomon's seal, calico aster and Christmas fern.	Provides habitat for the following species: **Birds:** Downy Woodpecker, Blue Jay, American Goldfinch, Northern Flicker, American Crow, Black-capped Chickadee, White-breasted Nuthatch **Herpetofauna:** Spring Peeper
WOD-313	375	>0.1 m (collection line)	13.2	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type (FOD6-5) (northwest of Turbine 5): The canopy of this mid-age deciduous forest is dominated by sugar maple, basswood, white ash, American beech and ironwood. The sub-canopy consists of trembling aspen, blue beech, sweet cherry and silky dogwood. The shrub layer includes calico aster, wild black currant and fly honeysuckle, and the herbaceous layer was dominated by poison ivy with lesser amounts of large bellwort and woodland strawberry. • Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-1): This mid-age deciduous forest is dominated by sugar maple with lesser amounts of American beech, basswood and poplar species. • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy layer within this mid-age deciduous swamp is dominated by Freeman's maple with some green ash. The sub-canopy consists of Freeman's maple, white elm, and	Provides habitat for the following species: **Birds:** Downy Woodpecker, Blue Jay, American Goldfinch, Northern Flicker, American Crow, Black-capped Chickadee, White-breasted Nuthatch **Herpetofauna:** Spring Peeper **Mammals:** Eastern Cottontail

Table 3.6 Woodland Features Identified Through the Records Review and Site Investigation

Woodland ID	Natural Area	Minimum Distance from Project Location[5]	Attributes			Composition	Functions
			Total Size (ha)	Forest Community Type	Woodland Age		
						basswood. Species observed within the shrub layer include white elm with equal amounts of green ash, basswood, and choke cherry. The herbaceous layer is comprised of buttonbush, with equal amounts of choke cherry, sensitive fern, and spinulose wood fern. There is a Fresh-Moist Sugar Maple - Hemlock Mixed Forest Type (FOM6-1) inclusion associated with this forest.	
WOD-328	392	10 m (access road)	9.7	Deciduous Forest and Deciduous Swamp	Mid-age	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Swamp Maple Mineral Deciduous Swamp Type (SWD3-3): The canopy layer within this mid-age deciduous forest consists of freeman's maple, and green ash, while species within the sub-canopy include freeman's maple, green ash, and poison ivy. The shrub layer consists of equal amounts of freeman's maple and green ash while the ground cover layer is comprised of red-osier dogwood with lesser amounts of poison ivy and sensitive fern. • Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2): Species observed within the canopy of this mid-age deciduous forest include sugar maple and American beech, with some white ash, basswood and black cherry. The sub-canopy is dominated sugar maple with lesser amounts of American beech, ironwood, and white elm. Species recorded in the shrub layer include white ash, American beech, choke cherry and ironwood, while the herbaceous layer includes large flowered bellwort, thicket creeper, poison ivy, yellow avens, yellow trout lily, basswood, garlic mustard, and common blue violet. There are two inclusions of the same type associated with this forest: Swamp Maple Mineral Deciduous Swamp Type (SWD3-3).	Provides habitat for the following species: **Birds:** Wood Duck, Song Sparrow, Red-winged Blackbird, Downy Woodpecker, Mourning Dove, Blue Jay, Black-capped Chickadee, American Crow, White-breasted Nuthatch, American Goldfinch, Yellow-bellied Sapsucker (holes in tree) **Herpetofauna:** Wood Frog **Mammals:** Raccoon, White-tailed Deer
WOD-331	379	23 m (access road)	1030.6	Coniferous Plantation	Mature	Vegetation community and species composition within the 120 m Area of Investigation as follows: • Red Pine Coniferous Plantation Type (CUP3-1): The canopy layer within this mature plantation is dominated by red pine with fewer eastern white pine, less white spruce and even less white ash. The sub-canopy is mainly white ash with fewer eastern white pine and less white spruce and sweet cherry. The shrub layer is dominated by white ash with fewer choke cherry, common buckthorn and wild red raspberry. The ground cover consists of garlic mustard, herb-robert, bittersweet nightshade, immature white ash, poison ivy and avens species.	Provides habitat for the following species: **Birds:** Blue Jay, American Crow, Northern Flicker, Red-winged Blackbird, Song Sparrow, Downy Woodpecker, Brown-headed Cowbird, Black-capped Chickadee **Herpetofauna:** Spring Peeper **Mammals:** White-tailed Deer, Raccoon

3.3.5 Valleylands

One valleyland feature was identified in or within the 120 m Area of Investigation through the Records Review and Site Investigation. The boundary of this valleyland feature is shown on Figure 3.5. A description of the attributes, composition, and function of this valleyland feature, as well as the distance from this feature to the nearest project components, is provided in Table 3.7 below. This valleyland feature was carried forward to the Evaluation of Significance phase of this Natural Heritage Assessment.

Table 3.7 Valleyland Feature Identified Through the Records Review and Site Investigation

Valleyland ID	Minimum Distance from Project Location[6]	Attributes		Composition	Functions
		Size within Study Area (ha)	Catchment Area		
VAL-02	0 (transmission line in feature)	2683.5	The total catchment area of the surface water feature through the valleyland is 32,249 ha	Vegetation community and species composition within the 120 m Area of Investigation include: • Green Ash Mineral Deciduous Swamp Type (SWD2-2): The canopy layer of this mid-age deciduous swamp community consists of green ash and Freeman's maple. The sub-canopy layer consists of Freeman's maple and green ash. The shrub layer consists of wild red raspberry, Freeman's maple and green ash. The ground cover consists of wood nettle, goldenrod species, spotted jewelweed and blue flag iris. Two inclusions have been identified within this vegetation community: Coniferous Plantation Ecosite (CUP3) and Willow Mineral Thicket Swamp Type (SWT2-2). • Willow Mineral Thicket Swamp Type (SWT2-2): The canopy within this mid-age thicket swamp community consists of crack willow and green ash. There is no sub-canopy. The shrub layer consists of sandbar willow, alternate-leaved dogwood and red-osier dogwood. The ground cover consists of reed canary grass, wood nettle, spotted jewelweed and goldenrod species. Two inclusions have been identified within this vegetation community: Open Aquatic (OAO) and Green Ash Mineral Deciduous Swamp Type (SWD2-2). • Red Pine Coniferous Plantation Type (CUP3-1): The canopy layer within this mature plantation is dominated by red pine with fewer eastern white pine, less white spruce and even less white ash. The sub-canopy is mainly white ash with fewer eastern white pine and less white spruce and sweet cherry. The shrub layer is dominated by white ash with fewer choke cherry, common buckthorn and wild red raspberry. The ground cover consists of garlic mustard, herb-robert, bittersweet nightshade, immature white ash, poison ivy and avens species. The meadow marsh inclusion is associated with an intermittent drainage feature. Scattered trees consisting of willow and Manitoba maple were observed throughout with some red-osier dogwood. The community is dominated by reed canary grass. Vegetation communities outside the 120 m Area of Investigation include deciduous forest (FOD), deciduous swamp (SWD),thicket swamp (SWT), cultural thicket (CUT), cultural woodland (CUW),), meadow marsh (MAM), open aquatic (OAO).	• Provides habitat and resources for wildlife including mammals such as White-tailed and numerous bird species including: Baltimore Oriole, Brown-headed Cowbird, Red-winged Blackbird, American Robin, Magnolia Warbler, Song Sparrow, Turkey Vulture, American Goldfinch, Woodpecker sp., Rose-breasted Grosbeak, Eastern Wood-pewee, Great-crested Flycatcher, Chipping Sparrow, White-throated Sparrow, Blue Jay, Northern Flicker, Black-capped Chickadee. • Area is considered of regional significance for winter cover for White-tailed Deer (MNR, 1987); • Site is an important water storage area and contains the headwaters for Black Creek (MNR, 2011a); • Provides a corridor function for the movement of species across the broader landscape.

6. Reflects distance between feature and disturbance area associated with project infrastructure unless otherwise stated.

3.3.6 Wildlife Habitat

The presence or absence of candidate Significant Wildlife Habitat in or within the 120 m Area of Investigation was confirmed through site investigations. A description of how a determination was made of the presence or absence of each type of candidate Significant Wildlife Habitat identified through the Records Review and site investigation is provided in the sections that follow. The locations of candidate Significant Wildlife Habitat carried forward to the Evaluation of Significance phase of the NHA are shown on Figure 3.6a, 3.6b, 3.6c and 3.6d.

3.3.6.1 Seasonal Concentration Areas of Animals

Seasonal concentration areas are described in the SWHTG and Draft Ecoregion Criterion Schedules. The following seasonal concentration areas of animals were identified as potentially occurring in the Project Study Area through the Records Review:

- Waterfowl stopover and staging areas (terrestrial and aquatic);
- Shorebird migratory stopover areas;
- Raptor wintering area;
- Bat hibernacula;
- Bat maternity colonies;
- Turtle wintering areas;
- Reptile hibernacula;
- Colonially-nesting bird breeding habitat (bank and cliff, tree/shrubs and ground); and,
- Deer winter congregation areas.

A description of the results of site investigations pertaining to seasonal concentration areas of animals follows.

Waterfowl Stopover and Staging Areas: Terrestrial

Tundra Swan (*Cygnus columbianus*) stopover and staging habitat typically consists of agricultural fields with waste grains that are subject to annual spring flooding from melt water or runoff. These fields function as important feeding areas for Tundra Swan during spring migration. Agricultural fields with waste grains that are not subject to annual spring flooding may also be used by migrating Tundra Swans but cannot be identified as readily.

Information provided by landowners, aerial photo interpretation and preliminary Tundra Swan migration surveys conducted in 2010 and 2012 were used to identify potential candidate Tundra Swan stopover and staging habitats. A total of 10 possible candidate Tundra Swan stopover and staging habitat sites, shown on Figure 2.1, were initially identified through the Records Review. Site investigations were undertaken at these locations to determine whether the sites exhibit evidence of annual spring flooding (e.g. by examining local topography, soil conditions and plant species composition) as well as whether forage crops are present, and to delineate the boundaries of candidate significant Tundra Swan stopover and staging habitats. As described in the SWHTG, the area of the waterfowl stopover and staging habitat plus an additional 100 to 300 m may be protected, depending on the sensitivity of the birds, local site conditions and adjacent land use. A conservative approach was taken herein, where the area within 300 m of the delineated habitat boundary was considered to form part of the habitat and distances to project components were measured from the outer limit of this area (refer to Figure 3.6c).

Of the 10 sites identified through the Records Review, two are located in or within the 120 m Area of Investigation, had visible evidence of spring flooding and are within 120 m of a proposed turbine location (Table 3.8); therefore, these two features (WSST-15 and WSST-36) were carried forward to the Evaluation of Significance as candidate significant Tundra Swan stopover and staging habitats. The locations of these candidate Significant Wildlife Habitats are shown on Figure 3.6c.

Table 3.8 Tundra Swan Stopover and Staging Areas

Feature No.	Method of Identification	Evidence of Annual Spring Flooding	Forage Crop Present	Within 120 m of Turbine	Within Project Location	Carried Forward to EOS		Rationale
						Candidate SWH	Generalized Candidate SWH	
WSST-08	Tundra Swans observed by AECOM	No evidence of spring flooding in agricultural fields	Yes	Yes	Yes	No	No	WSST-08 was not carried forward to EOS due to lack of evidence of spring flooding.
WSST-14	Tundra Swans observed by AECOM	Evidence of spring flooding in agricultural fields	Yes	No	No	No	No	WSST-14 was not carried forward to EOS as it is not in or within 120 m of the Project Location.
WSST-15	Tundra Swans observed by AECOM	Potential low area adjacent water-course at east end of property	Yes	Yes	Yes	Yes (WSST-15)	No	WSST-15 falls within 120 m of a proposed turbine and supports evidence of annual spring flooding.
WSST-16	Tundra Swans observed by AECOM	No evidence of spring flooding in agricultural fields	Yes	No	No	No	No	WSST-16 was not carried forward to EOS as it is not in or within 120 m of the Project Location.
WSST-32	Tundra Swans reported by resident	No evidence of spring flooding in agricultural fields	Yes	No	No	No	No	WSST-32 was not carried forward to EOS as it is not in or within 120 m of the Project Location.
WSST-33	Tundra Swans reported by resident	No evidence of spring flooding in agricultural fields	Yes	No	No	No	No	WSST-33 was not carried forward to EOS as it is not in or within 120 m of the Project Location.
WSST-34	Tundra Swans reported by Resident	No evidence of spring flooding in agricultural fields	Yes	No	No	No	No	WSST-34 was not carried forward to EOS as it is not in or within 120 m of the Project Location.
WSST-35	Tundra Swans observed by AECOM	No evidence of spring flooding in agricultural fields	Yes	No	No	No	No	WSST-35 is not within 120 m of the Project Location.
WSST-36	Tundra Swans reported by resident	Evidence of spring flooding in agricultural fields	Yes	Yes	Yes	Yes (WSST-36)	No	WSST-36 falls within 120 m of a proposed turbine and supports evidence of spring flooding.
WSST-37	Tundra Swans reported by resident	No evidence of spring flooding in agricultural fields	Yes	Yes	Yes	No	No	WSST-37 was not carried forward to EOS due to lack of evidence of spring flooding.

Other terrestrial waterfowl stopover and staging habitat may also occur in cultural meadow or cultural thicket communities where there is evidence of annual spring flooding from melt water or runoff. These melt water ponds can function as important feeding areas used by waterfowl during spring and fall migration.

A total of 26 natural areas containing cultural meadow or cultural thicket vegetation communities were identified in or within the 120 m Area of Investigation during the site investigation (refer to Table 3.9). None of these have meadow marsh inclusions. Many are located within the limits of ABCA Regulated Area and therefore may be subject to some seasonal flooding. Overall the field areas are not extensive and did not show evidence of seasonal flooding that would be extensive enough to provide habitat for a large number of staging waterfowl. Only relatively large areas located in a floodplain and presenting evidence of extensive annual spring flooding are considered to have some potential to provide significant waterfowl staging habitat, as such areas have potential to attract large numbers of the target waterfowl species. The only waterfowl likely to congregate in fields in or within the 120 m Area of Investigation are Mallard (*Anas platyrhynchos*) and Canada Goose (*Branta canadensis*), neither which are target species for this Significant Wildlife Habitat type. Consequently, none of the areas were carried forward to Evaluation of Significance.

Table 3.9 Waterfowl Stopover and Staging Areas (Terrestrial)

Natural Area No.	ELC Unit	Area of Cultural Community Complex (ha)	Evidence of Annual Spring Flooding	Within 120 m of Turbine	Within Project Location	Carried Forward to EOS		Rationale
						Candidate SWH	Generalized Candidate SWH	
198	CUT1h	0.2	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
	CUM1-1	1.2		No	No	No	No	
204	CUM1-1	0.1	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
209	CUM1-1	0.04	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
	CUT1	0.05		No	No	No	No	
210	CUM1-1	0.5	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
	CUTi	1.6		No	No	No	No	
215	CUM1-1	0.5	No evidence of annual spring flooding.	No	No	No	No	No evidence of annual spring flooding.
216	CUM1-1	0.2	No evidence of annual spring flooding.	Yes	No	No	No	No evidence of annual spring flooding.
220	CUM1-1	1.1	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
227	CUM1-1	4.9	Possible, within ABCA Regulated Area.	Yes	No	No	No	Insufficient size to support required number of waterfowl.
236	CUT1h	0.9	Possible, within ABCA Regulated Area.	Yes	No	No	No	Insufficient size to support required number of waterfowl.
	CUM1-1	0.2		Yes	No	No	No	
250	CUM1-1	0.4	No evidence of annual spring flooding.	No	No	No	No	No evidence of annual spring flooding.
255	CUM1-1	0.5	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
258	CUM1-1	0.2	No evidence of annual spring flooding.	No	No	No	No	No evidence of annual spring flooding.
266	CUT	0.4	No evidence of annual spring flooding.	No	No	No	No	No evidence of annual spring flooding.
	CUM1-1	0.2		No	No	No	No	
	CUM1-1	0.3		No	No	No	No	
271	CUM1-1	0.4	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
280	CUM1-1	0.1	No evidence of annual spring flooding.	Yes	No	No	No	No evidence of annual spring flooding.
282	CUM1-1	1.4	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
285	CUM1-1	0.1	No evidence of annual spring flooding.	Yes	No	No	No	No evidence of annual spring flooding.
300	CUM1-1	0.7	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
346	CUM1-1	0.3	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
373	CUM1-1	0.8	Possible, within ABCA Regulated Area.	Yes	No	No	No	Insufficient size to support required number of waterfowl.
635	CUM1-1	2.7	Possible, within ABCA Regulated Area.	No	Yes	No	No	Insufficient size to support required number of waterfowl.
	CUTi	0.3		No	No	No	No	
	CUTi	0.2		No	Yes	No	No	
636	CUM1-1	2.7	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.
637	CUM1-1	1.6	Possible, within ABCA Regulated Area.	No	Yes	No	No	Insufficient size to support required number of waterfowl.
648	CUM1-1	4.8	Possible, within ABCA Regulated Area.	No	Yes	No	No	Insufficient size and water levels to support required number of waterfowl.
	CUT1	0.2		No	Yes	No	No	
720	CUM1-1	0.3	No evidence of annual spring flooding.	No	Yes	No	No	No evidence of annual spring flooding.
738	CUM1-1	1.1	Possible, within ABCA Regulated Area.	No	No	No	No	Insufficient size to support required number of waterfowl.

Waterfowl Stopover and Staging Areas: Aquatic

Larger wetlands and those associated with shorelines are usually preferred by waterfowl and tend to attract the largest concentrations. Marsh habitats where open water and emergent plant cover are interspersed tend to be higher quality sites because they provide an optimum mix of food and cover. Aquatic waterfowl stopover and staging areas may be found within marsh, shallow water and deciduous swamp vegetation communities (refer to Table 3.2 for corresponding ELC units) with fairly extensive areas of shallow open water.

Generally, the Project Study Area does not contain marshes with sufficient extent of open water to serve as waterfowl stopover and staging areas. A total of eight natural areas with qualifying vegetation communities containing standing water were determined to be located in or within the 120 m Area of Investigation (Table 3.10). None of these features contain suitable waterfowl stopover and staging (aquatic) areas due to their insufficient size and diversity to support the required number of waterfowl. Consequently this type of Significant Wildlife Habitat was not carried forward to the Evaluation of Significance.

Table 3.10 Waterfowl Stopover and Staging Areas (Aquatic)

Natural Area No.	ELC Unit	Area of Wetland + Open Water Complex (ha)	Standing Water Present	Within 120 m of Turbine	Within Project Location	Carried Forward to EOS		Rationale
						Candidate SWH	Generalized Candidate SWH	
225	MAM2-2	0.1	Yes – vernal pool	Yes	No	No	No	Insufficient size and diversity to support required number of waterfowl
235	SWD3-3	0.7	Yes – vernal pool	No	No	No	No	Insufficient size and diversity to support required number of waterfowl
236	SWD3-3	1.4	Yes – vernal pools & evidence of seasonal flooding	Yes	No	No	No	Insufficient size and diversity to support required number of waterfowl
	SWD3-3	3.7	Yes – vernal pools & evidence of seasonal flooding	Yes	No	No	No	Insufficient size and diversity to support required number of waterfowl
244	SWD3-3	0.6	Yes – vernal pool	Yes	No	No	No	Insufficient size and diversity to support required number of waterfowl
275	SWD3-3	1.5	Yes – vernal pool	No	No	No	No	Insufficient size and diversity to support required number of waterfowl
300	SWD3-3	1.2	Yes – vernal pools & evidence of seasonal flooding	No	No	No	No	Insufficient size and diversity to support required number of waterfowl
309	SWD3-3	5.4	Yes – vernal pools	No	No	No	No	Insufficient size and diversity to support required number of waterfowl
375	SWD 3-3	1.8	Yes – vernal pool	No	No	No	No	Insufficient size and diversity to support required number of waterfowl

Shorebird Migratory Stopover Areas

Shorebird stopover areas are used by migratory shorebirds to rest and feed along their migration route. Natural areas that function as migration stopover areas for shorebirds typically provide a stretch of undisturbed shoreline and relatively abundant invertebrate food. These habitats can be found along the shorelines of lakes, rivers and wetlands, including beach areas, bars, seasonally flooded shoreline, mudflats, rock groynes, and other forms of armour rock lakeshore.

One Lesser Yellowlegs (*Tringa flavipes*) (during fall migration study), 49 American Golden Plovers (*Pluvialis dominica*) (during the fall migration study), five Least Sandpipers (*Calidris minutilla*) (spring breeding surveys), three Spotted Sandpipers (*Actitis macularius*) (1 observed in the spring, 2 in the summer), and one Upland Sandpiper (*Bartramia longicauda*) (summer breeding survey) were recorded during avian surveys conducted in the Project Study Area (Golder Associates, 2011).

A total of four natural areas containing marsh ELC polygons (i.e. vegetation communities larger than 0.5 ha) were identified in or within the 120 m Area of Investigation during the site investigation (Table 3.11). The meadow marsh communities in this area contain minimal open water and, therefore, do not have the potential to form more than just small areas of mudflats. None of the communities meet the habitat requirements for shorebird migratory stopover areas (e.g., presence of mudflats or shorelines adjacent to large open water area). Small numbers of migrant shorebirds may occasionally occur but would be far below the thresholds to qualify for Significant Wildlife Habitat. This type of Significant Wildlife Habitat was not carried forward to the Evaluation of Significance.

Table 3.11 Shorebird Migratory Stopover Areas

Natural Area No.	ELC Vegetation Type	Shoreline Habitat Present	Within 120 m of Turbine	Within Project Location	Carried Forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
274	MAM3-2	No	No	No	No	No	No open water present.
279	MAM3-2	No	No	No	No	No	No open water present.
375	MAM2a	No	No	No	No	No	No open water present.
739	MAM2-2	No	No	No	No	No	No open water present.

Raptor Wintering Areas

Fields and open meadows can function as important feeding habitats for a variety of raptors, since prey (e.g., small mammals and ground nesting birds) are exposed and abundant in these open areas. Open areas also provide good visibility and unimpeded flight, contributing to hunting success. Because the persistence of local raptor populations is highly influenced by the availability of food, fields and meadows are key habitat natural areas for many raptor species.

In southern Ontario, oldfields, pastures and open meadows provide critical winter roosting areas for Northern Harriers (*Circus cyaneus*) and Short-eared Owls (*Asio flammeus*), which roost on the ground in winter. Good roosting habitat consists of large fields (usually >20 ha) since these are generally not disturbed, have adequate cover, as well as abundant and nearby prey resources, typically consisting of Meadow Voles.

For fields and meadows to function as Significant Wildlife Habitat for wintering raptors, they must provide suitable habitat for prey species. Prey population density and productivity will be maximized in fields with a diversity of herbaceous plant species offering a mix of green leafy plant matter, seeds, nuts and fruits throughout the year. Sufficient cover is also needed to ensure that predators do not exert too much pressure on prey populations, causing them to decline to low levels that no longer provide sufficient food for raptors. Areas with grasses or forbs 5 cm to 30 cm in height are ideal, as this provides adequate cover for small mammals, yet the cover is not so dense that raptors cannot detect prey.

During winter avian use surveys conducted in the Project Study Area, a total of eight Red-tailed Hawks, and one Rough-legged Hawk were observed (Golder Associates, 2011).

A total of three natural areas with a combination of both forest and upland Ecosites having a total area of over 20 ha were identified within the 120 m Area of Investigation during the site investigation (Table 3.12). However, none of the natural features contained open upland habitat of sufficient size to meet the criterion; none of the open upland areas are larger than 15 ha in any natural area within the Study Area. Therefore no candidate raptor wintering areas will be carried forward to the Evaluation of Significance.

Table 3.12 Raptor Wintering Areas

Natural Area No.	Contains > 20 ha Forest & Upland Habitats	Open Upland Habitat > 15 ha	Within 120 m of Turbine	Within 120 m of T-line	Within Project Location	Carried forward to EOS		Rationale
						Candidate SWH	Generalized Candidate SWH	
236	Yes	No	Yes	Yes	Yes	No	No	Open upland does not meet the minimum size for this criterion.
255	Yes	No	No	Yes	Yes	No	No	Open upland does not meet the minimum size for this criterion.
258	Yes	No	Yes	No	Yes	No	No	Open upland does not meet the minimum size for this criterion.

Bat Hibernacula

Bat winter hibernacula may be found in caves, mine shafts, underground formations and karsts. No candidate bat winter hibernacula were identified in or within the 120 m Area of Investigation by AECOM or NRSI. This type of candidate Significant Wildlife Habitat was not carried forward to the Evaluation of Significance.

Bat Maternity Colonies

Details regarding the identification of bat maternity colonies are provided in Appendix G. In summary, 17 candidate significant bat maternity roost habitats were identified in woodlands found within 120 m of proposed wind turbines and two candidate significant bat maternity roost habitats are proposed to be overlapped by the transmission line (refer to Table 3.13). These locations potentially qualify as Significant Wildlife Habitat for bat maternity colonies on the basis of MNR criteria (refer to Section 3.2.6.1 and Table 3.2) and were, therefore, carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat. Other woodlands located in or within 120 m of the Project Location but more than 120 m from proposed turbines and not overlapped by the transmission line also contain suitable habitat for bat maternity colonies (NRSI, 2012; refer to Appendix G). These were treated as Generalized Candidate Significant Wildlife Habitat and carried forward to the Evaluation of Significance. The locations of these features are shown on Figure 3.6c.

Table 3.13 Bat Maternity Colonies

Natural Area No.	Contains >10 cavity trees/ha	Within 120 m of Turbine	Within Project Location	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
177	Yes	Yes	No	Yes (BMC-177)	No	Contains >10 cavity trees/ha
189	Yes	Yes	No	Yes (BMC-189)	No	Contains >10 cavity trees/ha
215	Yes	Yes	No	Yes (BMC-215)	No	Contains >10 cavity trees/ha
229	Yes	Yes	No	Yes (BMC-229)	No	Contains >10 cavity trees/ha
235	Yes	Yes	No	Yes (BMC-235)	No	Contains >10 cavity trees/ha
236	Yes	Yes	No	Yes (BMC-236)	No	Contains >10 cavity trees/ha
242	Yes	Yes	No	Yes (BMC-242)	No	Contains >10 cavity trees/ha
249	Yes	Yes	No	Yes (BMC-249)	No	Contains >10 cavity trees/ha
267	Yes	Yes	No	Yes (BMC-267)	No	Contains >10 cavity trees/ha

Natural Area No.	Contains >10 cavity trees/ha	Within 120 m of Turbine	Within Project Location	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
282	Yes	Yes	No	Yes (BMC-282)	No	Contains >10 cavity trees/ha
285	Yes	Yes	No	Yes (BMC-285)	No	Contains >10 cavity trees/ha
326	Yes	Yes	No	Yes (BMC-326)	No	Contains >10 cavity trees/ha
342	Yes	Yes	No	Yes (BMC-342)	No	Contains >10 cavity trees/ha
352	Yes	Yes	No	Yes (BMC-352)	No	Contains >10 cavity trees/ha
358	Yes	Yes	No	Yes (BMC-358)	No	Contains >10 cavity trees/ha
372	Yes	Yes	No	Yes (BMC-372)	No	Contains >10 cavity trees/ha
757	Yes	Yes	No	Yes (BMC-757)	No	Contains >10 cavity trees/ha
648	Yes	No	Yes (transmission line)	Yes (BMC-648)	No	Contains >10 cavity trees/ha
720	Yes	No	Yes (transmission line)	Yes (BMC-720)	No	Contains >10 cavity trees/ha

Turtle Wintering Areas

Turtles over-winter in permanent water bodies including deep rivers, large wetlands, and bogs or fens with adequate dissolved oxygen, soft mud substrates that they can burrow into, and water deep enough so as not to freeze completely in winter. Areas containing permanent open water habitats occurring in or within the 120 m Area of Investigation were assessed to determine if they contain suitable habitat for turtle wintering (Table 3.14).

There are no bogs or fens within the 120 m Area of Investigation. Many of the ponds are manmade or dug out ponds used for agricultural or aesthetic purposes with steep sides and minimal emergent vegetation and therefore are not considered Significant Wildlife Habitat for turtle wintering. Natural or naturalized ponds, as well as marshes, swamps and shallow water vegetation communities containing water greater than 1 m in depth and muddy substrates were considered potential turtle wintering habitat. Potential suitable turtle wintering habitat was identified in a total of seven locations within the 120 m Area of Investigation (Table 3.14). Two of these features (TOW-01 and TOW-03) are within 120 m of a proposed access road and were therefore carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (Table 3.14; refer to Figure 3.6a for locations). The remaining five locations are not within 120 m of a proposed access road nor is there infrastructure proposed in these locations therefore they were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (Table 3.14; refer to Figure 3.6a for locations).

Table 3.14 Turtle Wintering Areas

Natural Area No.	ELC Unit	Description of Standing Water	Substrate Along Shoreline	Evidence of Turtles	Water Depth (m)	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
198	OAO	Pond	Mineral soil	None	Unknown	Yes	No	No	No	Not suitable habitat – pond unlikely to be deep enough to support turtle wintering habitat
209	OAO	Permanent dug pond, appears to be spring-fed	Gravel road/clay substrate	Yes, along gravel driveway near pond	0.4	No	No	No	No	Not suitable habitat – pond not deep enough to support turtle wintering habitat

Table 3.14 Turtle Wintering Areas

Natural Area No.	ELC Unit	Description of Standing Water	Substrate Along Shoreline	Evidence of Turtles	Water Depth (m)	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
236	OAO, MAM2-2	Pond	Mineral soil	None	0.6	Yes	No	No	No	Not suitable habitat – pond not deep enough to support turtle wintering habitat
	FOD9b, SAS1-3	Permanent dug pond	Mineral soil	None	3	Yes	No	Yes (TOW-03)	No	Suitable substrate and water depth to support turtle wintering habitat
249	OAO	Site appears to be a dug pond	Mineral soil	None	Unknown	Yes	No	No	No	Not suitable habitat – pond unlikely to be deep enough to support turtle wintering habitat
255	OAO	Pond	Mineral soil	None	1	No	No	No	Yes	Suitable substrate and water depth to support turtle wintering habitat
266	OAO	Permanent pond	Mineral soil	None	Deep	No	No	No	Yes	Suitable substrate and water depth to support turtle wintering habitat
759	OAO	Pond	Mineral soil	None	3	Yes	No	Yes (TOW-01)	No	Suitable substrate and water depth to support turtle wintering habitat
609	OAO	Permanent pond	Mineral soil	None	3	No	No	No	Yes	Suitable substrate and water depth to support turtle wintering habitat
720	OAO	Permanent pond	Mineral soil	None	1	No	No	No	Yes	Suitable substrate and water depth to support turtle wintering habitat
754	SWT2b	Permanent pond	Mineral soil	None	2	No	No	No	Yes	Suitable substrate and water depth to support turtle wintering habitat

Reptile Hibernacula

Rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. Some snake species can hibernate in large groups, while other species tend to hibernate in isolation. Some, such as the Eastern Gartersnake (*Thamnophis sirtalis*), can do either. Once spring has arrived, snakes will typically come out of hibernation, bask in the sun's warmth on sunny days in close proximity, and then return to their hibernating sites at night. They may remain in the vicinity of their hibernaculum for a week or so before moving out to their summer range.

Five-lined Skink (*Eumeces fasciatus*) prefers mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. Natural areas in the Project Study Area are comprised largely of deciduous forest, not mixed forest. Granite bedrock is largely confined to the Canadian Shield, which is not in the Project Study Area. There are historical sightings of Five-lined Skink inhabiting sandy soils, such as found in Pinery Provincial Park which is close to, but not within, the Project Study Area. No suitable habitat for the Five-lined Skink was encountered in or within the 120 m Area of Investigation.

The Project Study Area is generally a fragmented, intensively cultivated agricultural area on mostly clay-based soils that is not known to harbour large or diverse snake populations. The only snakes encountered during field investigations were Eastern Gartersnakes. This species was observed in natural areas 232, 251, 266, 321 and 759. Rock piles were noted in two of these natural areas (232 and 321); however the Eastern Garter Snake observed within feature 321 was not observed near the potential hibernaculum.

All potential snake hibernacula encountered in or within the 120 m Area of Investigation were inspected to determine whether they have the potential to extend below the frost line. Eleven features were identified as having some potential to allow snakes to enter ground below frost line (refer to Table 3.15). These mainly consisted of identified stone piles at the edge of cultivated fields as well as an old foundation. A 30 m circumference around each potential hibernaculum was mapped and is considered to be part of the habitat, to protect the habitat form and function, as defined by MNR (2011e; 2011f). When measured from this 30 m buffer, four of these features are located within 120 m of a proposed turbine or access road (RH-01, RH-02, RH-03 and RH-05), and an additional four are overlapped by the disturbance areas for a collection lines (RH-04 and RH-08) or the transmission line (RH-06 and RH-07); these were therefore carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (refer to Figure 3.6a for locations). Three additional features had the potential to extend below frostline but were not located within 120 m of qualifying infrastructure; therefore these features were treated as Generalized Candidate Significant Wildlife Habitat. The locations of these features are also shown on Figure 3.6a. These features were also carried forward to the Evaluation of Significance.

Table 3.15 Reptile Hibernacula

Natural Area No.	ELC Unit	Description of Potential Hibernaculum	Description of Surrounding Habitat	Snakes Observed	Potential to Extend Below Frostline	Within 120 m of Road or Turbine	Within Project Location	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
232	FOD5-5	Rock pile with 0.15 m diameter rocks	Shagbark hickory, sugar maple, wild red raspberry; adjacent to agricultural field	Yes	Yes	No	Yes	Yes (RH-08)	No	Rock pile has potential to extend below frostline; Eastern Gartersnake observed.
235	FOD9c	Rocks and soil	Surrounding area dominated by grasses & raspberry	No	Yes	Yes	Yes	Yes (RH-02)	No	Stone pile has potential to extend below frostline.
236	SWD3-3	Cement slabs	Surrounding habitat composed of aster and raspberry; adjacent to agricultural field	No	Yes	Yes	Yes	Yes (RH-03)	No	Cement slab pile has potential to extend below frostline.
	FOD9b	Cement slabs, bricks, large woody debris, soil	Cultural meadow species with some mature trees	No	Yes	No	No	No	Yes	Pile has potential to extend below frostline.
275	SWD3-3	Picked stone from field	Man-made ditch; adjacent to agricultural field	No	Yes	No	Yes	Yes (RH-04)	No	Stone pile has potential to extend below frostline.
300	CUM1-1	Dirt pile inter-mixed with logs and rocks	Cultural meadow	No	Yes	Yes	No	Yes (RH-01)	No	Large stone pile has potential to extend below frostline.
321	FOD6-5	Rocks, soil, logs, and garbage	Agricultural land; within hedgerow of two natural areas	Yes	Yes	Yes	Yes	Yes (RH-05)	No	Stone pile has potential to extend below frostline; Eastern Gartersnake observed.
609	SWD2-2	Exposed old brick foundation and cement slabs along watercourse	Swamp thicket bordering onto stream community	No	Yes	No	Yes	Yes (RH-06)	No	Old foundation has potential to extend below frostline.
661	FOD5-1	Pile of flat and large rocks	Sugar maple deciduous forest; cattle around rock pile	No	Yes	No	No	No	Yes	Stone pile has potential to extend below frostline.
695	FOD5-6	Rock pile with 50% 0.1 m to 0.4 m dia, and 50% with 0.15 m dia	Grasses along hedgerow; surrounded by agricultural land	No	Yes	No	No	No	Yes	Stone pile has potential to extend below frostline.
723	FOD6-5	Large stone pile consisting of collected stones from field	Sugar maple and agricultural land	No	Yes	No	Yes	Yes (RH-07)	No	Stone pile has potential to extend below frostline.

Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)

Nesting colonies of Bank Swallows (*Riparia riparia*) can be found on exposed eroding banks, such as shoreline bluffs, river banks sand piles and abandoned pits, and steep slopes. Cliff Swallows (*Hirundo pyrrhonota*) will nest on steep rock faces such as cliffs, but in this area nesting more commonly occurs on man-made structures such as bridges and barns (which do not qualify as Significant Wildlife Habitat). Rock cliff faces do not occur in or within the 120 m Area of Investigation but bluffs can occur along some creeks or in abandoned pits. Bluffs (BLO) can be an ELC community on its own, or occasionally may occur in an abandoned pit or stream bank in cultural meadow, cultural thicket or cultural savannah communities. No bluff or cliff ecosites were identified during site investigations (refer to Figures 3.1 and 3.2a to 3.2i).

While there were a total of 13 natural areas containing cultural vegetation communities belonging to one of the specified ecosites (e.g., community types belonging to CUM1, CUT1 or CUS ecosites) identified in or within the 120 m Area of Investigation during the site investigation, none of these contained suitable natural Bank Swallow or Cliff Swallow nesting habitat (refer to Table 3.16). In addition to these, one feature, 209, contained cultural vegetation community CUP3, and a man-made bridge being used for nesting habitat. As man-made structures are not considered Significant Wildlife Habitat, this site was not carried forward to the Evaluation of Significance.

Candidate Colonially-nesting Bird Breeding Habitat (Bank and Cliff) does not occur in or within the 120 m Area of Investigation. This type of Significant Wildlife Habitat was not carried forward to the Evaluation of Significance.

Table 3.16 Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)

Natural Area No.	ELC Unit	Contains Bank, Cliff, Slope, etc. Habitat	Within 120 m of Turbine	Within Project Location	Carried forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
198	CUM1-1	No	Yes	No	No	No	No suitable habitat.
209	CUP3	Bridge nesting habitat	No	No	No	No	Only natural habitat is considered for SWH. Man-made structures do not qualify as SWH.
210	CUM1-1, CUT1i	No	No	No	No	No	No suitable habitat.
220	CUM1-1	No	No	No	No	No	No suitable habitat.
227	CUM1-1	No	No	No	No	No	No suitable habitat.
236	CUT1h	No	Yes	No	No	No	No suitable habitat.
282	CUM1-1	No	No	No	No	No	No suitable habitat.
300	CUM1-1	No	No	No	No	No	No suitable habitat.
373	CUM1-1	No	Yes	No	No	No	No suitable habitat.
635	CUM1-1	No	No	Yes	No	No	No suitable habitat.
636	CUM1-1	No	No	No	No	No	No suitable habitat.
637	CUM1-1	No	No	Yes	No	No	No suitable habitat.
648	CUM1-1	No	No	Yes	No	No	No suitable habitat.
738	CUM1-1, CUT1k	No	No	No	No	No	No suitable habitat.

Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)

Nesting colonies of herons generally occur within trees in treed wetlands such as mixed or deciduous swamps or treed fen habitats (refer to Table 3.2 for corresponding ELC units). Colonies are specific sites where herons congregate to build nests and raise young but need to fly out and forage widely from the colony in all directions over many square kilometres. Consequently an area the size of the Project Study Area would only support a few colonies at best. No treed fens were identified during site investigations; however a number of natural areas containing deciduous or mixed swamp communities were identified in or within the 120 m Area of Investigation.

According to the Atlas of the Breeding Birds of Ontario, there is evidence of breeding for several tree colonial nesting breeding birds including Great Blue Heron (*Ardea herodias*) and Green Heron (*Butorides virescens*) in the general vicinity of the Project Study Area (Cadman *et al.,* 2007). Great Blue Heron were recorded during spring and summer avian surveys conducted by Golder in the Project Study Area (Golder Associates, 2011) as well as Green Heron and Great Blue Heron recorded by AECOM during breeding bird surveys conducted in 2011(Appendix D). In southern Ontario, Great Blue Heron typically nests in dead trees in large deciduous swamps, large marshes or lakes. Green Heron usually nests over water or very close to it, often in shrubs adjacent to or in wetlands, as well as in flooded timber. There is no evidence of Black-crowned Night Heron or Great Egret breeding in this area (Cadman *et al.,* 2007).

Heron nests, particularly of Great Blue Heron, are large and conspicuous, even outside of the breeding season. The birds often remain in the vicinity of colonies well after the breeding season. All vegetation units in or within the 120 m Area of Investigation were visited and nests searched for during ELC and vegetation surveys.

Most colonies (at least those large enough to qualify as Significant Wildlife Habitat) are known to MNR and although there were some identified to the north of the Project Study Area, none were identified within the Project Study Area.

Table 3.17 identifies swamp units within the Area of Investigation where heronries (breeding grounds for herons) were observed during ELC surveys. One heronry (breeding grounds for herons) was observed in natural area 189 in or within the 120 m Area of Investigation; this active heronry was observed approximately 50 m to 70 m from the northern edge of natural area 189 during site investigations conducted from the fenceline of an adjacent property near the proposed location of Turbine 56. The MNR includes the area within a 300 m radius from the edge of the colony or the edge of the vegetation community. Due to a lack of permission to enter the property on which the heronry was observed, the location of the edge of the colony is unknown. Therefore, a 300 m buffer was applied to the vegetation communities which may contain this heronry (refer to Figure 3.6b). Although Turbine 56 is located more than 120 m from the edge of the woodland, it is within the 300 m buffer applied to this habitat; therefore, this feature was forward to the Evaluation of Significance as candidate Significant Wildlife Habitat.

Table 3.17 Colonially-Nesting Bird Breeding Habitat (Tree/Shrub)

Natural Area No.	ELC Unit	Area of Woodland + Wetland Complex (ha)	Contains Suitable Habitat	Nests Observed During ELC Survey	Within 120 m of Turbine	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
189	FOD9-4 SWD2-2	12.2	Yes	Yes	Yes	Yes	Yes	Yes (CNB-01)	No	Nesting Great Blue Herons observed.

Colonially-Nesting Bird Breeding Habitat (Ground)

Colonies of ground-nesting birds may occur on any rocky island or peninsula (natural or artificial) within a lake or large river. No such habitats were identified in or within the 120 m Area of Investigation through the Records Review or site investigation.

Brewer's Blackbird (*Euphagus cyanocephalus*) requires open fields or pastures with scattered trees or shrubs in close proximity to watercourses. Ecosites with codes MAM1-6, MAS1-3, CUM, CUT and CUS were identified and examined to determine proximity to agricultural drains or streams in or within the 120 m Area of Investigation. Although potentially suitable habitat does exist within the Project Study Area, the Breeding Bird Atlas does not have any records of Brewer's Blackbird near the Project Study Area; the closest records are from north of Walkerton (Cadman *et al*., 2007). The species was not recorded during breeding bird surveys conducted in the Project Study Area in 2010 (Golder Associates, 2011) or 2011 (Appendix B). Due to the very low likelihood of the species breeding within the Project Study Area, habitat for this species was not carried forward to the Evaluation of Significance.

This type of Significant Wildlife Habitat was not carried forward to the Evaluation of Significance.

Deer Winter Congregation Areas

Deer Winter Congregation Areas are areas where deer move to suitable woodlands in response to the onset of winter snow and cold in order to reduce or avoid the impacts of winter conditions. This is a behavioural response and deer will establish traditional use areas; as such, Deer Winter Congregation Areas typically have a long history of annual use by deer. Agricultural lands can also be included in this area. To be considered Significant Wildlife Habitat, woodlands will typically be greater than 100 ha in size; however woodlands less than 100 ha may be considered significant based on MNR studies or assessment. Large woodlands greater than 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. Woodlands with high densities of deer due to artificial feeding, however, are not considered significant (MNR, 2011e; MNR, 2011f).

Deer management is an MNR responsibility. Deer Winter Congregation Areas are evaluated by MNR following methods outlined in Selected Wildlife and Habitat Features: Inventory Manual (MNR, 1998). Habitats considered significant will be mapped by MNR; those occurring in or within the 120 m Area of Investigation were mapped during the Records Review (refer to Figure 2.1).

One Deer Winter Congregation Area is located in or within the 120 m Area of Investigation, in association with Hay Swamp. This feature is located within 120 m of a proposed access road. As a result, this Deer Winter Congregation Area will be carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (DWC-01). Refer to Figure 3.6b for location.

3.3.6.2 Rare Vegetation Communities

Rare vegetation communities are described in the SWHTG and Draft Ecoregion Criterion Schedules. The following rare vegetation communities were identified as potentially occurring in the Project Study Area through the Records Review and site investigation:

- Cliffs and talus slopes;
- Sand barrens;
- Alvars;
- Savannahs;
- Tall-grass prairies;
- Old growth forests; and
- Other rare vegetation communities.

The presence/absence of rare vegetation communities in or within the 120 m Area of Investigation was confirmed through the Site Investigation. No cliff or talus slope, sand barren, alvar, savannah, or tallgrass prairie vegetation communities were identified in or within the 120 m Area of Investigation. Consequently, these rare vegetation community types were not carried forward to the Evaluation of Significance.

A description of the Site Investigation results for the remaining rare vegetation communities follows.

Old Growth or Mature Forest Stands

Mature forest stands consist of very large trees and a broad range of tree size classes, large standing snags and abundant downed wood of variable sizes creating a diverse structure. Mature forest stands that lack evidence of recent disturbances or evidence of logging are considered Significant Wildlife Habitat.

Mature forests identified in or within the 120 m Area of Investigation are listed in Table 3.18. No vegetation removal is proposed within these areas. Twenty natural areas containing mature forests that lack evidence of recent disturbances were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat. The locations of these features are shown on Figure 3.6c.

Table 3.18 Mature Forest Stands

Natural Area No.	ELC Community	Mature or Old Growth Forest	Evidence of Disturbance	Within Project Location	Carried forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
189	FOD9-4	Mature	Yes	No	No	No	Evidence of selective tree removal and oldest tree only 60 years old
	FOD9-5	Mature	No	No	No	Yes	Undisturbed, mature forest present
206	FOD9-4	Mature	No	No	No	Yes	Undisturbed, mature forest present
210	FOD7-1	Mature	No	No	No	Yes	Undisturbed, mature forest present
215	SWD3-3	Mature	No	No	No	Yes	Undisturbed, mature forest present
	FOD6-5	Mature	No	No	No	Yes	Undisturbed, mature forest present
216	FOD9-2	Mature	No	No	No	Yes	Undisturbed, mature forest present
229	FOD5-6	Mature	No	No	No	Yes	Undisturbed, mature forest present
236	SWD3-3	Mature	No	No	No	Yes	Undisturbed, mature forest present
242	FOD6-1	Mature	No	No	No	Yes	Undisturbed, mature forest present
245	FOD7-2	Mature	No	No	No	Yes	Undisturbed, mature forest present
251	FOD5-1	Mature	No	No	No	Yes	Undisturbed, mature forest present
258	FOD7-1	Mature	No	No	No	Yes	Undisturbed, mature forest present
259	FOD5-1	Mature	No	No	No	Yes	Undisturbed, mature forest present
269	FOD5-2	Mature	No	No	No	Yes	Undisturbed, mature forest present
	SWD2-2	Mature	No	No	No	Yes	Undisturbed, mature forest present
300	SWD3-3	Mature	No	No	No	Yes	Undisturbed, mature forest present
309	SWD3-3	Mature	No	No	No	Yes	Undisturbed, mature forest present
321	FOD6-5	Mature	No	No	No	Yes	Undisturbed, mature forest present
326	FOD5-6	Mature	Yes	No	No	No	Forest has been managed through selective cutting
	FOD5-1	Mature	No	No	No	Yes	Undisturbed, mature forest present
339	FOD5-2	Mature	Yes	No	No	No	Forest has been selectively logged
342	FOD5-5	Mature	No	No	No	Yes	Undisturbed, mature forest present
352	FOD5-2	Mature	No	No	No	Yes	Undisturbed, mature forest present
358	FOD5-2	Mature	No	No	No	Yes	Undisturbed, mature forest present
364	FOD5-1	Mature	Yes	No	No	No	Forest has been selectively logged

Other Rare Vegetation Communities

The global and provincial rankings for all vegetation communities identified in or within the 120 m Area of Investigation were obtained from the Natural Heritage Information Centre (NHIC), Southern Ontario Vegetation Communities and Appendix J of the SWHTG. These are provided in Table 3.19.

Table 3.19 Global and Provincial Rankings of Vegetation Communities Identified through the Site Investigation

ELC Community	Global Rank (G-rank) [1]	Provincial Rank (S-rank)[2]
Cultural Meadow (CUM)		
CUM1-1: Dry-Moist Oldfield Meadow Type	Cultural Communities not ranked	
Cultural Plantation (CUP)		
CUP1-7: Green Ash Deciduous Plantation Type	Cultural Communities not ranked	
CUP1a: Eastern Cottonwood Deciduous Plantation Type	Cultural Communities not ranked	
CUP1b: Bur Oak Deciduous Plantation Type	Cultural Communities not ranked	
CUP1c: Black Walnut - Red Oak Deciduous Plantation Type	Cultural Communities not ranked	

Table 3.19 Global and Provincial Rankings of Vegetation Communities Identified through the Site Investigation

ELC Community	Global Rank (G-rank) [1]	Provincial Rank (S-rank)[2]
CUP2a: White Pine - Carolina Poplar Mixed Plantation Type	Cultural Communities not ranked	
CUP2b: White Pine - White Ash - Trembling Aspen Mixed Plantation Type	Cultural Communities not ranked	
CUP3: Coniferous Plantations	Cultural Communities not ranked	
CUP3-1: Red Pine Coniferous Plantation Type	Cultural Communities not ranked	
CUP3-2: White Pine Coniferous Plantation Type	Cultural Communities not ranked	
CUP3a: Scots Pine - White Pine Coniferous Plantation Type	Cultural Communities not ranked	
CUP3c: Colorado Spruce Coniferous Plantation Type	Cultural Communities not ranked	
CUP3d: White Pine - Red Pine - Scots Pine - Balsam Fir Coniferous Plantation Type	Cultural Communities not ranked	
CUP3e: White Pine - Red Pine - Norway Spruce - White Spruce Coniferous Plantation Type	Cultural Communities not ranked	
Cultural Thicket (CUT)		
CUT1: Mineral Cultural Thicket Ecosite	Cultural Communities not ranked	
CUT1h: Green Ash Mineral Cultural Thicket Type	Cultural Communities not ranked	
CUT1i: Green Ash - Manitoba Maple Mineral Cultural Thicket Type	Cultural Communities not ranked	
CUT1j: Hawthorn - Apple - Buckthorn Mineral Cultural Thicket Type	Cultural Communities not ranked	
CUT1k: Hawthorn Mineral Cultural Thicket Type	Cultural Communities not ranked	
Cultural Woodland (CUW)		
CUW1b: Ash - Basswood Mineral Cultural Woodland Type	Cultural Communities not ranked	
CUW1c: Green Ash - Apple - Hawthorn Mineral Cultural Woodland Type	Cultural Communities not ranked	
CUW1d: Black Walnut Mineral Cultural Woodland Type	Cultural Communities not ranked	
CUW1e: Sweet Cherry - White Elm Mineral Cultural Woodland Type	Cultural Communities not ranked	
CUW1h: White Elm Mineral Cultural Woodland Type	Cultural Communities not ranked	
CUW1m: Green Ash - Hawthorn Mineral Cultural Woodland Type	Cultural Communities not ranked	
Deciduous Forest (FOD)		
FOD2-1: Dry - Fresh Oak - Red Maple Deciduous Forest Type	G?	S5
FOD3-1: Dry-Fresh Poplar Deciduous Forest Type	G5	S5
FOD4-1: Dry - Fresh Beech Deciduous Forest Type	G4G5	S4S5
FOD4-2: Dry-Fresh White Ash Deciduous Forest Type	G?	S5
FOD4a: Dry - Fresh White Ash - Paper Birch - Cottonwood - White Cedar Deciduous Forest Type	Community not ranked	
FOD4b: Dry - Fresh Basswood - White Elm - Bitternut Hickory - White Ash Deciduous Forest Type	Community not ranked	
FOD4c: Dry - Fresh White Ash - Paper Birch Deciduous Forest Type	Community not ranked	
FOD4d: Dry - Fresh Trembling Aspen Deciduous Forest Type	Community not ranked	
FOD4e: Dry - Fresh Large-tooth Aspen Deciduous Forest Type	Community not ranked	
FOD4f: Dry - Fresh White Ash - Basswood Deciduous Forest Type	Community not ranked	
FOD4g: Dry - Fresh Green Ash Deciduous Forest Type	Community not ranked	
FOD5-1: Dry-Fresh Sugar Maple Deciduous Forest Type	G5?	S5
FOD5-2: Dry-Fresh Sugar Maple-Beech Deciduous Forest Type	G5?	S5
FOD5-5: Dry - Fresh Sugar Maple - Hickory Deciduous Forest Type	G?	S4
FOD5-6: Dry-Fresh Sugar Maple-Basswood Deciduous Forest Type	G?	S5
FOD5-7: Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest Type	Community not ranked	
FOD5-8: Dry-Fresh Sugar Maple-White Ash Deciduous Forest Type	G?	S5
FOD5b: Dry - Fresh Sugar Maple - White Ash - Basswood Deciduous Forest Type	Community not ranked	
FOD6-1: Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type	G?	S5
FOD6-4: Fresh - Moist Sugar Maple - White Elm Deciduous Forest Type	G?	S5
FOD6-5: Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type	G5?	S5
FOD7-1: Fresh-Moist White Elm Lowland Deciduous Forest Type	Community not ranked	
FOD7-2: Fresh-Moist Ash Lowland Deciduous Forest Type	Community not ranked	
FOD7-4: Fresh-Moist Black Walnut Lowland Deciduous Forest Type	G4?	S2S3
FOD7d: Fresh - Moist White Elm - Ash - Hawthorn Deciduous Forest Type	Community not ranked	
FOD7e: Fresh - Moist Green Ash - White Elm Deciduous Forest Type	Community not ranked	
FOD7f: Fresh - Moist Basswood - White Elm - Freeman's Maple - Green Ash Lowland Deciduous Swamp Type	Community not ranked	
FOD8-1: Fresh - Moist Poplar Deciduous Forest Type	G4?	S5
FOD9-1: Fresh - Moist Oak - Sugar Maple Deciduous Forest Type	Community not ranked	
FOD9-2: Fresh - Moist Oak - Maple Deciduous Forest Type	Community not ranked	
FOD9-3: Fresh - Moist Bur Oak Deciduous Forest Type	Community not ranked	
FOD9-4: Fresh - Moist Shagbark Hickory Deciduous Forest Type	Community not ranked	
FOD9-5: Fresh - Moist Bitternut Hickory Deciduous Forest Type	Community not ranked	
FOD9a: Fresh - Moist Bitternut Hickory - Basswood - Ironwood - Bur Oak Deciduous Forest Type	Community not ranked	

Table 3.19 Global and Provincial Rankings of Vegetation Communities Identified through the Site Investigation

ELC Community	Global Rank (G-rank) [1]	Provincial Rank (S-rank)[2]
FOD9b: Fresh - Moist Shagbark Hickory - White Ash - Beech Deciduous Forest Type	Community not ranked	
FOD9c: Fresh - Moist Bitternut Hickory - Basswood Deciduous Forest Type	Community not ranked	
FOD9d: Fresh - Moist Shagbark Hickory - Green Ash Deciduous Forest Type	Community not ranked	
FOD9e: Fresh - Moist Shagbark Hickory - Sugar Maple - American Beech - Blue Beech Deciduous Forest Type	Community not ranked	
Mixed Forest (FOM)		
FOM5-2: Dry - Fresh Poplar Mixed Forest Type	Community not ranked	
FOM6-1: Fresh-Moist Sugar Maple - Hemlock Mixed Forest Type	G4G5	S4S5
FOM6-2: Fresh - Moist Hemlock - Hardwood Mixed Deciduous Forest Type	Community not ranked	
Meadow Marsh (MAM)		
MAM2-10: Forb Mineral Meadow Marsh Type	G?	S4S5
MAM2-2: Reed Canary Grass Mineral Meadow Marsh Type	Community not ranked	
MAM2a: Missouri Willow Mineral Meadow Marsh Type	Community not ranked	
MAM3-2: Reed-canary Grass Organic Meadow Marsh Type	Community not ranked	
Shallow Marsh (MAS)		
Open Aquatic (OAO)		
Submerged Shallow Aquatic (SAS)		
SAS1-3: Stonewort Submerged Shallow Aquatic Type	G5Q	S4S5
Deciduous Swamp Type (SWD)		
SWD2-2: Green Ash Mineral Deciduous Swamp Type	G?	S5
SWD2a: Shagbark Hickory - Green Ash Deciduous Swamp Type	Community not ranked	
SWD3-3: Swamp Maple Mineral Deciduous Swamp Type	Community not ranked	
SWD4: Mineral Deciduous Swamp Ecosite	Ecosites not ranked	
SWD4-1: Willow Mineral Deciduous Swamp Type	G?	S5
SWD4a: Swamp Maple - Green Ash Deciduous Swamp Type	Community not ranked	
SWD4b: Green Ash - Trembling Aspen Mineral Deciduous Swamp Type	Community not ranked	
SWD4c: Cottonwood Mineral Deciduous Swamp Type	Community not ranked	
SWD6-3: Swamp Maple Organic Deciduous Swamp Type	Community not ranked	
Mixed Swamp (SWM)		
Thicket Swamp (SWT)		
SWT2: Mineral Thicket Swamp Ecosite	Ecosites not ranked	
SWT2-2: Willow Mineral Thicket Swamp Type	G5	S5
SWT2-9: Gray Dogwood Mineral Thicket Swamp Type	G5	S3S4
SWT2a: Russian Olive – Sandbar Willow – Gray Dogwood Mineral Thicket Swamp	Community not ranked	
SWT2b: Grey Dogwood-Red Osier Dogwood-Sandbar Willow Mineral Thicket Swamp Type	Community not ranked	

[1] ***G-rank:*** *Global ranks are assigned by a consensus of the network of CDCs, scientific experts, and The Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies or variety.*

- *G1 Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.*
- *G2 Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.*
- *G3 Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.*
- *G4 Common; usually more than 100 occurrences; usually not susceptible to immediate threats.*
- *G5 Very common; demonstrably secure under present conditions*
- *G? Not Yet Ranked; or if following a ranking, Rank Uncertain (e.g. G3?). S? Species have not had a rank assigned.*

[3] ***S-rank:*** *The Natural Heritage provincial ranking system (provincial S-rank) is used by the MNR Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. Definitions are as follows:*

- *S1 Extremely rare in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.*
- *S2 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 Rare to uncommon in Ontario; usually between 20 and 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 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.*
- *S5 Very common and demonstrably secure in Ontario.*
- *SE Exotic; not believed to be a native component of Ontario's flora.*
- *SH* Possibly Extirpated (Historical)—*Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.*
- *S? Not Yet Ranked; or if following a ranking, Rank Uncertain (e.g. S3?). S? Species have not had a rank assigned.*

Only one provincially rare vegetation community was identified in or within the 120 m Area of Investigation. This community, Fresh-Moist Black Walnut Lowland Deciduous Forest Type (FOD7-4), is a rare forest type with a provincial ranking of S2S3 and is shown on Figure 3.6c. This community occurs in Natural Area 309 and is not located within 120 m of a proposed access road; therefore, it was carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat.

3.3.6.3 Specialized Habitats for Wildlife

Specialized habitats for wildlife are described in the SWHTG and Draft Ecoregion Criterion Schedules. The following specialized habitats for wildlife were identified as potentially occurring in the Project Study Area through the Records Review and site investigation:

- Waterfowl nesting areas;
- Bald Eagle and Osprey nesting, foraging and perching habitats;
- Woodland raptor nesting habitats;
- Turtle nesting areas;
- Seeps and springs;
- Amphibian breeding habitats (woodland); and
- Amphibian breeding habitats (wetland).

A description of the results of the site investigation pertaining to specialized habitats for wildlife follows.

Waterfowl Nesting Areas

Waterfowl nesting areas are typically located in upland vegetation communities composed of grasses, sedges, rushes and low shrubs adjacent to wetland habitat with open standing water. Wood Duck (*Aix sponsa*) nesting areas, which consist of nesting cavities in large hollow trees or nest boxes within forests or swamps with open standing water, are also considered waterfowl nesting area Significant Wildlife Habitat. In addition to these requirements the surrounding upland habitat must also be greater than 120 m in width to decrease nest predation (MNR, 2000), which is generally higher in upland habitat adjacent wetlands.

Wetland communities that contain enough standing water and adjacent upland habitat to support a large number of nesting waterfowl are rare in the Project Study Area, as the majority of lands in the area have been cleared for agricultural use. Only one site in or within the 120 m Area of Investigation, located in natural area 209, contained suitable habitat and was carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (Table 3.20). The location of this Generalized Candidate significant waterfowl nesting area is show on Figure 3.6b.

Table 3.20 Waterfowl Nesting Areas

Natural Area No.	ELC Unit	Width >120 m	Size of Adjacent Wetland (ha)	Age of Trees	Type of Adjacent Wetland	Within 120 m of Turbine	Within Project Location	Carried Forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
189	FOD6-5	Yes	12.2	Mid-age	SWD2-2	Yes	No	No	No	Insufficient water in wetland to support target number of broods
	FOD9-4	Yes		Mature		Yes	No	No	No	
	FOD9-5	Yes		Mature		Yes	No	No	No	
	FOD7	Yes		Young to mid-age		Yes	No	No	No	
209	CUP3-2	Yes	0.9	Mid-age	OAO	No	No	No	Yes	Suitable habitat present
	CUP2b	Yes		Mid-age		No	No	No		
209	FOD9e	Yes	0.2	Mid-age	SWT2	No	No	No	No	Insufficient water in wetland to support target number of broods
215	FOD6-5	Yes	1.7	Mature	SWD3-3	Yes	No	No	No	Insufficient water in wetland to support target number of broods

Table 3.20 Waterfowl Nesting Areas

Natural Area No.	ELC Unit	Width >120 m	Size of Adjacent Wetland (ha)	Age of Trees	Type of Adjacent Wetland	Within 120 m of Turbine	Within Project Location	Carried Forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
216	FOD9-2	Yes	0.9	Mid-age	SWD, SWT2	Yes	No	No	No	Insufficient wetland size to support target number of broods
	FOD	Yes		Mid-age		Yes	No	No	No	
232	FOD2-4	Yes	16.6	Mid-age	SWD2-2	No	No	No	No	Insufficient water in wetland to support target number of broods
	CUP	Yes	3.9	Mid-age		No	No	No	No	
236	FOD9b	Yes	0.6	Mid-age	SWD2-2	Yes	No	No	No	Insufficient water in wetland to support target number of broods
	FOD4-2	Yes	0.8	Mid-age to mature		Yes	No	No	No	
	FOD9-4	Yes	2.2	Mid-age		Yes	No	No	No	
244	FOD6-5	Yes	0.6	Mid-age	SWD3-3	Yes	No	No	No	Insufficient wetland size to support target number of broods
258	CUP	Yes	22.8	Mid-age	SWD	No	No	No	No	Insufficient water in wetland to support target number of broods
	FOD	Yes	7.4	Mid-age		No	No	No	No	
	FOD9-4	Yes	40.3	Young to mid-age		No	No	No	No	
259	FOD	Yes	5.3	Mid-age	SWD4a, SWD2-2	No	No	No	No	Insufficient water in wetland to support target number of broods
	FOD5-9	Yes	0.6	Mid-age		No	No	No	No	
	FOD5-1	Yes	4.8	Mid-age		No	No	No	No	
266	CUP1a	Yes	4.4	Mid-age	SWT2a	No	No	No	No	Insufficient water in wetland to support target number of broods
275	FOD6-5	Yes	5.9	Mid-age	SWD3-3	No	No	No	No	Insufficient water in wetland to support target number of broods
339	FOD5-2	Yes	6.2	Mature	SWD3-3	No	No	No	No	Insufficient wetland size to support target number of broods
	FOM	Yes	17.4			No	No	No	No	
	FOD	Yes	962.3			No	No	No	No	
701	FOD5-8	Yes	9.6	Mid-age	SWD3-3	No	No	No	No	Insufficient water in wetland to support target number of broods
757	FOD6-5	Yes	10.1	Mid-age to mature	SWD3-3	Yes	No	No	No	Insufficient water in wetland to support target number of broods

Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

Osprey (*Pandion haliaetus*) and Bald Eagles (*Haliaeetus leucocephalus*) nest near open water where fish species are abundant. Nests are built in large trees, or in artificial structures, and can become very large as new material is added with each year. These species can be sensitive to human activity, so remoteness may be a factor in determining a nest site.

Osprey nests in Ontario are usually 9 to 18 m from the ground and are within 10 km of large lakes, rivers, marshes or other productive foraging areas (Whetmore and Gillespie, 1976; Poole, *et al*. 2002). Ospreys prefer dead coniferous tree tops with unobstructed views and there is typically a tall perch nearby for the male. As such, the majority of nests are found in mature, isolated trees, rather than groups of trees.

Like Osprey, most Bald Eagle nests are associated with large lakes. Bald Eagle nests are typically 15 to 22 m from the ground and are often found in mature forest with discontinuous or open canopy but may also be in isolated groups of trees. In Ontario, Bald Eagles show a preference for live trees and conifers, typically at least 60 centimetres diameter at breast height (dbh). Bald Eagles choose trees with an unobstructed view and flight path. Both the Osprey and Bald Eagle may use the same nest every year, for decades.

Osprey and Bald Eagle prey on fish species in clear, shallow water. Osprey typically hunt in water less than 1 m deep while the Bald Eagle will hunt in areas less than 6 m deep. As such, nesting habitats must be located near large water bodies with large shallow areas and an abundance of fish populations.

The Atlas of the Breeding Birds of Ontario presents evidence of possible Bald Eagle breeding in the general vicinity of the Project Study Area (Cadman *et al*., 2007). A total of seven Bald Eagles were recorded during avian surveys conducted in the Project Study Area (Golder Associates, 2011). All observations during avian surveys were outside the breeding season: one individual was observed during winter surveys, while six were observed in the fall.

Although there is no evidence of breeding for Osprey in the general vicinity of the Project Study Area (Cadman *et al.,* 2007) correspondence with MNR during the Records Review provided information relating to possible nesting, foraging and perching habitat within the Project Study Area. Two Osprey were recorded during avian use studies conducted in the Project Study Area (Golder Associates, 2011). They were recorded during summer and fall surveys.

Locations of nest bowls and stick nests observed during site investigations were recorded, including an approximate height above ground and relative size. Bald Eagle and Osprey nests are usually very conspicuous because of their large size and prominent locations since the birds prefer unobstructed views. Consequently, these distinctive nests would have been identified as belonging to these species during site investigations. No Bald Eagle or Osprey nests were observed during site investigations therefore no sites were carried forward to the Evaluation of Significance.

Woodland Raptor Nesting Habitat

Woodland raptors find shelter, build nests and hunt for prey in forested habitat. These species are sensitive to seemingly minor changes in habitat as they have specialized habitat requirements. Woodland raptors are very territorial and seldom nest closer than one kilometre to another of the same species. As a result, the species are highly sensitive to fragmentation because they require large tracts of forest cover. In addition, woodland raptors are intolerant of human activity which can result in disturbance to nests and ultimately may affect brood survival.

Red-tailed Hawk (*Buteo jamaicensis*) and Cooper's Hawk (*Accipiter cooperii*) were identified as confirmed breeders within the Project Study Area in the Breeding Bird Atlas (Cadman *et al.,* 2007). Possible breeding raptors observed during the Atlas of the Breeding Birds of Ontario included Sharp-shinned Hawk, Broad-winged Hawk (*Buteo platypterus*) and Barred Owl (*Strix varia*). Sharp-shinned Hawk (*Accipiter striatus*), Cooper's Hawk, and Broad-winged Hawk were recorded in the Project Study Area during spring/summer avian surveys conducted by Golder Associates (2011). Further studies conducted by AECOM during the 2012 breeding season also identified Cooper's Hawk within the Project Study Area.

Cooper's Hawk usually nests in deciduous forests greater than 50 ha in size. This species prefers upland forests, tends to nest in intermediate-aged or mature forests and forest interior, and often nests within 300 m or less of water (MNR, 2010c).

Sharp-shinned Hawk's secretive nature and tendency to nest within dense vegetation makes it a difficult species to detect during the breeding season. These hawks breed mainly in large stands of deciduous, coniferous and mixed pine-hardwood forests and pine plantations (Bildstein & Meyer, 2000).

The Broad-winged Hawk can be found nesting in continuous deciduous or mixed-deciduous forests with canopy openings and water nearby. Nests are usually located in the first main crotch of deciduous tree, or on a platform of horizontal branches against the trunk in a conifer (Goodrich *et al*., 1996).

The nests are well concealed and woodland raptors are very cryptic around their nests, consequently it is difficult to confirm this type of Significant Wildlife Habitat. The natural areas in or within the 120 m Area of Investigation which are part of woodlands or swamps over 30 ha in area and contain greater than 4 ha of interior forest habitat are identified in Table 3.21. No vegetation removal is proposed within these three features; therefore they were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat. The locations of these features are shown on Figure 3.6c.

Table 3.21 Woodland Raptor Nesting Habitat

Woodland	At least 30 ha in Size	Contains >4 ha interior forest	Within Project Location	Carried Forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
WOD-117	Yes (455.3 ha)	Yes (101.6 ha)	No	No	Yes	Woodland meets size and interior forest criteria for candidate Woodland Raptor Nesting habitat.
WOD-131	Yes (199.8 ha)	Yes (69.4 ha)	No	No	Yes	Woodland meets size and interior forest criteria for candidate Woodland Raptor Nesting habitat.
WOD-331	Yes (1030.6 ha)	Yes (758.8 ha)	No	No	Yes	Woodland meets size and interior forest criteria for candidate Woodland Raptor Nesting habitat.

Turtle Nesting Areas

Turtles typically nest in areas of open vegetation in the general vicinity of ponds, marshes, lakes or other water bodies that support turtle populations. Ideal turtle nesting habitat is located within several hundred metres of a permanent water feature, is elevated to protect the nest from being inundated, and consists of sand or sand mixed with gravel as these are light enough to allow turtles to dig out nests (MNR, 2011e; MNR, 2011f). In addition, sand and gravel absorb heat from the sun which aids in incubating the eggs thus accelerating hatching. Nests will be laid in other soils if sand is not available, preferably exposed and on south or west facing slopes to maximize radiant heat. The immediate exposed sandy shorelines of ponds, where raised well above water level, can provide suitable nesting sites.

Larger beaches provide higher quality nesting habitat and reduce the chances of a nest being discovered by a predator, such as the Striped Skunk (*Mephitis mephitis*) or Raccoon (*Procyon lotor*). In areas where sand and gravel beaches are limited, small pockets of these beaches become essential for turtle nesting and species maintenance. Large beaches or extensive sand deposits are not present in the Project Study Area, and there are few large bodies of water that support turtles in or within 120 m of the Project Location.

Areas where turtles nest are often easily identifiable because high rates of nest predation result in egg shells being exposed at the ground surface for a year or more. No predated turtle nests were observed during site investigations; however a resident provided information that nesting turtles have been observed around the pond in natural area 209.

A total of eleven natural areas containing open water were identified in or within the 120 m Area of Investigation during the site investigations (refer to Table 3.22).The majority of these do not have appropriate substrate for turtle nesting habitat. Only one pond in natural feature 209 was identified as suitable turtle nesting habitat. This feature is located more than 120 m of a proposed access road; therefore, it was carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat. The location of this feature is shown on Figure 3.6a.

Table 3.22 Turtle Nesting Areas

Natural Area No.	ELC Unit	Description of Standing Water	Substrate Along Shoreline	Evidence of Turtles	Water Depth (m)	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
198	OAO	Pond	Mineral soil	None	Unknown	Yes	No	No	No	Substrate not suitable for turtle nesting
209	OAO	Permanent dug pond, appears to be spring-fed	Gravel road/clay substrate	Yes, along gravel driveway near pond	0.4	No	No	No	Yes	Suitable substrate for nesting habitat, nesting turtles reported by resident
236	OAO, MAM2-2	Pond	Mineral soil	None	0.6	Yes	No	No	No	Substrate not suitable for turtle nesting
	FOD9b, SAS1-3	Permanent dug pond	Mineral soil	None	3	Yes	No	No	No	Substrate not suitable for turtle nesting

Natural Area No.	ELC Unit	Description of Standing Water	Substrate Along Shoreline	Evidence of Turtles	Water Depth (m)	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
249	OAO	Site appears to be a dug pond	Mineral soil, some exposed around edges of pond	None	Unknown	Yes	No	No	No	Substrate not suitable for turtle nesting
255	OAO	Pond	Mineral soil	None	1	No	No	No	No	Substrate not suitable for turtle nesting
266	OAO	Permanent pond	Mineral soil	None	Deep	No	No	No	No	Substrate not suitable for turtle nesting
759	OAO	Pond	Mineral soil	None	3	Yes	No	No)	No	Substrate not suitable for turtle nesting
609	OAO	Permanent pond	Mineral soil, very little exposed	None	3	No	No	No	No	Substrate not suitable for turtle nesting
661	FOD5-1, MAM2	Dug pond	Clay soil	None	3	No	No	No	No	Substrate not suitable for turtle nesting
720	OAO	Permanent pond	Mineral soil, 30% exposed	None	1	No	Yes	No	No	Substrate not suitable for turtle nesting
754	SWT2b	Permanent pond	Mineral soil	None	2	No	No	No	No	Substrate not suitable for turtle nesting

Seeps and Springs

Wildlife may rely on open water available at seeps and springs during the winter. Seeps are also important for baseflow to streams thereby contributing to fish habitat, and as habitat for a number of specialized plant species.

A total of 15 natural areas were identified as containing seep indicators during site investigations (refer to Table 3.23). Eleven of these were located in forested areas, but none of them occur in or within the Project Location and therefore all were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat. The locations of these features are shown on Figure 3.6b.

Table 3.23 Seeps and Spring Location

Natural Area No.	Waterbody No.	ELC Unit	Seep Indicators Present	Within Project Location	Carried Forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
198	C68	CUM1-1	Watercress	No	No	No	This area is not forested.
232	C48	FOD7-2	Water Speedwell	No	No	Yes	Suitable habitat
249	C52	SWD2-2	Watercress	No	No	Yes	Suitable habitat
266	C44	CUP1a CUP1-7	Watercress	No	No	Yes	Suitable habitat
267	C43	FOD7-2	Watercress	No	No	Yes	Suitable habitat
273	D53	FOD8-1	Water Speedwell	No	No	Yes	Suitable habitat
280	C124	FOD4e	Watercress	No	No	Yes	Suitable habitat
280	C42	FOD7-2 FOD6-1	Watercress	No	No	Yes	Suitable habitat
282	D17	CUM1-1	Watercress	No	No	No	This area is not forested.
309	C33	SWD3-3	Watercress	No	No	Yes	Suitable habitat
369	C7	CUW1e	Iron staining	No	No	Yes	Suitable habitat
609	D36	SWT2-2	Watercress	No	No	Yes	Suitable habitat
635	D37	CUM1-1	Watercress, Water Speedwell	No	No	No	This area is not forested.
648	D38	CUM1-1	Watercress	No	No	No	This area is not forested.
723	D40	FOD6-5	Watercress, Water Speedwell, Bittercress	No	No	Yes	Suitable habitat

Amphibian Breeding Habitat (Woodland)

Woodland breeding amphibians congregate in temporary wooded ponds (vernal or ephemeral ponds) in spring where they mate and eggs are laid in water. The larvae then hatch and live in the water for several months until they emerge as adults. To be suitable, woodland pools must hold water until at least July so that the larvae have sufficient time to develop and transform. Pools therefore must be sufficiently deep, preferably about 50 cm in the early spring. In the Project Study Area, swamps show a considerable drop in the water table from spring through summer. Many swamps are seasonally flooded for only a brief period in spring or contain pools that are too shallow and ephemeral to support breeding amphibians. In addition pools should have shrubs or some emergent vegetation to be productive. Generally pools should be free of fish since fish will devour larvae. During site visits, the conditions of encountered pools were recorded. Even in late summer or autumn when pools have dried up, it is possible to determine the depth of springtime pools using waterline marks on trees and other indicators. This evidence provides a good indication of their hydro period. In addition the presence of emergent plants and shrubs will determine if the pool is likely to provide suitable amphibian habitat.

The adults of most woodland breeding amphibians live in terrestrial habitat away from the ponds for most of the active season, only to return in the spring to breed. Some may winter in the pools but many hibernate terrestrially and migrate to pools with spring thaws.

Table 3.24 indicates all locations where woodland vernal pools or ponds were observed during site investigations. These are woodland or swamp vegetation communities wherein vernal pools or ponds were noted during site investigations. Some of the natural areas contained ephemeral pools or ponds within two or more different vegetation communities. These were identified on the basis of presence of ephemeral pools or ponds in forest or swamp that appeared to hold water until at least July. In total, 18 features were identified as candidate Significant Wildlife Habitat requiring Evaluation of Significance studies, including 14 features located within 120 m of a proposed access road (AWO-02, AWO-03, AWO-04, AWO-06, AWO-07, AWO-08, AWO-09, AWO-14, AWO-17, AWO-24, AWO-25, AWO-26, AWO-27, AWO-28 and AWO-30) and three features located in woodlands where vegetation removal is proposed for the transmission line (AWO-33, AWO-34, and AWO-35). In addition, 14 locations were identified as Generalized Candidate Significant Wildlife Habitat. The locations of these features are shown on Figure 3.6d.

Amphibian Breeding Habitat (Wetland)

Wetland breeding amphibians congregate in temporary or permanent standing water in spring where they mate and lay eggs. The larvae then hatch and live in the water for several months to over a year in the case of Green Frogs (*Rana clamitans*) and Bullfrogs (*Rana catesbeiana*). Amphibian species require a sufficient water depth with submergent and/or emergent shoreline vegetation to support populations of invertebrates on which the larvae feed, and to provide protection from predators. To be suitable, pools must hold water until at least July so that the larvae have sufficient time to develop and transform. Pools therefore must be sufficiently deep, preferably about 50 cm in the early spring. In the Project Study Area, wetlands show a considerable drop in water table from spring through summer. Many meadow marshes are seasonally flooded for only a brief period in spring and are too shallow and ephemeral to support breeding amphibians. During site visits the conditions of encountered pools were recorded. Even in late summer or autumn when pools have dried up, it is possible to determine the depth of pools in spring which is a good indication of their hydro period. In addition the presence of emergents and shrubs will indicate whether the pool is likely to provide suitable amphibian habitat.

The adults of some wetland breeding amphibians such as Spring Peeper (*Pseudacris crucifer*) and Leopard Frog (*Rana pipiens*) live in terrestrial habitat away from the ponds for most of the active season. Others such as Green Frog and Eastern Newt (*Notophthalmus viridescens*) mainly stay in or near the water. Some may winter in the pools but many hibernate terrestrially and migrate to pools with spring thaws. Areas of open water were identified during site investigations.

Table 3.24 Amphibian Breeding Habitat (Woodland)

Natural Area No.	ELC Unit	Vernal Pools or Ponds Observed	Potential to Hold Water until July	Water Depth (m)	% Open Water/ % Emergent Vegetation	Logs	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
									Candidate SWH	Generalized Candidate SWH	
189	FOD6-5	Shallow vernal pools, but with potential to hold water until July in a wetter year.	No	0.10	-	None	No	No	No	No	Does not have potential to hold water until July
198	FOD7-2, OAO	Pond	Yes	Unknown	100 / 0	None	Yes	No	Yes (AWO-03)	No	Suitable habitat present
209	OAO, FOD9e, FOD8-1	Permanent pond (dug pond)	Yes	0.40	90 / 5	Fallen woody debris around portions of area	No	No	No	Yes	Suitable habitat present
210	FOD4-2	Vernal pools	Yes	-	-	-	No	No	No	Yes	Suitable habitat present
225	SWD2-2	Vernal pool	Yes	0.25	80 / 5	5-25 cm diameter logs present	Yes	No	Yes (AWO-04)	No	Suitable habitat present
232	FOD5-5	Vernal pool	Yes	0.15	0 / 0	Sparse 10 cm diameter logs around edges	No	No	No	Yes	Suitable habitat present
235	SWD3-3	Vernal pool	Yes	0.30	80 / 2	Fallen logs have been put into piles	Yes	No	Yes (AWO-06)	No	Suitable habitat present
236	FOD9b, SAS1-3	Pond	Yes	3.00	2 / 5	None	Yes	No	Yes (AWO-07)	No	Suitable habitat present
	FOD9b	Vernal pool	Yes	0.25	80 / 0	10 to 20 cm diameter logs within pool	Yes	No	Yes (AWO-08)	No	Suitable habitat present
	SWD3-3	Vernal pool	Yes	0.35	15 / 0	10-30 cm diameter logs within pond	Yes	No	Yes (AWO-09)	No	Suitable habitat present
	SWD3-3	Vernal pool	Yes	0.25	60 / 0	Minimal downed logs, one large log going across pond	No	No	No	Yes	Suitable habitat present
245	FOD7-2	Vernal pool	Yes	0.25	80 /0	Fallen logs surrounding pond	Yes	No	Yes (AWO-02)	No	Suitable habitat present
249	SWD2-2, OAO	Site appears to be a dug pond, but could not see into water to collect detailed information	Yes	-	- / -	None	Yes	No	Yes (AWO-14)	No	Suitable habitat present
255	OAO, FOM5-2	Pond	Yes	1.00	80 / 0	None	No	No	No	Yes	Suitable habitat present
258	SWD2-2, SWD3-3, FOD9-4	Complex of vernal pools within deciduous forest	Yes	0.10 to 0.40	40 to 90 / 5 to 30	Abundant logs within some of the pools	Yes	No	Yes (AWO-17)	No	Suitable habitat present
261	FOD6-5	Vernal pool	No	0.30	70 / 10	-	No	No	No	No	Does not have potential to hold water until July
266	FOD4a	Vernal pool	Yes	0.15	0 / 0	None	No	No	No	Yes	Suitable habitat present
	OAO, FOD	Pond	Yes	1.0	90 / -	5 cm twigs within pond, large logs along outside of pond	No	No	No	Yes	Suitable habitat present
269	SWD2-2	Vernal pool	Yes	0.30	40 / 5	10-50 cm diameter logs along edge and within pond.	No	No	No	Yes	Suitable habitat present
275	SWD3-3	Vernal pool	No	0.40	60 / 25	-	No	No	No	No	Does not have potential to hold water until July.

Table 3.24 Amphibian Breeding Habitat (Woodland)

Natural Area No.	ELC Unit	Vernal Pools or Ponds Observed	Potential to Hold Water until July	Water Depth (m)	% Open Water/ % Emergent Vegetation	Logs	Within 120 m of Road	Within Project Location	Carried forward to EOS		Rationale
									Candidate SWH	Generalized Candidate SWH	
280	SWD2-2	Vernal pool with evidence of higher water mark on trees	Yes	0.15	0 / 0	40% cover by 10 cm diameter logs along edge of pool	No	No	No	Yes	Suitable habitat present
	FOD7-2	Vernal pool	Yes	0.15	100 / 0	Abundant 10 cm diameter logs, Infrequent 15 cm diameter logs	No	No	No	Yes	Suitable habitat present
300	SWD3-3	Vernal pool	Yes	0.10	97 / 0	10-20 cm diameter logs within along edges	Yes	No	Yes (AWO-24)	No	Suitable habitat present
	SWD3-3	Vernal pool	Yes	0.30	80 / 0	None	Yes	No	Yes (AWO-25)	No	Suitable habitat present
309	FOD7-4	Vernal pool	Yes	-	-	-	No	No	No	Yes	Suitable habitat present
	SWD3-3	Vernal pool	Yes	-	-	-	No	No	No	Yes	Suitable habitat present
321	FOD6-5	Vernal pool	Yes	0.30	40-70 / -	10-25 cm diameter logs abundant within and adjacent to the pond	Yes	No	Yes (AWO-26)	No	Suitable habitat present
342	FOD5-5	Vernal pool	Yes	-	-	-	No	No	No	Yes	Suitable habitat present
375	SWD3-3	Vernal pool	Yes	-	-	-	No	No	No	Yes	Suitable habitat present
392	SWD3-3, FOD5-2	Vernal pool	Yes	0.30	90 / 0	40 cm diameter logs throughout	Yes	No	Yes (AWO-30)	No	Suitable habitat present
648	FOD9a	Vernal pool	Yes	0.03	100 / 1	None	No	Yes	Yes (AWO-35)	No	Suitable habitat present
720	OAO, FOD6-5	Pond	Yes	1.00	95 / 5	None	No	Yes	Yes (AWO-33)	No	Suitable habitat present
721	SWD3-3, FOD6-5	Vernal pool	Yes	0.20	75 / 15	None	No	Yes	Yes (AWO-34)	No	Suitable habitat present
757	SWD2-2	Vernal pool	Yes	0.20	90 / 0	Several 10-24 cm diameter logs fallen in and around vernal pool	Yes	No	Yes (AWO-28)	No	Suitable habitat present
759	OAO	Dug pond	Yes	3.00	90 / 0	None	Yes	No	Yes (AWO-27)	No	Suitable habitat present

Table 3.25 indicates all locations in or within the 120 m Area of Investigation where marsh or swamp thicket vegetation communities with standing water were observed during site investigations. Deciduous swamps identified to have standing water were assessed as Amphibian Woodland Breeding Habitat and described in the section above. One natural area within 120 m of a proposed access road was deemed to have potential for amphibian wetland breeding habitat and was therefore carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (AWE-29). An additional two natural areas were treated as Generalized Candidate Significant Wildlife Habitat and carried forward to the Evaluation of Significance. The locations of these features are shown on Figure 3.6d.

Table 3.25 Amphibian Breeding Habitat (Wetland)

Natural Area No.	ELC Unit	Vernal Pools or Ponds Observed	Potential to hold water until July	Water Depth (m)	% Open Water / % Emergent Vegetation	Logs	Within 120 m of Road	Carried forward to EOS		Rationale
								Candidate SWH	Generalized Candidate SWH	
236	MAM2-2, OAO	Pond in marsh community	Yes	0.60	30 / 2	None	No	No	Yes	Suitable habitat present
379	MAM2-2	Drainage feature with pooling	Yes	0.4	100 / 0	None	Yes	Yes (AWE-29)	No	Suitable habitat present, near provincially significant wetland
609	SWT2-2, OAO	Permanent Pond	Yes	3.0	100 / 0	None	No	No	Yes	Suitable habitat present
754	SWT2b	Permanent pond in middle of agricultural field	Yes	2.0	90 / 5	None	No	No	Yes	Suitable habitat present

3.3.6.4 Habitats of Species of Conservation Concern (not including Threatened or Endangered Species)

Marsh Bird Breeding Habitat

A number of bird species in Ontario require high quality marsh habitat for successful breeding. According to the Atlas of the Breeding Birds of Ontario, there is breeding evidence for Sora (*Porzana carolina*), American Coot (*Fulica americana*), Pied-billed Grebe (*Podilymbus podiceps*) and Green Heron in the general vicinity of the Project Study Area (Cadman *et al.,* 2007). Green Heron was also recorded during avian surveys conducted in the Project Study Area (Golder Associates, 2011). A total of 93 Common Loons (*Gavia immer*), 7 Horned Grebe (*Podiceps auritus*) and 2 Trumpeter Swans (*Cygnus buccinator*) were also recorded during avian surveys conducted in the Project Study Area (Golder Associates, 2011) but these were migrants (refer to Table 3.25).

The target marsh bird species generally require large marshes with a good interspersion of deeper water (at least 30 cm) and emergent marsh vegetation. Shallow water or open water without much emergent vegetation will not suffice. For example, Sandhill Crane nests in large wetlands, typically at least 200 ha but occasionally smaller and usually bogs and fens, but occasionally in marshes, and usually nests at least 1 km from any human activity. There is no suitable nesting habitat for this species in or within the 120 m Area of Investigation.

Habitat for Green Heron, which was also evaluated under this section, is found along the edge of water such as slow flowing streams, ponds and marshes sheltered by shrubs and trees. Less frequently it may also be found in upland shrubs or forests a considerable distance from water (MNR, 2011f). Swamp communities containing standing water were evaluated for suitability for breeding habitat for Green Heron, and stick nests were searched for in these habitats. Cultural meadows were also assessed under this section however none were found to contain suitable habitat. All of the communities that were assessed for suitability for Green Heron did not contain stick nests and were therefore not carried forward as candidate Significant Wildlife Habitat or Generalized Candidate Significant Wildlife Habitat.

All of the locations containing marsh habitat with standing water or swamp habitat where stick nests were observed in or within the 120 m Area of Investigation are listed on Table 3.26. These consist mainly of meadow marshes along stream floodplains. None of the marshes or swamps contained sufficient interspersion of deep water and

emergent marsh vegetation to be considered suitable habitat for marsh breeding birds, therefore none were carried forward to the Evaluation of Significance.

Table 3.26 Marsh Breeding Bird Habitat

Natural Area No.	ELC Unit	Description of Habitat	Within 120 m of Turbine	Carried Forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
236	SAS1-3	Small pond, approximately 0.01 ha in size and 1 m deep, along edge of forest	No	No	No	Insufficient emergent vegetation
	MAM2-2	Small marsh, approximately 0.3 ha in size with a small pond	No	No	No	Insufficient water levels and emergent vegetation
	MAM2-2	Small marsh, approximately 0.4 ha in size, minimal open water	No	No	No	Insufficient water levels
	SWD3-3	Swamp, 3.7 ha in size, with 2 vernal pools and an inactive stick nest	Yes	No	No	Insufficient water levels
300	SWD3-3	Swamp, 1.2 ha in size, with 2 vernal pools and an inactive stick nest	No	No	No	Insufficient water levels
358	MAM2-10	Small marsh, approximately 0.4 ha in size, adjacent intermittent watercourse	Yes	No	No	Insufficient water levels
379	MAM2-2	Small marsh, approximately 0.3 ha in size, adjacent intermittent watercourse	No	No	No	Insufficient water levels

Woodland Area-Sensitive Bird Breeding Habitat

Forest-interior birds, also referred to as area-sensitive birds, are susceptible to forest fragmentation and require large tracts of forest for nesting. These large sections of continuous forest provide shelter and nesting habitat, in addition to food for its inhabitants. Birds that prefer forest interiors tend to avoid edges, whereas birds that are considered area-sensitive tend to prefer forests with certain size characteristics.

While some area-sensitive breeding birds may occur in much smaller woodlands, these woodlots may not contribute to reproductive success for those species. Interior forest species utilizing smaller woodlands have less young reaching maturity due to greater susceptibility to nest parasitism, and nest and fledgling predation known to occur in edge habitats. In order to qualify as Significant Wildlife Habitat for interior forest breeding birds, a contiguous area of forest must be at least 30 ha in size, of which at least 4 ha must comprise interior habitat (*i.e.*, at least 200 m from a forest edge), based on MNR criteria (refer to Table 3.2). The forest must also contain some mature forest. While several woodlands within the 120 m Area of Investigation are greater than 30 ha in size, most are narrow linear natural areas between concession lines that do not meet the interior forest area criterion. Three woodlands located in or within the 120 m Area of Investigation have more than 4 ha of interior forest habitat (Table 3.27); however, one was found to be young (trees approximately 20 to 40 years old) during site investigations and therefore does not qualify under the mature forest criterion (Table 3.2). Two woodlands, WOD-131 and WOD-331, met all the criteria. Vegetation removal is not proposed within these woodlands; therefore, they were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat. The locations of these features are shown on Figure 3.6a.

Table 3.27 Woodland Area-Sensitive Bird Breeding Habitat

Woodland Unit	Woodland >30 ha	Mature Forest	Woodland Contains >4 ha of Interior Forest Habitat	Within Project Location	Carried forward to EOS Generalized Candidate SWH		Rationale
					Candidate SWH	Generalized Candidate SWH	
WOD-117	Yes (455.3 ha)	No	Yes (101.6 ha)	No	No	No	No mature forest present.
WOD-131	Yes (199.8 ha)	Yes	Yes (69.4 ha)	No	No	Yes	Mature forest with >4 ha interior habitat.
WOD-331	Yes (1030.6 ha)	Yes	Yes (758.8 ha)	No	No	Yes	Mature forest with >4 ha interior habitat.

Open Country Bird Breeding Habitat

Open country breeding birds are dependent on large patches of grassland or old field habitat for successful breeding. To qualify as Significant Wildlife Habitat, the MNR criterion for grassland patches is that they must be greater than 30 ha in size (refer to Table 3.2). No such suitable habitats for open country breeding birds were identified in or within the 120 m Area of Investigation during site investigations. The largest single patch of grassland is a 4.9 ha cultural meadow in natural area 227, which is well below this threshold. Consequently no sites were carried forward to the Evaluation of Significance.

Shrub/Early Successional Bird Breeding Habitat

This type of Significant Wildlife Habitat consists of shrublands or successional fields greater than 10 ha in size, excluding Class 2 agricultural lands and lands actively used for farming (i.e., no row-cropping in the last 5 years). To be Significant Wildlife Habitat, contiguous patches of vegetation communities must be over 10 ha in size and composed of the following ELC Ecosites: CUT1, CUT2, CUS1, CUS2, CUW1 and CUW2. Only vegetation communities belonging to CUW1 and CUT1 Ecosites were identified within the 120 m Area of Investigation during site investigations, of which none were of sufficient size to qualify for this type of habitat. Therefore, this type of Significant Wildlife Habitat was not carried forward to the Evaluation of Significance.

Terrestrial Crayfish

Evidence of crayfish tubes or 'chimneys' was observed in proximity to 10 vegetation community polygons associated with six natural areas (refer to Table 3.28). The burrows were often present in the edge of agricultural fields immediately next to natural areas as opposed to actually in the vegetation community (*i.e.*, the crayfish do not occur in FOD). The crayfish occur in areas of wet or seasonally wet clay-based soils that allow burrowing crayfish to form the tubes. These crayfish are an important keystone species as their burrows are used for hibernation by other wildlife species including amphibians, some snakes, and a variety of invertebrates. Crayfish burrows were located in one meadow marsh or shallow marsh vegetation community however no vegetation removal is proposed at this location, therefore that feature was carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (refer to Figure 3.6b for location).

Table 3.28 Terrestrial Crayfish Habitat

Natural Area No.	ELC Unit	Evidence of Chimney Crayfish Observed	Within Project Location	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
189	FOD6-5	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
225	FOD9d	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
	SWD2-2 (with MAM2-2 inclusion)	Yes	No	No	Yes	Crayfish chimneys observed in meadow marsh inclusion
258	FOD7-1	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
	FOD9-4	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
609	SWD2-2	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
	SWT2-2	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
636	CUM1-1	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
637	CUM1-1	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat
	CUP3a	Yes	No	No	No	Not in meadow marsh or shallow marsh habitat

3.3.6.5 Species of Conservation Concern Identified through the Records Review – Special Concern and Rare Wildlife Species

Any plant or animal species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO is provincially significant and considered to be a Species of Conservation Concern. A total of sixty-three Species of Conservation Concern were identified as potentially occurring in or within the Project Study Area through the Records Review (Table 2.5). Most of these species are rare locally and highly specialized to their preferred habitat.

A number of the animal species identified during the Records Review have been assessed under other categories of Significant Wildlife Habitat, as follows:

- **Bald Eagle** (*Haliaeetus leucocephalus*)
  Special Concern – Breeding habitat for this species was assessed as part of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat (Section 3.3.6.3). No candidate significant Bald Eagle nesting habitats were identified in or within the 120 m Area of Investigation, therefore habitat of this Species of Conservation Concern was not carried forward to Evaluation of Significance.

- **Short Eared Owl** (*Asio flammeus*)
  Special Concern – Seasonal concentration areas for this species were assessed as part of Raptor Wintering Areas (Section 3.3.6.1), and breeding habitat of this species was assessed as part of Open Country Bird Breeding Habitat (Section 3.3.6.4). No candidate significant Raptor Wintering Areas or Open Country Bird Breeding Habitats were identified in or within the 120 m Area of Investigation, therefore habitat of this Species of Conservation Concern was not carried forward to Evaluation of Significance.

- **Yellow-breasted Chat** (*Icteria virens*)
  Special Concern – Breeding habitat for this species was assessed as part of Shrub/Early Successional Bird Breeding Habitat (Section 3.3.6.4). No candidate significant shrub/early successional bird breeding habitats were identified in or within the 120 m Area of Investigation, therefore habitat of this Species of Conservation Concern was not carried forward to Evaluation of Significance. No Yellow-breasted Chats were observed during avian use surveys conducted by Golder in 2011 or during breeding bird surveys conducted by AECOM in 2012.

- **Eastern Ribbonsnake** (*Thamnophis sauritus*)
  Special Concern – Seasonal concentration areas for this species were assessed as part of Reptile Hibernacula (Section 3.3.6.1). Eight candidate reptile hibernacula (RH-01, RH-02, RH-03, RH-04, RH-05, RH-06, RH-07 and RH-08) and three Generalized Candidate Significant Wildlife Habitat features were carried forward to Evaluation of Significance (refer to Figure 3.6a for locations).

- **Milksnake** (*Lampropeltis triangulum*)
  Special Concern – Seasonal concentration areas for this species were assessed as part of Reptile Hibernacula (Section 3.3.6.1). Eight candidate reptile hibernacula (RH-01, RH-02, RH-03, RH-04, RH-05, RH-06, RH-07 and RH-08) and three Generalized Candidate Significant Wildlife Habitat features were carried forward to Evaluation of Significance (refer to Figure 3.6a for locations).

- **Snapping Turtle** (*Chelydra serpentine*)
  Special Concern – Seasonal concentration areas were for this species were assessed as part of Turtle Wintering Areas (Section 3.3.6.1) and specialized habitats for this species were assessed as part of Turtle Nesting Areas (Section 3.3.6.3). Two candidate turtle wintering areas (TOW-01 and TOW-03) were identified and six features were treated as Generalized Candidate Significant Wildlife Habitat for turtle wintering and carried forward to the Evaluation of Significance (refer to Figure 3.6a for locations). No candidate Significant Wildlife Habitats for turtle nesting were identified, however one feature was

carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for turtle nesting (refer to Figure 3.6a for location).

- **Little Brown Bat** (*Myotis lucifugus*)
  Endangered federally – Seasonal concentration areas for this species were assessed as part of Bat Hibernacula and Bat Maternity Colonies (Section 3.3.6.1). No candidate Bat Hibernacula were identified whereas 19 candidate Bat Maternity Colonies were identified in or within the 120 m Area of Investigation, therefore habitat of this Species of Conservation Concern was carried forward to the Evaluation of Significance (refer to Figure 3.6c for locations).

Plant Species of Conservation Concern

Five provincially rare (S1-S3) species were observed during site investigations:

- Burning Bush (*Euonymus atropurpurea*) ranks as S3 and was observed in natural area 326 located east of Bronson Line and North of Dashwood Road;
- Field Thistle (*Cirsium discolor*) ranks as S3 (Vulnerable) and was observed in a Dry - Moist Old Field Meadow Type in natural area 198 located along South Road and west of Mollard Line;
- Cream Violet (*Viola striata*) ranks as S3 (Vulnerable) and was observed in natural area 757 north of Pepper Road and east of Goshen Line;
- Narrow-leaved Sedge (*Carex amphibola*) ranks as S2 (Imperiled) and was observed in natural area 189 located south of South Road and west of Grand Bend Line; and
- Perfoliate Bellwort (*Uvularia perfoliata*) ranks as S1 (Critically Imperiled) and was observed within natural area 375 located north of Pepper Road and east of Goshen Line.

The observed occurrences of these rare species during site investigations confirm natural areas 198, 326, 757, 189 and 375 as Significant Wildlife Habitat according to the Ecoregion 6E Criterion Schedule Addendum to the SWHTG (MNR 2011e). All suitable ELC polygons in the natural areas where rare species have been observed were carried forward to the Evaluation of Significance as confirmed Significant Wildlife Habitat (SCP-12, SCP-13, SCP-14, SCP-15, SCP-16 and SCP-17). The locations of these features are shown on Figure 3.6a. A complete list of plant species observed during site investigations is provided in Appendix H.

Habitats of the plant Species of Conservation Concern identified through the Records Review were assessed individually as follows (refer to Table 3.2 for detailed description of habitat preferences and related references).

Habitats for the following plant Species of Conservation Concern were carried forward to the Evaluation of Significance as either Generalized Candidate Significant Wildlife Habitat or candidate Significant Wildlife Habitat:

- **American Gromwell** (*Lithospermum latifolium*)
  S3 (Vulnerable) – This species prefers shaded river banks, and wooded floodplains. The species may also be found within river floodplains, woods and edges of woods. The population of this plant species is scattered throughout southern Ontario, with records in areas adjacent to Huron County from 1950-1964. The last known occurrence of this species in the vicinity of the Project Study Area was in 1989. The species is believed to be only known in Huron County from the Maitland River valley (M.J. Oldham, personal communication). Suitable habitat for this species was found in or within the 120 m Area of Investigation, where Fresh-Moist Lowland Deciduous Forest Ecosites (FOD7) were identified on floodplains mapped by Conservation Authorities (natural areas 177, 189, 210, 232, 258, 280 and 300). No infrastructure is proposed within these ELC polygons and therefore these were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for American Gromwell. The locations of these features are shown on Figure 3.6a.

- **Burning Bush** (*Euonymus atropurpureus*)
  S3 (Vulnerable) - Burning bush grows in dry to moist thickets, valleys, and forest edges. This species has isolated populations scattered across southern Ontario. The last known occurrence of this species in the vicinity of the Project Study Area was in 1983. Since the habitat of this species is relatively common and found throughout the Project Study Area, all potential habitats for this species (i.e. all FOC, FOM or FOD series) in or within the 120 Area of Investigation were treated as Generalized Candidate Significant Wildlife Habitat for Burning Bush and carried forward to Evaluation of Significance, with the exception of natural areas 648, 662, 720 and 721 where the transmission line is proposed within suitable habitat. In total, seven candidate Significant Wildlife Habitats (SCP-03, SCP-04, SCP-05, SCP-06, SCP-09, SCP-10 and SCP-11) were identified in these four natural areas requiring Evaluation of Significance studies (refer to Figure 3.6a for locations).

  In addition, this species was observed during 2011 site investigations in an FOD5 Ecosite of natural area 326. An access road is proposed to be built directly adjacent to the natural area but project activities will not occur within it; therefore, no infrastructure is proposed within this natural area. Since Burning Bush was observed, this natural area is confirmed to be Significant Wildlife Habitat (SCP-12) and was carried forward to the Evaluation of Significance (refer to Figure 3.6a for locations).

- **Chinese Hemlock Parsley** (*Conioselinum chinense*)
  S2 (Imperiled) – This species prefers swampy places with deciduous trees (cedars and tamaracks), river banks and creek borders. The species can also be found in calcareous white cedar swamps, wet borders of streams and rivers as well as among calcareous seepage slopes. This species is present in scattered localities across southern Ontario. There is a pre-1925 record of its occurrence in Pinery Provincial Park and a post-1964 record in Huron County; the last observed occurrence in the study area is from 1986. The species is believed to be only known in Huron County from Maitland River valley (M.J. Oldham, personal communication). Suitable habitat for this species was found in or within the 120 m Area of Investigation, where a Mixed Swamp community (SWM) occurring on a floodplain mapped by Conservation Authorities was identified in natural area 266. There is no infrastructure proposed for this ELC polygon and therefore it was carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for Chinese Hemlock Parsley (refer to Figure 3.6a for location).

- **Eastern Green-violet** (*Hybanthus concolor*)
  S2 (Imperiled) – This species can be found in rich, wet-mesic floodplain forests as well as mesic forests over limestone. The species may also be located in floodplains and river banks. The last known local record for this species dates from 1989. The species is believed to be only known in Huron County from the Maitland River valley (M.J. Oldham, personal communication). No infrastructure is proposed within the required habitat for this species, and the species was not recorded in or within the 120 m Area of Investigation during site investigations. Suitable habitat for this species was found in or within the 120 m Area of Investigation, where Fresh-Moist Lowland Deciduous Forest Ecosites (FOD7) were identified in Natural Areas 177, 189, 210, 232, 258, 280 and 300, occurring on floodplains mapped by Conservation Authorities. There is no infrastructure proposed in these ELC polygons and therefore they were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for Eastern Green-violet (refer to Figure 3.6a for locations).

- **Green Dragon** (*Arisaema dracontium*)
  Special Concern, S3 (Vulnerable) – This species is found in damp deciduous forests especially along floodplains. It also grows in wet forests dominated by maple, red ash and white elm. It was last observed in the vicinity of the Project Study Area in 2000. The species is believed to be only known in Huron County from the Maitland River valley (M.J. Oldham, personal communication). Green Dragon is distinctive and was not observed during site investigations. Since Green Dragon occurs in a common habitat, all potential habitats for this species (*i.e.* all FOD6, FOD7 or FOD9 ecosites; refer to ELC maps for locations) were treated as Generalized Candidate Significant Wildlife Habitat for Green Dragon and carried forward to the Evaluation of Significance, with the exception of natural areas 648, 720 and 721 where the transmission line is proposed in suitable habitat of the species; these features (SCP-03, SCP-05, SCP-06, SCP-09 and SCP-11) were carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (refer to Figure 3.6a for locations).

- **Hairy Bedstraw** (*Galium pilosum*)
  S3 (Vulnerable) - This species grows in dry, sandy woods and thickets as well as occasionally in sandy fields. This species is restricted to southern Ontario with most of the historical records concentrated along the Lake Huron shoreline extending from Kettle Point to Grand Bend (Argus *et al.,* 1982-1987). The last known occurrence in the vicinity of the Project Study Area was in 1999. Since this species has a broad habitat description, all potential suitable habitats (*i.e.* all FOD1, FOD2, FOD3, FOD4 and FOD5 ecosites; refer to ELC map for locations) in or within the 120 m Area of Investigation were treated as Generalized Candidate Significant Wildlife Habitat for Hairy Bedstraw, with the exception of natural area 662, where the transmission line is proposed in suitable habitat for the species; therefore, this habitat (SCP-04) was carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (refer to Figure 3.6a for locations).

- **Hairy Valerian** (*Valeriana edulis*)
  S1 (Critically Imperilled) – This species inhabits swampy river flats and meadows, wet prairies, wooded, rocky riverbanks and fens. There is a post-1964 record of this species occurring in North Huron County but it is not in the vicinity of the Project Study Area (Argus *et al.,* 1982-1987). The species is believed to be only known in Huron County from Maitland River valley (M.J. Oldham, personal communication). There are no known records of this species in the Project Study Area. No fens or wet prairies were identified in or within the 120 m Area of Investigation and the species was not recorded in or within the 120 m Area of Investigation during site investigations. However, suitable habitat was found in or within the 120 m Area of Investigation in natural areas 236, 249, 280, 309, 609 and 738 (refer to Table 3.29 below). No infrastructure is proposed within the required habitat for this species. As such, these habitats were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for Hairy Valerian (refer to Figure 3.6a for locations).

Table 3.29 Hairy Valerian Habitat

Natural Area No.	Area (ha)	Vegetation Type	Swampy River Flats or Rocky Riverbanks Present	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
189	12.2	SWD2-2	No	No	No	No suitable habitat
209	0.3	SWT2	No	No	No	No suitable habitat
215	1.7	SWD3-3	No	No	No	No suitable habitat
216	0.1	SWT2	No	No	No	No suitable habitat
	0.1	SWT2	No	No	No	No suitable habitat
	0.2	SWT2	No	No	No	No suitable habitat
225	1.5	SWD2-2	No	No	No	No suitable habitat
232	0.4	SWD3-3	No	No	No	No suitable habitat
235	0.7	SWD3-3	No	No	No	No suitable habitat
236	0.4	SWD2-2	No	No	No	No suitable habitat
236	0.4	SWD2a	No	No	No	No suitable habitat
	0.6	SWD3-3	No	No	No	No suitable habitat
	0.8	SWD3-3	No	No	No	No suitable habitat
	1.4	SWD3-3	No	No	No	No suitable habitat
	2.1	SWD2-2	Yes	No	Yes	Suitable habitat
	3.7	SWD3-3	No	No	No	No suitable habitat
244	0.6	SWD3-3	No	No	No	No suitable habitat
245	0.1	SWD3-3	No	No	No	No suitable habitat
	0.2	SWD4a	No	No	No	No suitable habitat
249	0.6	SWD2-2	Yes	No	Yes	Suitable habitat
258	0.1	SWD2-2	No	No	No	No suitable habitat
	0.2	SWD3-3	No	No	No	No suitable habitat
	0.4	SWD3-3	No	No	No	No suitable habitat
	0.4	SWD2-2	No	No	No	No suitable habitat
259	1.5	SWD2-2	No	No	No	No suitable habitat
	3.3	SWD4a	No	No	No	No suitable habitat

Table 3.29 Hairy Valerian Habitat

Natural Area No.	Area (ha)	Vegetation Type	Swampy River Flats or Rocky Riverbanks Present	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
261	0.1	SWD4	No	No	No	No suitable habitat
261	0.1	SWD4	No	No	No	No suitable habitat
	0.1	SWD2-2	No	No	No	No suitable habitat
	0.4	SWD2-2	No	No	No	No suitable habitat
	0.4	SWT2-9	No	No	No	No suitable habitat
266	0.4	SWT2a	No	No	No	No suitable habitat
	0.6	SWT2a	No	No	No	No suitable habitat
	12.8	SWM	No	No	No	No suitable habitat
269	1.2	SWD2-2	No	No	No	No suitable habitat
273	0.1	SWD3-3	No	No	No	No suitable habitat
274	2.6	SWD6-3	No	No	No	No suitable habitat
275	1.5	SWD3-3	No	No	No	No suitable habitat
279	6.2	SWD6-3	No	No	No	No suitable habitat
280	0.3	SWD2-2	No	No	No	No suitable habitat
	0.4	SWD2-2	Yes	No	Yes	Suitable habitat
	1.3	SWD3-3	No	No	No	No suitable habitat
	4.3	SWD4b	No	No	No	No suitable habitat
282	2.1	SWD2-2	No	No	No	No suitable habitat
285	0.2	SWD4c	No	No	No	No suitable habitat
291	1.0	SWD4a	No	No	No	No suitable habitat
300	0.1	SWD3-3	No	No	No	No suitable habitat
	0.2	SWD3-3	No	No	No	No suitable habitat
	1.0	SWD3-3	No	No	No	No suitable habitat
	5.6	SWD3-3	No	No	No	No suitable habitat
309	5.4	SWD3-3	Yes	No	Yes	Suitable habitat
321	0.0	SWD3-3	No	No	No	No suitable habitat
	0.0	SWD3-3	No	No	No	No suitable habitat
	0.1	SWD3-3	No	No	No	No suitable habitat
	0.1	SWD3-3	No	No	No	No suitable habitat
	0.2	SWD3-3	No	No	No	No suitable habitat
339	0.6	SWD3-3	No	No	No	No suitable habitat
375	0.5	SWD3-3	No	No	No	No suitable habitat
	1.4	SWD3-3	No	No	No	No suitable habitat
392	0.1	SWD3-3	No	No	No	No suitable habitat
	0.3	SWD3-3	No	No	No	No suitable habitat
	0.7	SWD3-3	No	No	No	No suitable habitat
609	0.0	SWT2-2	Yes	No	Yes	Suitable habitat
	0.3	SWT2-2	Yes	No	Yes	Suitable habitat
	0.4	SWD2-2	Yes	No	Yes	Suitable habitat
	0.4	SWT2-2	Yes	No	Yes	Suitable habitat
	0.5	SWD2-2	Yes	No	Yes	Suitable habitat
	0.6	SWD2-2	Yes	No	Yes	Suitable habitat
	0.7	SWD2-2	Yes	No	Yes	Suitable habitat
	3.0	SWT2-2	Yes	No	Yes	Suitable habitat
701	3.7	SWD3-3	No	No	No	No suitable habitat
721	0.1	SWD3-3	No	No	No	No suitable habitat
722	0.7	SWD3-3	No	No	No	No suitable habitat
738	0.3	SWD4-1	Yes	No	Yes	Suitable habitat
	0.5	SWD4-1	Yes	No	Yes	Suitable habitat
754	0.0	SWD4-1	No	No	No	No suitable habitat
	0.3	SWT2b	No	No	No	No suitable habitat
757	0.5	SWD2-2	No	No	No	No suitable habitat
	1.0	SWD2-2	No	No	No	No suitable habitat

- **Hairy Wood Mint** (*Blephilia hirsuta*)
  S1 (Critically Imperilled) – This species can be found within rich woods, swamp forests, and floodplains. The species may also be found in woodlands, preferably rocky, and especially along rivers. The species was not recorded in or within the 120 m Area of Investigation during site investigations. The last known local record for this species dates from 1959 (MNR, 2012a). This very rare species is unlikely to occur in Huron County and the record may be an error (M.J. Oldham, personal communication). Woods and swamps were identified in or within the 120 m Area of Investigation; however, only those that were identified to occur on floodplains mapped by Conservation Authorities were considered suitable habitat for the species. Table 3.30 identifies suitable habitat found for Hairy Wood Mint in or within the 120 m Area of Investigation. No infrastructure is proposed within these ELC polygons and thus these locations were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for the species (refer to Figure 3.6a for locations).

Table 3.30 Hairy Wood Mint Habitat

Natural Area No.	ELC Unit	Rocky Riverbanks and/or Floodplains Present	Infrastructure Proposed Within Habitat	Carried forward to EOS		Rationale
				Generalized Candidate SWH	Candidate SWH	
177	FOD7-2	Yes	No	Yes	No	Suitable habitat present
189	SWD2-2	No	No	No	No	No suitable habitat present
	FOD6-5	No	No	Yes	No	Suitable habitat present
	FOD7d	Yes	No	Yes	No	Suitable habitat present
198	FOD7-2	No	No	No	No	No suitable habitat present
210	FOD7-1	Yes	No	Yes	No	Suitable habitat present
	FOD7-2	Yes	No	Yes	No	Suitable habitat present
215	FOD6-5	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
216	FOD7-2	Yes	No	Yes	No	Suitable habitat present
217	FOD7-2	No	No	No	No	No suitable habitat present
225	SWD2-2	No	No	No	No	No suitable habitat present
232	SWD3-3	Yes	No	Yes	No	Suitable habitat present
	FOD7-2	Yes	No	Yes	No	Suitable habitat present
235	SWD3-3	No	No	No	No	No suitable habitat present
236	SWD3-3	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
	SWD2a	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
240	FOD7-2	No	No	No	No	No suitable habitat present
242	FOD6-1	No	No	No	No	No suitable habitat present
244	FOD6-5	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
245	FOD6-5	Yes	No	Yes	No	Suitable habitat present
	SWD4a	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	FOD7e	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
	FOD6-4	Yes	No	Yes	No	Suitable habitat present
249	SWD2-2	Yes	No	Yes	No	Suitable habitat present
258	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
	FOD7-1	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present

Table 3.30 Hairy Wood Mint Habitat

Natural Area No.	ELC Unit	Rocky Riverbanks and/or Floodplains Present	Infrastructure Proposed Within Habitat	Carried forward to EOS		Rationale
				Generalized Candidate SWH	Candidate SWH	
259	FOD7-2	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
	SWD4a	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
261	FOD6-5	No	No	No	No	No suitable habitat present
	SWD4	No	No	No	No	No suitable habitat present
	SWD4	No	No	No	No	No suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
266	SWM	No	No	No	No	No suitable habitat present
267	FOD7-2	Yes	No	Yes	No	Suitable habitat present
269	SWD2-2	No	No	No	No	No suitable habitat present
271	FOD6-4	Yes	No	Yes	No	Suitable habitat present
273	SWD3-3	No	No	No	No	No suitable habitat present
274	SWD6-3	Yes	No	Yes	No	Suitable habitat present
275	FOD6-5	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
279	SWD6-3	Yes	No	Yes	No	Suitable habitat present
280	SWD3-3	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
	SWD2-2	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
	FOD7-2	Yes	No	Yes	No	Suitable habitat present
	FOD6-1	Yes	No	Yes	No	Suitable habitat present
	SWD4b	No	No	No	No	No suitable habitat present
	FOD6-1	No	No	No	No	No suitable habitat present
282	SWD2-2	No	No	No	No	No suitable habitat present
	FOD6-4	Yes	No	Yes	No	Suitable habitat present
	FOD6-4	Yes	No	Yes	No	Suitable habitat present
285	SWD4c	No	No	No	No	No suitable habitat present
	FOD7-2	No	No	No	No	No suitable habitat present
291	SWD4a	No	No	No	No	No suitable habitat present
300	FOD7-2	Yes	No	Yes	No	Suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	FOD6-5	No	No	No	No	No suitable habitat present
	FOD7-2	Yes	No	Yes	No	Suitable habitat present
309	SWD3-3	Yes	No	Yes	No	Suitable habitat present
	FOD7-4	Yes	No	Yes	No	Suitable habitat present
321	FOD6-5	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
339	SWD3-3	No	No	No	No	No suitable habitat present
349	FOD7-2	No	No	No	No	No suitable habitat present
361	FOD7-2	No	No	No	No	No suitable habitat present

Table 3.30 Hairy Wood Mint Habitat

Natural Area No.	ELC Unit	Rocky Riverbanks and/or Floodplains Present	Infrastructure Proposed Within Habitat	Carried forward to EOS		Rationale
				Generalized Candidate SWH	Candidate SWH	
375	FOD6-5	No	No	No	No	No suitable habitat present
	FOD6-5	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	FOD6-5	No	No	No	No	No suitable habitat present
392	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
	SWD3-3	No	No	No	No	No suitable habitat present
609	SWD2-2	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	Yes	No	Yes	No	Suitable habitat present
	SWD2-2	Yes	No	Yes	No	Suitable habitat present
611	FOD6-5	No	No	No	No	No suitable habitat present
701	SWD3-3	No	No	No	No	No suitable habitat present
720	FOD6-5	No	Transmission Line (in feature)	No	No	No suitable habitat present
	FOD6-5	No	No	No	No	No suitable habitat present
	FOD7f	No	Transmission Line (in feature)	No	No	No suitable habitat present
	FOD6-5	No	No	No	No	No suitable habitat present
721	FOD7-1	No	Transmission Line (in feature)	No	No	No suitable habitat present
	FOD6-5	No	Transmission Line (in feature)	No	No	No suitable habitat present
	SWD3-3	No	Transmission Line (in feature)	No	No	No suitable habitat present
722	SWD3-3	No	Transmission Line (in feature)	No	No	No suitable habitat present
723	FOD6-5	Yes	No	Yes	No	Suitable habitat present
738	SWD4-1	Yes	No	Yes	No	Suitable habitat present
	SWD4-1	Yes	No	Yes	No	Suitable habitat present
754	SWD4-1	Yes	No	Yes	No	Suitable habitat present
757	FOD6-5	No	No	No	No	No suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present
	SWD2-2	No	No	No	No	No suitable habitat present

- **Harbinger-of-spring** (*Erigenia bulbosa*)
  S3 (Vulnerable) – This species occurs in rich, moist deciduous woods, especially on floodplains. The species is ephemeral and has a very short flowering period early in the spring, after which it is easily overlooked. Although site investigations in 2012 took place during the flowering period for this species, it may have been missed. Since it occurs in a common habitat and the period of detection is very short, all potential habitats for this species (*i.e.*, all FOD6, FOD7, FOD8 or FOD9 ecosites; refer to ELC map for locations) were treated as Generalized Candidate Significant Wildlife Habitat for Harbinger-of-spring and carried forward to Evaluation of Significance, with the exception of natural areas 720, 721 and 648 where the transmission line is proposed within the habitat for the species; six candidate Significant Wildlife Habitats were identified (SCP-03, SCP-10, SCP-05, SCP-11, SCP-06 and SCP-09) within these natural areas and were carried over to the Evaluation of Significance (refer to Figure 3.6a for locations).

- **Lizard's Tail** (*Saururus cernuus*)
  S3 (Vulnerable) – This species inhabits shores and stream banks along shallow water, as well as swamps (usually deciduous but sometimes cedar), floodplains, shallow water and mudflats at the border of streams and

ponds. The last known record in the area dates from 2005 (MNR, 2012a). Lizard's Tail is a distinctive and easily identifiable plant that was not observed during field investigations in or within the 120 m Area of Investigation; however, it may have been missed during late season surveys. No infrastructure is proposed within the preferred habitat for this species. Therefore, suitable habitat identified in Table 3.31 was carried forward as Generalized Candidate Significant Wildlife Habitat for Lizard's Tail (refer to Figure 3.6a for locations).

Table 3.31 Lizard's Tail Habitat

Natural Area No.	ELC Unit	Date of Investigation	Species Observed	Streambank or Floodplain Present	Carried forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
189	SWD2-2	4-Jul-2012	No	No	No	No	No suitable habitat
215	SWD3-3	4-Oct-2012	No	No	No	No	No suitable habitat
225	MAM2-2	13-Jul-2011	No	No	No	No	No suitable habitat
	SWD2-2	13-Jul-2011	No	No	No	No	No suitable habitat
232	SWD3-3	14-Oct-2011	No	No	No	No	No suitable habitat
235	SWD3-3	7-Nov-2011 19-Apr-2012	No	No	No	No	No suitable habitat
236	MAM2-2	13-Oct-2011 9-Nov-2011	No	No	No	No	No suitable habitat
	SWD2-2	9-Nov-2011 18-Apr-2012 19-Apr-2012	No	No	No	No	No suitable habitat
	SWD2a	13-Oct-2011 18-Apr-2012	No	No	No	No	No suitable habitat
	MAM2-2	13-Oct-2011 18-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	13-Oct-2011 18-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	13-Oct-2011 18-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	13-Oct-2011 18-Apr-2012	No	No	No	No	No suitable habitat
	SWD2-2	9-Nov-2011 18-Apr-2012 19-Apr-2012	No	Yes	No	Yes	Suitable habitat present
	SWD3-3	21-Sep-2011 18-Apr-2012 19-Apr-2012	No	Yes	No	Yes	Suitable habitat present
244	SWD3-3	27-Apr-2012	No	No	No	No	No suitable habitat
245	SWD3-3	8-Sep-2011 9-Nov-2011 23-Apr-2012	No	No	No	No	No suitable habitat
	SWD4a	8-Sep-2011 9-Nov-2011 23-Apr-2012	No	No	No	No	No suitable habitat
249	SWD2-2	4-Jul-2012	No	Yes	No	Yes	Suitable habitat present
258	SWD2-2	19-Jul-2011 21-Sep-2011 25-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	19-Jul-2011 21-Sep-2011 25-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	29-Nov-2011 1-May-2012	No	No	No	No	No suitable habitat
	SWD2-2	9-Sep-2011	No	No	No	No	No suitable habitat
259	SWD2-2	9-Sep-2011	No	No	No	No	No suitable habitat
	SWD4a	9-Sep-2011	No	No	No	No	No suitable habitat

Table 3.31 Lizard’s Tail Habitat

Natural Area No.	ELC Unit	Date of Investigation	Species Observed	Streambank or Floodplain Present	Carried forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
261	SWD4	30-Apr-2012 7-Jun-2012 29-Jun-2012	No	No	No	No	No suitable habitat
	SWD4		No	No	No	No	No suitable habitat
	SWD2-2		No	No	No	No	No suitable habitat
	SWD2-2		No	No	No	No	No suitable habitat
269	SWD2-2	18-Apr-2012	No	No	No	No	No suitable habitat
273	SWD3-3	2-May-2012	No	No	No	No	No suitable habitat
274	MAM3-2	2-May-2012	No	Yes	No	Yes	Suitable habitat present
	SWD6-3	2-May-2012	No	Yes	No	Yes	Suitable habitat present
275	SWD3-3	8-May-2012	No	No	No	No	No suitable habitat
279	MAM3-2	2-May-2012	No	Yes	No	Yes	Suitable habitat present
	SWD6-3	2-May-2012	No	Yes	No	Yes	Suitable habitat present
280	SWD2-2	21-Sep-2011 24-Apr-2012	No	No	No	No	No suitable habitat
	SWD2-2	21-Sep-2011 24-Apr-2012	No	Yes	No	Yes	Suitable habitat present
	SWD3-3	21-Sep-2011 24-Apr-2012	No	No	No	No	No suitable habitat
	SWD4b	21-Sep-2011	No	No	No	No	No suitable habitat
282	SWD2-2	25-Apr-2012	No	No	No	No	No suitable habitat
285	SWD4c	28-Jun-2012	No	No	No	No	No suitable habitat
291	SWD4a	26-Apr-2012	No	No	No	No	No suitable habitat
300	SWD3-3	7-Nov-2011 26-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	7-Nov-2011 26-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	7-Nov-2011 26-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	21-Sep-2011	No	Yes	No	Yes	Suitable habitat present
309	SWD3-3	3-Oct-2011	No	Yes	No	Yes	Suitable habitat present
321	SWD3-3	20-Jul-2011 5-Oct-2011 23-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	20-Jul-2011 5-Oct-2011 23-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	20-Jul-2011 5-Oct-2011 23-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	20-Jul-2011 5-Oct-2011 23-Apr-2012	No	No	No	No	No suitable habitat
	SWD3-3	20-Jul-2011 5-Oct-2011 23-Apr-2012	No	No	No	No	No suitable habitat
339	SWD3-3	7–Sep-2011 8-Nov-2011	No	No	No	No	No suitable habitat
358	MAM2-10	7-Sep-2011	No	No	No	No	No suitable habitat
375	SWD3-3	12-Dec-2011	No	No	No	No	No suitable habitat
	SWD3-3	12-Dec-2011	No	No	No	No	No suitable habitat
	MAM2a	5-Oct-2011	No	No	No	No	No suitable habitat
379	MAM2-2	27-Sep-2011	No	No	No	No	No suitable habitat
392	SWD3-3	12-Dec-2011	No	No	No	No	No suitable habitat
	SWD3-3	12-Dec-2011	No	No	No	No	No suitable habitat
	SWD3-3	12-Dec-2011	No	No	No	No	No suitable habitat

Table 3.31 Lizard's Tail Habitat

Natural Area No.	ELC Unit	Date of Investigation	Species Observed	Streambank or Floodplain Present	Carried forward to EOS		Rationale
					Candidate SWH	Generalized Candidate SWH	
609	SWD2-2	31-May-2012	No	Yes	No	Yes	Suitable habitat present
	SWD2-2	31-May-2012	No	Yes	No	Yes	Suitable habitat present
	SWD2-2	31-May-2012	No	Yes	No	Yes	Suitable habitat present
	SWD2-2	31-May-2012	No	Yes	No	Yes	Suitable habitat present
701	SWD3-3	4-Jul-2012	No	No	No	No	No suitable habitat
721	SWD3-3	6-Jun-2012	No	No	No	No	No suitable habitat
722	SWD3-3	29-Jun-2012	No	No	No	No	No suitable habitat
738	MAM2-2	3-Jul-2012	No	Yes	No	Yes	Suitable habitat present
	SWD4-1	3-Jul-2012	No	Yes	No	Yes	Suitable habitat present
	SWD4-1	2-May-2012	No	Yes	No	Yes	Suitable habitat present
739	MAM2-2	5-Jul-2012	No	Yes	No	Yes	Suitable habitat present
754	SWD4-1	2-May-2012	No	Yes	No	Yes	Suitable habitat present
756	MAS	n/a	No	No	No	No	No suitable habitat
757	SWD2-2	25-Apr-2012	No	No	No	No	No suitable habitat
	SWD2-2	25-Apr-2012	No	No	No	No	No suitable habitat

- **Pawpaw** (*Asimina triloba*)
  S3 (Vulnerable) - Pawpaw commonly grows in shady, rich moist deciduous woodlands and bottomlands. Although uncommon, Pawpaw occurs mostly in the extreme southern Ontario with a higher concentration of occurrences in Essex, Kent, and Niagara Counties and fewer occurrences in the Counties of Lambton and Middlesex. The last known local record of this species in the vicinity of the Project Study Area was from 1959. Since Pawpaw was not observed during site investigations and it occurs in a common habitat, all potential habitats for this species (*i.e.* all FOD6, FOD7 or FOD9 ecosites; refer to ELC map for locations) were treated as Generalized Candidate Significant Wildlife Habitat for the species and carried forward to the Evaluation of Significance, with the exception of natural areas 648, 720 and 721, where the transmission line is proposed in suitable habitat of the species; therefore, candidate Significant Wildlife Habitat identified within these features (SCP-03, SCP-05, SCP-06 and SCP-09) were carried forward to the Evaluation of Significance (refer to Figure 3.6a for locations).

- **Pumpkin Ash** (*Fraxinus profunda*)
  S2? (Imperilled?; rank uncertain) - This species is wetlands obligate and only grows in bottomland swamps and floodplains. Pumpkin Ash is very rare and is found in the extreme southwestern Ontario in Essex County along Lake Erie. The last known record of this species in the vicinity of the Project Study Area is from 1994. Swamps in or within the 120 m Area of Investigation occurring on floodplains mapped by Conservation Authorities were considered as suitable habitat for the species. Pumpkin ash was not observed during site investigations. However, suitable habitat was identified in or within the 120 m Area of Investigation in natural areas 210, 216, 232, 236, 244, 249, 258, 267, 274, 279, 280, 300, 309, 738 and 754, where no infrastructure is proposed within the required habitat of the species. These habitats were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (Table 3.32; refer to Figure 3.6a for locations).

Table 3.32 Pumpkin Ash Habitat

Natural Area No.	ELC Unit	Within Floodplain (N/Y)	Infrastructure Proposed Within Habitat	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
177	FOD7-2	No	No	No	No	Not suitable habitat
189	SWD2-2	No	No	No	No	Not suitable habitat
	FOD7d	No	No	No	No	Not suitable habitat
198	FOD7-2	No	No	No	No	Not suitable habitat

Table 3.32 Pumpkin Ash Habitat

Natural Area No.	ELC Unit	Within Floodplain (N/Y)	Infrastructure Proposed Within Habitat	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
210	FOD7-1	Yes	No	No	Yes	Suitable habitat present
	FOD7-2	Yes	No	No	Yes	Suitable habitat present
215	SWD3-3	No	No	No	No	Not suitable habitat
216	FOD7-2	Yes	No	No	Yes	Suitable habitat present
217	FOD7-2	No	No	No	No	Not suitable habitat
225	SWD2-2	No	No	No	No	Not suitable habitat
232	SWD3-3	Yes	No	No	Yes	Suitable habitat present
	FOD7-2	Yes	No	No	Yes	Suitable habitat present
235	SWD3-3	No	No	No	No	Not suitable habitat
236	SWD3-3	Yes	No	No	Yes	Suitable habitat present
	SWD2-2	Yes	No	No	Yes	Suitable habitat present
	SWD2-2	No	No	No	No	Not suitable habitat
	SWD2a	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	FOD7-2	Yes	No	No	Yes	Suitable habitat present
240	FOD7-2	No	No	No	No	Not suitable habitat
244	SWD3-3	Yes	No	No	Yes	Suitable habitat present
245	SWD4a	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	FOD7e	No	No	No	No	Not suitable habitat
	FOD7-2	No	No	No	No	Not suitable habitat
249	SWD2-2	Yes	No	No	Yes	Suitable habitat present
258	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
	FOD7-1	Yes	No	No	Yes	Suitable habitat present
	SWD2-2	No	No	No	No	Not suitable habitat
259	FOD7-2	No	No	No	No	Not suitable habitat
	FOD7-2	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
	FOD7-2	No	No	No	No	Not suitable habitat
	SWD4a	No	No	No	No	Not suitable habitat
259	FOD7-2	No	No	No	No	Not suitable habitat
261	SWD4	No	No	No	No	Not suitable habitat
	SWD4	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
267	FOD7-2	Yes	No	No	Yes	Suitable habitat present
269	SWD2-2	No	No	No	No	Not suitable habitat
273	SWD3-3	No	No	No	No	Not suitable habitat
274	SWD6-3	Yes	No	No	Yes	Suitable habitat present
275	SWD3-3	No	No	No	No	Not suitable habitat
279	SWD6-3	Yes	No	No	Yes	Suitable habitat present
280	SWD3-3	No	No	No	No	Not suitable habitat
	FOD7-2	No	No	No	No	Not suitable habitat
	SWD2-2	Yes	No	No	Yes	Suitable habitat present
	SWD2-2	No	No	No	No	Not suitable habitat
	FOD7-2	Yes	No	No	Yes	Suitable habitat present
	SWD4b	No	No	No	No	Not suitable habitat
282	SWD2-2	No	No	No	No	Not suitable habitat
285	SWD4c	No	No	No	No	Not suitable habitat
	FOD7-2	No	No	No	No	Not suitable habitat

Table 3.32 Pumpkin Ash Habitat

Natural Area No.	ELC Unit	Within Floodplain (N/Y)	Infrastructure Proposed Within Habitat	Carried forward to EOS		Rationale
				Candidate SWH	Generalized Candidate SWH	
291	SWD4a	No	No	No	No	Not suitable habitat
300	FOD7-2		No	No	Yes	Suitable habitat present
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	FOD7-2	Yes	No	No	Yes	Suitable habitat present
309	SWD3-3	Yes	No	No	Yes	Suitable habitat present
	FOD7-4	Yes	No	No	Yes	Suitable habitat present
321	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
339	SWD3-3	No	No	No	No	Not suitable habitat
349	FOD7-2	No	No	No	No	Not suitable habitat
361	FOD7-2	No	No	No	No	Not suitable habitat
375	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
392	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
	SWD3-3	No	No	No	No	Not suitable habitat
609	SWD2-2	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat
701	SWD3-3	No	No	No	No	Not suitable habitat
720	FOD7f	No	Yes (transmission line)	No	No	Not suitable habitat
721	FOD7-1	No	Yes (transmission line)	No	No	Not suitable habitat
	SWD3-3	No	Yes (transmission line)	No	No	Not suitable habitat
722	SWD3-3	No	Yes (transmission line)	No	No	Not suitable habitat
738	SWD4-1	Yes	No	No	Yes	Suitable habitat present
	SWD4-1	Yes	No	No	Yes	Suitable habitat present
754	SWD4-1	Yes	No	No	Yes	Suitable habitat present
757	SWD2-2	No	No	No	No	Not suitable habitat
	SWD2-2	No	No	No	No	Not suitable habitat

- **Ram's-head Lady's-slipper** (*Cypripedium arietinum*)
  S3 (Vulnerable) – This species can be found in undisturbed cedar woodlands and swamps, limestone plains and wooded fens, primarily in calcareous areas. Although it is uncommon in Ontario, most of its population is found along the Lake Huron shoreline. This species was last observed in the vicinity of the Project Study Area in 1994. This species was not encountered during site investigations; however, cultural woodlands were identified as the only suitable habitat for the species in or within the 120 m Area of Investigation in natural areas 190, 206, 216, 361, 369 and 373. There is no infrastructure proposed in these features and thus these were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (refer to Figure 3.6a for locations).

- **Round-leaved Groundsel** (*Packera obovata*)
  S3 (Vulnerable) – This species is found in moist woodlands and rocky outcrops. The last observed date in the vicinity of the Project Study Area was in 1987. It was not observed during site investigations. Since Round-leaved Groundsel occurs in a common habitat, all potential habitats for this species (i.e. all FOD6, FOD7 or FOD9 ecosites; refer to ELC map for locations) were treated as Generalized Candidate Significant Wildlife Habitat for this species and carried forward to the Evaluations of Significance, with the exception of natural areas 648, 720 and 721, where the transmission line is proposed in suitable habitat for the species; therefore candidate Significant Wildlife Habitat identified within these natural areas (SCP-03, SCP-05, SCP-06, and SCP-09) were carried forward to the Evaluation of Significance (refer to Figure 3.6a for locations).

- **Round-leaved Hawthorn** (*Crataegus lumaria*)
  S3? (Vulnerable?; rank uncertain) – This species grows in old fields, poorly managed pastures, fence lines, and roadsides. It is locally common in extreme southwestern Ontario with historical records in Lambton and Middlesex Counties (Argus *et al*., 1982-1987). The last known local record of the species dates from 1978. The Round-leaved Hawthorn was not encountered during site investigations and this species is generally not easily identified in the field. Suitable habitat in natural areas 635, 637, 648 and 720 where the transmission line is proposed inside the feature were carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (SCP-01, SCP-02, SCP-07 and SCP-08). Since the habitat of this species is relatively common, all other potential habitats for this species (*i.e.* all CUM1-1 and CUT1 ecosites; refer to ELC map for locations) in or within the 120 m Area of Investigation were treated as Generalized Candidate Significant Wildlife Habitat and carried forward to the Evaluation of Significance (refer to 3.6a for locations).

- **Slim-flowered Muhly** (*Muhlenbergia tenuiflora*)
  S2 (Imperilled) – This species can be found in rich deciduous forest, often on rocky or sandy soils. The species may also be found on wooded dunes, hillsides, and riverbanks dominated by either oak or beech-maple. Although no treed sand dunes were identified in or within the 120 m Area of Investigation, potentially suitable deciduous forest habitats are common. Since the species occurs in a common habitat and it is an obscure grass not easily recognized, all potential habitats for this species where no infrastructure is proposed (*i.e.*, all FOD5 or FOD9 ecosites; refer to ELC map for locations) were treated as Generalized Candidate Significant Wildlife Habitat for Slim-flowered Muhley and carried forward to the Evaluation of Significance. However, as the transmission line is proposed inside suitable habitat identified in natural areas 662 and 648; two candidate Significant Wildlife Habitats were identified within these natural areas (SCP-04 and SCP-03) and were carried forward to the Evaluation of Significance (refer to Figure 3.6a for locations).

- **Tuberous Indian Plantain** (*Arnoglossum plantagineum*)
  Special Concern – This species is largely restricted to the coast of Lake Huron but may also be found in fens, wet meadows, and calcareous river flats. Where not in association with shorelines, it may be found in association with open seepage slopes. There are a few post-1964 records that indicate the occurrence of this species in Huron County (Argus *et al.,* 1982-1987); however, no records exist for the local area (MNR, 2012a). No fens are located in or within the 120 m Area of Investigation; however, potential habitat for the species was identified in or within the 120 m Area of Investigation in natural areas 274, 279, 738 and 739. These ELC polygons consist of wet meadows (MAM2-2 and MAM3-2) that occur on floodplains. No infrastructure is proposed within these habitats. Therefore, these features were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (refer to Figure 3.6a for locations).

<u>Habitats for the following plant Species of Conservation Concern were not carried forward to the Evaluation of Significance:</u>

- **A Moss (Muehlenberg's Astomum Moss)** (*Astonum muehlenbergianum*)
  S2 (Imperilled) – This moss species grows in soils over level outcrop ledges and soils found under grasses in open prairies. The last known occurrence of this species in the vicinity of the Project Study Area was in 1966.

No suitable tallgrass prairie or alvar habitat was identified in or within the 120 m Area of Investigation nor was the species encountered during site investigations; therefore, the habitat for this species was not carried forward to the Evaluation of Significance.

- **Autumn Coral-root** (*Corallorhiza odontorhiza*)
  S2 (Imperilled) – This species prefers dry oak or oak-pine woods or occasionally open, red pine or white pine plantations. Scattered occurrences of this species are mainly restricted to the Carolinian zone, and the species is not listed for Huron County in Oldham (1993). Most of the historical occurrences are concentrated in Norfolk County with only one occurrence near Grand Bend from 1950-1964. The last observed date in the Project Study Area is unknown. Open oak dominated woodlands were considered candidate Significant Wildlife Habitat for this species but plantations were not because it is not favoured habitat and the probability of occurrence there is very low. No suitable habitat was found in or within the 120 m Area of Investigation nor was this species observed during site investigations; therefore, the habitat for this species was not carried forward to the Evaluation of Significance.

- **Carolina Whitl*ow-grass*** *(Draba reptans)*
  S3 (Vulnerable) – This species is primarily found in open, dry, sandy areas and limestone pavements. Historical records after 1964 suggest that this species occurred in the Pinery Provincial Park (Argus *et al.,* 1982-1987). The last known occurrence for the Carolina Whitlow-grass in the area was in 1958. As a habitat specialist, it only thrives in the coastal dune systems exclusive to the shoreline of Lake Huron. No suitable habitat was identified in or within the 120 m Area of Investigation nor was the species recorded during site investigations; therefore, the habitat for this species was not carried forward to Evaluation of Significance.

- **Crowned Beggarticks** (*Bidens trichosperma*)
  S2 (Imperilled) – This species can be found in openings in swamps, marshes, along shores and wet fields within the Carolinian zone and southeastern Georgian Bay. The species can also be found in bogs, fens, and tamarack swamps. Crowned Beggarticks was not recorded in or within the 120 m Area of Investigation during site investigations. No infrastructure is proposed within the required habitat for this species. The last known local record for this species dates from 1936 (MNR, 2012a), the species is not listed for Huron County in Oldham (1993), and M.J. Oldham (personal communication) is not aware of any more recent records. For these reasons, this species was not carried forward to Evaluation of Significance.

- **Dwarf Chinquapin** (*Quercus prinoides*)
  S2 (Imperilled) – This species specializes in open, dry and sandy habitats such as sandy woods and savannahs. The distribution of the Dwarf Chinquapin is only known from three sites in southern Ontario which include Grand Bend on Lake Huron (post-1964 record), Point Pelee and the Walsingham Township along the shore of Lake Erie (Argus *et al.,* 1982-1987). The last known record in the vicinity of the Project Study Area was in 1999 (MNR, 2012a). No suitable habitat was identified in or within the 120 m Area of Investigation nor was the species recorded during site investigations. Therefore, the habitat for the Dwarf Chinquapin was not carried forward to the Evaluation of Significance.

- **False Tomentose** (*Packera paupercula var. pseudotomentosa*)
  S2S3 (Imperilled to Vulnerable) - This species grows in prairies, sandy open woods, and savannahs. Its distribution range is confined to the Carolinian Zone of southern Ontario. This species was last observed in the vicinity of the Project Study Area in 1990. The species has specific habitat preferences and no such areas of suitable habitat were identified in or within the 120 m Area of Investigation. As a result, the habitat of this species was not carried forward to the Evaluation of Significance.

- **Fogg's Goosefoot** (*Chenopodium foggii*)
  S2 (Imperilled) – Fogg's Goosefoot inhabits dry sandy soil habitats under oak or pine-oak forests. The last known record of the species in the area dates from 1975. Although there are historical occurrences of Fogg's

Goosefoot in Grand Bend, it would likely occur in the pine-oak savannah ecosystems restricted to the lakeshore of Lake Huron. As such, no areas of suitable habitat were identified in or within the 120 m Area of Investigation and thus the habitat was not carried forward to the Evaluation of Significance.

- **Giant Ironweed** (*Vernonia gigantea*)
  S1 (Critically Imperilled) – Giant Ironweed grows in wet prairies, thickets, moist woods, and grassy meadows. This species is rare in Ontario and most observances after 1964 are concentrated in extreme southern Ontario. Giant Ironweed was observed near Kettle Point between 1950-1964 (Argus *et al.,* 1982-1987). The last known occurrence of this species in the vicinity of the Project Study Area was in 1983 (MNR, 2012a). No suitable habitat was observed in or within the 120 m Area of Investigation nor was this species encountered during site investigations; therefore, the habitat for Giant Ironweed was not carried forward to the Evaluation of Significance.

- **Great Lakes Sand Reed** (*Calamovilfa longifolia var. magna*)
  S3 (Vulnerable) – This habitat specialist grows on active and stabilized sand dunes and open sand plains. It is endemic to the Lake Huron shoreline where it can abundantly occur from Point Edward in Lambton County stretching to Sauble Beach in Bruce County. This species has been commonly observed since 1964 along the Lake Huron shoreline (Argus *et al.,* 1982-1987). The last observed date for this species in the vicinity of the Project Study Area was in 2004 (MNR, 2012a). No suitable habitat for this species was identified in or within the 120 m Area of Investigation nor was this species observed during site investigations; thus, the habitat for this species was not carried forward to the Evaluation of Significance.

- **Hill's Pond Weed** (*Potamogeton hillii*)
  SC, S2 (Imperilled) – This is an aquatic plant found in highly alkaline waters of ditches, ponds, beaver ponds, and slow-moving cold waters chiefly confined to the Bruce Peninsula and Manitoulin Island, with a few additional areas elsewhere in the province. The species is not listed for Huron County in Oldham (1993). No suitable habitat was found that meets the cold water requirement of Hill's Pond Weed in or within the 120 m Area of Investigation and the species was not observed during site investigations; as a result, the habitat for this species was not carried forward to the Evaluation of Significance.

- **Large Round-leaved Orchid** *(Platanthera macrophylla*)
  S2 (Imperilled) – This species inhabits moist mixed woods. The species can be found in fairly mature, upland sugar maple-beech-eastern hemlock woodlands, a relatively common type of habitat in Ontario although this species is rarely encountered. At least one historic record was found in Huron County, dating from 1867 (MNR, 2012b). Since this historical record is more than 60 years old and the species was not observed during site investigation, habitat for Large Round-leaved Orchid was not carried forward to the Evaluation of Significance.

- **Moss phlox** (*Phlox subulata*)
  S1? (Critically Imperilled?; rank uncertain) – Moss phlox prefers open, dry, sandy habitats such as sandy woods, roadsides, and lakeshores. There is a historical record from 1906 of Moss Phlox near Kettle Point (MNR, 2012a; Argus *et al*., 1982-1987). It is likely that this species occurred in the Pinery Provincial Park. No suitable habitat was identified in or within the 120 m Area of Investigation nor was this species encountered during site investigations; thus, the habitat of this species was not carried forward to the Evaluation of Significance.

- **Narrow leaved Puccoon** (*Lithospermum incisum*)
  S1 (Critically imperilled) – This species grows in dune, savannah, and sandy woods. This is a historical record seemingly within Pinery Provincial Park that predates 1925 (Argus *et al*., 1982-1987). There are no recent records of this species in the Project Study Area. No suitable habitat was identified in or within the 120 m Area of Investigation nor was this species encountered during site investigations. Due to its habitat requirements, this species is confined to the coastal ecosystem of Lake Huron. As such, habitat of this species was not carried forward to the Evaluation of Significance.

- **Pillose Evening Primrose** (*Oenothera pilosella*)
  S2 (Imperilled) – This species grows in moist edges of woods and open, disturbed ground. There are historical records of the Pillose Evening Primrose on the Lake Huron shore near Kettle Point. The last known record of the species in the vicinity of the Project Study Area was in 1919. Since the historical record is more than 60 years old and this species was not observed during site investigations, the habitat for the Pillose Evening Primrose was not carried forward to the Evaluation of Significance.

- **Prostrate Tick-trefoil** (*Desmodium rotundifolium*)
  S2 (Imperilled) – This species prefers dry, sandy or rocky woods. There are historical records (1950-1964) of this species in Grand Bend (Argus *et al*., 1982-1987); the last known record of this species in the vicinity of the Project Study Area was in 1970. Due to its specific habitat requirements this species is largely confined to the open Oak-Savannah habitat of Pinery Provincial Park where it has been known to occur from historical records. As well as, this species was not encountered during site investigations which should have captured its relatively late flowering period (July – September). As a result, habitat for the Prostrate Tick-trefoil was not carried forward to the Evaluation of Significance.

- **Rattlesnake Hawkweed** (*Hieracium venosum*)
  S2 (Imperilled) – This species can be found in open, dry sandy woods consisting of Jack pine, oak, and/or aspens. The last known local record for this species dates from 1956, and the species was not recorded in or within the 120 m Area of Investigation during site investigations despite its relatively long flowering period. This very rare species is unlikely to occur in Huron County and the record may be an error (M.J. Oldham, personal communication). Habitat of this species was not carried forward to the Evaluation of Significance.

- **Scarlet Beebalm** (*Monarda didyma*)
  S3 (Vulnerable) – This species can be found in moist, rich woods, thicket swamps, banks and floodplains. This species used to be fairly common in the Carolinian Zone but now only a few isolated populations remain. The last known local record for this species dates from 1900. Scarlet Beebalm is a distinctive and easily identifiable plant that was not observed during site investigations; therefore its habitat was not carried forward to the Evaluation of Significance.

- **Shore Bluestem** (*Schizachyrium littorale*)
  S2? (Imperilled?; rank uncertain) – The Shore Bluestem prefers dry sandy habitats and is found on the sandy dunes and shores of the Lower Great Lakes. The last observed date of the Shore Bluestem in the vicinity of the Project Study Area was in 2000. Due to its specific habitat requirements, it is most likely that this species is confined to the Pinery Provincial Park. No suitable habitat for this species was identified in or within the 120 m Area of Investigation nor was this species encountered during site investigations. Therefore, the habitat of this species was not carried forward to the Evaluation of Significance.

- **Slender Blazing Star** (*Liatris cylindracea*)
  S3 (Vulnerable) – This species grows in dry woodlands, prairies, fields, and moist, sandy meadows as well as on limestone and dolostone alvars. This species was last observed in the vicinity of the Project Study Area in 2004. The Slender Blazing Star is a tallgrass habitat specialist and as such no suitable habitat was identified in or within the 120 m Area of Investigation nor was this species encountered during site investigations. Therefore, the habitat for this species was not carried forward to the Evaluation of Significance.

- **Slender Knotweed** (*Polygonum tenue*)
  S2 (Imperilled) – Slender Knotweed grows in dry, sandy, open areas in deciduous woods often dominated by Oak as well as prairie meadows and at edges of sand pits. There are historical records of this species occurring at or near Grand Bend (Argus *et al.,* 1982-1987). It was last observed in the vicinity of the Project Study Area in 1964. This species is a habitat specialist and is most likely confined to the Oak-Savannah ecosystem at Pinery

Provincial Park located along the shores of Lake Huron. Suitable habitat was not identified in or within the 120 m Area of Investigation nor was this species encountered during site investigations. As a result, the habitat for this species was not carried forward to the Evaluation of Significance.

- **Slender Vulpia** (*Vulpia octoflora*)
  S2 (Imperilled) – This species inhabits dry, sandy habitats, including rocky woods meadows, dry forests, and stabilized dunes. The last known local record for this species dates from 1970. It is unlikely to occur in the study area (M.J. Oldham, personal communication) and its habitat was not encountered during site investigations, therefore its habitat was not carried forward to the Evaluation of Significance.

- **Slim-spikes Three-awned Grass** (*Aristida longispica var. longispica*)
  S2 (Imperilled) – This species grows in dry to moist sandy fields and sandy openings in prairies. There are a few historical records of this grass species occurring in Kent and Essex Counties. The last known local record dates from 1989. This species is more commonly associated with wet to wet-mesic prairies. There were no sandy fields or prairies found in or within the 120 m Area of Investigation. In addition, this species was not encountered during site investigations. Therefore, habitat for this species was not carried forward to the Evaluation of Significance.

- **Stiff Gentian** (*Gentianella quinquefolia*)
  S2 (Imperilled) – This species is often found in moist soils of stream banks, edges of woods and wet prairies, as well as marshy meadows, bluffs and wooded hillsides. The last known local record for this species dates from 1982, and the species was not recorded in or within the 120 m Area of Investigation during site investigations. The species is not listed for Huron County in Oldham (1993) and M.J. Oldham (personal communication) was not aware of any more recent records, therefore this species was not carried forward to the Evaluation of Significance.

- **Sundial Lupine** (*Lupinus perennis*)
  S3 (Vulnerable) – This species is known to inhabit dry, sandy oak savannahs and prairies, as well as open barrens or clearings in woodlands of oak, jack pine, and/or aspen. The most frequent historical accounts of this species were in Norfolk County and Pinery Provincial Park (Argus *et al.,* 1982-1987). The last known local record for this species dates from 2000. The species is not listed for Huron County in Oldham (1993) and M.J. Oldham (personal communication) is not aware of any more recent records. No suitable habitats were identified in or within the 120 m Area of Investigation; therefore habitat of this species was not carried forward to the Evaluation of Significance.

- **Tall Blazing Star** (*Liatris aspera*)
  S2 (Imperilled) – This species inhabits open, sandy woods, dry roadsides and sandy prairies. Occurrences of this species are mostly limited to extreme southwestern Ontario. There is a record of occurrence in 1999 near Grand Bend and Pinery Provincial Park. As a specialist, the Tall Blazing Star thrives best in tall grass prairie habitats which were not within the study area. No suitable habitat was identified in or within the 120 m Area of Investigation nor was this species observed during site investigations. Therefore, its habitat was not carried forward to the Evaluation of Significance.

- **Woodland Pinedrops** *(Pterospora andromedea*)
  S2 (Imperilled) – This species may be found in conifer forest, particularly under pines, but also hemlock, spruce, fir, and white cedar. It may also occur in dry or rocky soil, often with common juniper and sometimes aspen or birch. The most recent known record for this species in the area dates from 1936. Woodland Pinedrops is a distinctive and easily identifiable plant that was not observed during site investigations. No suitable habitats were identified in or within the 120 m Area of Investigation, therefore its habitat was not carried forward to the Evaluation of Significance.

- **Yellow Ladies'-tresses** (*Spiranthes ochroleuca*)
  S2 (Imperilled) – This species occurs on dry, open sites, usually on acidic sandy soil, and particularly prairie or savannah. It may also be found in dry to mesic open woodland, thickets, meadows, barrens, ledges, outcrops, and banks. Yellow Ladies'-tresses was not recorded in or within the 120 m Area of Investigation during site investigations. The species is not listed for Huron County in Oldham (1993) and the last known occurrence in the Project Study Area was in 1942. Since this record is more than 60 years old, it is considered historic and therefore habitat of this species was not carried forward to the Evaluation of Significance.

- **Yellow Stargrass** (*Hypoxis hirsute*)
  S3 (Vulnerable) – This species grows in dry open sandy woods, wet to dry prairies, and savannahs. Historical records from after 1964 indicate its occurrence in Pinery Provincial Park and Middlesex County (Argus *et al.,* 1982-1987); the last observed date in the vicinity of the Project Study Area was in 1983. This species was not encountered during site investigations and no suitable habitat was identified in or within the 120 m Area of Investigation. The habitat of this species was not carried forward to the Evaluation of Significance.

Bird Species of Conservation Concern

One bird Species of Conservation Concern, Red-headed Woodpecker, was observed in natural area 720 during site investigations. No other animal species of conservation concern were observed during site investigations. A complete list of wildlife species observed during site investigations is provided in Appendix I.

Habitats of the remaining bird Species of Conservation Concern identified through the Records Review were assessed individually as follows (refer to Table 3.2 for detailed description of habitat preferences and related references).

- **Common Nighthawk** (*Chordeiles minor*)
  Special Concern – This species is an aerial forager that hunts insects over a wide variety of habitats, in particular open or semi-open areas such as farmland or open woodlands. The species nests on the ground in a wide range of open, sparse or vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, rock outcrops, rocky barrens, gravel pits and urban rooftops. It may sometimes nest in grasslands, pastures, peat bogs, marshes or lakeshores. Common Nighthawk was not recorded in the area in either the first or second Breeding Bird Atlas (Cadman *et al*., 2007), or during 2011 (Golder, 2011) or 2012 avian surveys. No infrastructure is proposed within the required habitat for this species, which includes vegetation communities belonging to the following ELC Community Series: CUW, SDO, RBO and TPS. Because this species is a nocturnal aerial forager and its nests are difficult to locate, all suitable habitats occurring in or within the 120 m Area of Investigation (*i.e.*, all CUW ecosites; refer to ELC map for locations) were treated as Generalized Candidate Significant Wildlife Habitat for Common Nighthawk and carried forward to Evaluation of Significance (refer to Figure 3.6d for locations).

- **Louisiana Waterthrush** (*Seiurus motacilla*)
  Special Concern – This species inhabits mature forests along steeply sloped ravines adjacent to running water, and nests primarily along streams (Stucker, 2000). Because it is an area-sensitive forest breeding bird, the features identified as suitable Woodland Area-Sensitive Bird Breeding Habitat (refer to Section 3.3.6.3) were examined to determine whether they contain the riparian habitat required by this species.

  Large, mature deciduous or mixed forests containing both 4 ha of interior forest habitat and riparian habitat were found in woodlands WOD-131 and WOD-331 (Table 3.33). No infrastructure is proposed within these features therefore they were treated as Generalized Candidate Significant Wildlife Habitat for Louisiana Waterthrush and carried forward to Evaluation of Significance (refer to Figure 3.6d for locations).

Table 3.33 Louisiana Waterthrush Habitat

Woodland Unit	Woodland >30 ha	Mature Forest	Woodland Contains >4 ha of Interior Forest Habitat	Riparian Habitat Present	Within Project Location	Carried forward to EOS Generalized Candidate SWH		Rationale
						Candidate SWH	Generalized Candidate SWH	
WOD-117	Yes (455.3 ha)	No	Yes (101.6 ha)	Yes	No	No	No	No mature forest habitat present.
WOD-131	Yes (199.8 ha)	Yes	Yes (69.4 ha)	Yes	No	No	Yes	Mature forest with >4 ha interior habitat.
WOD-331	Yes (1030.6 ha)	Yes	Yes (758.8 ha)	Yes	No	No	Yes	Mature forest with >4 ha interior habitat.

- **Red-headed Woodpecker** (*Melanerpes erythrocephalus*)
  Special Concern – This species inhabits open woodland and woodland edges, especially in oak savannahs and riparian forest, open, deciduous forest with little understorey; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees. The species generally requires cavity trees with at least 40 cm dbh. Red-headed Woodpecker was recorded in the area in the first Breeding Bird Atlas but not in the second (Cadman *et al*., 2007).

  Since Red-headed Woodpecker has such a wide habitat description, all potential habitats (i.e., all ecosites associated with the following ELC Community Series: FOD, CUW or CUT) occurring in or within the 120 m Area of Investigation where vegetation removal is not proposed were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat (refer to Figure 3.6d for locations). Red-headed Woodpecker was observed during site investigations in natural area 720 where the transmission line is proposed through the natural area. This feature was carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat (SCB-03). Likewise, all woodlands where tree removal is proposed were treated as candidate Significant Wildlife Habitat for bird Species of Conservation Concern (Red-headed Woodpecker) (SCB-01, SCB-02, SCB-03, SCB-04 and SCB-05) and carried forward to the Evaluation of Significance (Table 3.34; refer to Figure 3.6d for locations).

Table 3.34 Red-headed Woodpecker Habitat

Woodland ID	Natural Area No.	Size (ha)	Community Age	Evidence of Forest Management	Within Project Location	Carried forward to EOS		Rationale
						Generalized Candidate SWH	Candidate SWH	
WOD-120	648	2.8	Mid-age	No	Yes	No	Yes (SCB-01)	Suitable habitat present.
WOD-134	662	4.4	Young	No	Yes	No	Yes (SCB-02)	Suitable habitat present.
WOD-200	720	2.3	Young to Mid-age	No	Yes	No	Yes (SCB-03)	Suitable habitat present.
WOD-180	721	4.8	Mid-age	No	Yes	No	Yes (SCB-04)	Suitable habitat present.
WOD-164	722	0.7	Mid-age	No	Yes	No	Yes (SCB-05)	Suitable habitat present.

Insect Species of Conservation Concern

Habitats of the insect species of conservation concern identified through the Records Review were assessed individually as follows (refer to Table 3.2 for detailed description of habitat preferences and related references).

- **Azure Bluet** (*Enallagma aspersum*)
  S3 (Vulnerable) – This damselfly species inhabits fishless ponds, lakes and boggy swamps. According to the Ontario Odonata Atlas (MNR, 2005), there are historical records from after 1983 of the Azure Bluet in Huron Country. More recently, the last known occurrence of this species in the Project Study Area was in 1997. Ponds and other water bodies where the fish habitat was unknown or where the absence of fish habitat was confirmed were treated as suitable habitat for the Azure Bluet (Table 3.35). In total, there are eleven ponds identified in or within the 120 m Area of Investigation. Of these, nine ponds were determined to be suitable habitat for the Azure Bluet. No infrastructure is proposed in these identified ponds and thus these habitats were carried forward to the Evaluation of Significance as Generalized Candidate Significant Wildlife Habitat for the Azure Bluet (refer to Figure 3.6b for locations).

Table 3.35 Potential Azure Bluet Habitat

Natural Area No.	ELC Unit	Description of Standing Water	Substrate Along Shoreline	Evidence of Fish Present	Water Depth (m)	Within Project Location	Carried forward to EOS		Rationale
							Candidate SWH	Generalized Candidate SWH	
198	OAO	Pond	Mineral soil	Unknown	Unknown	No	No	Yes	Suitable habitat present
209	OAO	Permanent dug pond, appears to be spring-fed	Gravel road/clay substrate	Yes	0.4	No	No	No	Habitat not suitable due to presence of fish
236	OAO	Pond	Mineral soil	Unknown	0.6	No	No	Yes	Suitable habitat present
	SAS1-3	Permanent dug pond	Mineral soil	Unknown	3	No	No	Yes	Suitable habitat present
249	OAO	Site appears to be a dug pond	Mineral soil	No	Unknown	No	No	Yes	Suitable habitat present
255	OAO	Pond	Mineral soil	Unknown	1	No	No	Yes	Suitable habitat present
266	OAO	Permanent pond	Mineral soil	Unknown	Deep	No	No	Yes	Suitable habitat present
609	OAO	Permanent Pond	Mineral soil	Yes	3	No	No	No	Habitat not suitable due to presence of fish
720	OAO	Permanent pond	Mineral soil	No	1	No	No	Yes	Suitable habitat present
754	SWT2b	Permanent pond	Mineral soil	Unknown	2	No	No	Yes	Suitable habitat present
759	OAO	Pond	Mineral soil	Unknown	3	No	No	Yes	Suitable habitat present

- **Dusted Skipper** (*Atrytonospsis hianna*)
  S1 (Critically Imperilled) – This species is confined to remnants of dry prairie and sand dune areas. In Ontario, the Dusted Skipper is localized to a few sites along the shore of Lake Huron, most likely within the Pinery Provincial Park. The last known occurrence in the Project Study Area was in 1990 (MNR, 2012a). No prairie or sand dune areas were identified within the 120 m Area of Investigation, therefore the habitat of this species was not carried forward to the Evaluation of Significance.

- **Monarch Butterfly** (*Danaus plexippus*)
  Special Concern – According to MNR criteria, Monarch Migratory Stopover Areas are not associated with the Project Study Area and were therefore not assessed during the site investigation. Monarch feeding and breeding habitat consists of old field habitats with an abundance of milkweed (*Asclepius*). Monarchs were observed sporadically throughout the 120 m Area of Investigation; however, the Monarch is so widespread in meadows and so wide ranging that it is not practical to designate all locations where they occur as Significant

Wildlife Habitat. Therefore, Monarch feeding and breeding habitat was assessed as described in Table 3.2 above. No old fields containing a particular abundance of milkweed were identified in or within the 120 m Area of Investigation, therefore habitat of this species was not carried forward to the Evaluation of Significance.

- **Mottled Duskywing** (*Ernnis martialis*)
  S2 (Imperilled) – This species can be found in open woodlands, barrens, prairie hills, open brushy fields, and chaparrals. There are only five extant colonies in Ontario, one of which is in Pinery Provincial Park (CBIF, 2006). No suitable habitat for this species was identified in or within 120 m Area of Investigation nor was this species encountered during site investigations. Any suitable habitat that is likely to occur is confined to the Pinery Provincial Park which is located outside the Project Study Area. Thus, habitat for the Mottled Duskywing was not carried forward to the Evaluation of Significance.

- **Tawny Emperor** (*Asterocampa clyton*)
  S2S3 (Imperilled – Vulnerable) – This species inhabits densely wooded riparian areas, dry woods, open woods, fencerows and parks where its main host plants, Common Hackberry (*Celtis occidentalis*) and Dwarf Hackberry (*Celtis tenuifolia*), are abundantly found. No natural areas with a particular abundance of these species were encountered during site investigations. Currently, Tawny Emperor is most common in Pelee Island and rare everywhere else in southwestern Ontario. There are records of Tawny Emperor in the Lambton Shores and Pinery Provincial Park from 1991-2000 (Jones *et al*., 2012). No suitable habitat for this species was identified in or within the 120 m Area of Investigation nor was this species observed during site investigations. This species is unlikely to occur in the Project Study Area and therefore the habitat for the Tawny Emperor was not carried forward to the Evaluation of Significance.

- **Sleepy Duskywing** (*Erynnis brizo*)
  S1 (Critically Imperilled) – This species occurs in open oak woodland, oak savannah or oak-pine scrub, chaparral or barrens occurring on well-drained sandy or shaly soils. This species has been observed in the Pinery Provincial Park since 2000 but it is likely restricted to dry oak savannah ecosystem along the shoreline of Lake Huron. No suitable habitats were identified in or within the 120 m Area of Investigation; therefore, habitat of this species was not carried forward to the Evaluation of Significance.

- **West Virginia White** (*Pieris virginiensis*)
  Special Concern – This species is restricted to rich, deciduous woods, where its food plants, toothworts (*Cardamine concatenata* and *C. diphylla*), are abundant. Abundant amounts of toothwort were found during site investigations in three locations in or within the 120 m Area of Investigation in natural areas 245, 326 and 372, within Dry-Fresh Sugar Maple Deciduous Forest Ecosites (FOD5). In addition, an abundance of toothworts was also found in natural area 242 within a Fresh – Moist White Elm Lowland Deciduous Forest Type (FOD6). West Virginia White has a very short flight period in early spring and closely resembles a more common butterfly; therefore, West Virginia White is easily missed. No infrastructure is proposed within the identified areas. Consequently, these suitable habitats where an abundance of toothwort occurred throughout the forest stand were treated as Generalized Candidate Significant Wildlife Habitat for West Virginia White and carried forward to the Evaluation of Significance (refer to Figure 3.6b for locations).

3.3.6.6 Animal Movement Corridors

Amphibian Corridors

Many woodland and open wetland breeding amphibians move from their hibernation sites to breeding areas in spring and then to their summer habitats. The Project Study Area is characterized by isolated woodlots spread out on a mostly agricultural landscape. Many amphibians will move from one woodlot to another for breeding, crossing

inhospitable agricultural cropland in the process, then return to their home woodlot. These movements mostly take place at night, particularly during rainy nights in the spring.

In order to identify likely amphibian corridors, the significance of Amphibian Woodland Breeding and Amphibian Wetland Breeding Habitats must first be confirmed in the Evaluation of Significance. As such, the animal movement corridors were determined based on the locations of the identified significant breeding areas and discussed in the Evaluation of Significance (Section 4). These significant breeding areas were examined in the context of the landscape by making assumptions about where amphibians are likely migrating from, and identifying probable movement corridors based on connecting vegetation, riparian links, and nearness of natural areas. Amphibian corridors are of particular concern for proposed roads because moving amphibians are susceptible to road mortality. Strips of natural vegetation that are at least 200 m wide and connect at least one significant amphibian breeding location with other areas quality as amphibian corridors. This type of Significant Wildlife Habitat was carried forward to the Evaluation of Significance.

Deer Movement Corridors

Corridors are important for many species of wildlife to be able to access seasonally important habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling. Deer movement corridors may be found in any forested ecosites that potentially provide movement linkages to Deer Winter Congregation Areas determined to be Significant Wildlife Habitat by MNR.

One woodland feature (WOD-331) located in or within the 120 m Area of Investigation was determined to potentially function as a deer movement corridor for the formerly identified Deer Winter Congregation Area associated with Hay Swamp (DWC-01; refer to Section 3.3.6.1). This woodland is located within 120 m of a proposed access road therefore it was carried forward to the Evaluation of Significance as candidate Significant Wildlife Habitat. (refer to Figure 3.6b for location).

3.3.6.7 Summary of Candidate Significant Wildlife Habitats Carried Forward to Evaluation of Significance

Several candidate Significant Wildlife Habitats were identified in or within the 120 m Area of Investigation through the site investigation. The boundaries of these features are shown on Figures 3.6a, 3.6b, 3.6c and 3.6d. Generalized Candidate Significant Wildlife Habitats are also shown on Figures 3.6a, 3.6b, 3.6c and 3.6d. A description of the attributes, composition, and function of each candidate Significant Wildlife Habitat and distance to the nearest Project component is provided in Table 3.36 below. All of these candidate Significant Wildlife Habitats were carried forward to the Evaluation of Significance phase of this Natural Heritage Assessment.

Table 3.36 Summary of Candidate Significant Wildlife Habitats Identified Through the Site Investigation

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
Waterfowl Stopover and Staging Areas (Terrestrial) (300 m buffer included as habitat when determining distances)	WSST-15	Not applicable	0 m (overlapped by Project Location)	Tundra Swan stopover and staging habitat typically consists of agricultural fields with waste grains that are subject to annual spring flooding from melt water or runoff. Forage crops present and potential annual spring flooding in agriculture fields observed.	May provide stopover and staging habitat for Tundra Swans during spring migration.
	WSST-36	Not applicable	0 m (overlapped by Project Location)	Tundra Swan stopover and staging habitat typically consists of agricultural fields with waste grains that are subject to annual spring flooding from melt water or runoff. Forage crops present and evidence of spring flooding in agriculture fields observed.	May provide stopover and staging habitat for Tundra Swans during spring migration.
Bat Maternity Colonies	BMC-177	177	42 m (turbine blade tip)	Young white elm, green ash, and Freeman's maple swamp. Towards the north end, there is an older Freeman's maple swamp, consisting of trees approximately 60 cm dbh. Contains one large freeman's maple with a large cavity beginning at the base of the tree, extending upward into the tree for approximately 3 m.	May provide habitat for bat maternity colonies.
	BMC-189	189	41 m (turbine blade tip)	This woodland contains sugar maple-hardwood deciduous forest, shagbark hickory deciduous forest, and some areas of white elm, ash, and hawthorn. Contains a large, dead American beech tree, approximately 100 cm dbh, with a large cavity as well as some exfoliating bark.	May provide habitat for bat maternity colonies.
	BMC-215	215	37 m (turbine blade tip)	This woodland contains white ash-basswood forest, sugar maple-hardwood forest, and Freeman's maple deciduous swamp. Contains a white elm snag of approximately 30 cm dbh, with exfoliating bark.	May provide habitat for bat maternity colonies.
	BMC-229	229	43 m (turbine blade tip)	This forest is dominated by basswood, white elm, and sugar maple. Contains a very large, live basswood, approximately 120 cm dbh, which is largely hollow. The cavity of the tree has a circular entrance of approximately 100 cm in diameter.	May provide habitat for bat maternity colonies.
	BMC-235	235	32 m (turbine blade tip)	A mid-age forest dominated by maple, with abundant basswood and rare black walnut and American beech. Contains 14.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-236	236	28 m (turbine blade tip)	This woodland contains green ash deciduous swamp, Freeman's maple swamp, fresh-moist hemlock mixed forest, moist shagbark hickory deciduous forest, oak-maple-hickory forest, and white ash deciduous forest. Contains two black walnut snags within 20 m of each other, each approximately 30 cm dbh and containing 1 small cavity each.	May provide habitat for bat maternity colonies.
	BMC-242	242	56 m (turbine blade tip)	Abundant sugar maple and white ash (*Fraxinus americana*), with occasional American beech, hop hornbeam, black cherry (*Prunus serotina*), blue beech (*Carpinus caroliniana* ssp. *virginiana*), basswood, and white elm. Contains 16.00 cavity trees per hectare	May provide habitat for bat maternity colonies.

7. *Reflects distance between feature and disturbance area associated with project infrastructure unless otherwise noted.*

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	BMC-249	249	116 m (turbine blade tip)	This woodland contains green ash deciduous swamp. Access was not able to be obtained in order to describe the relevant attributes.	May provide habitat for bat maternity colonies.
	BMC-267	267	43 m (turbine blade tip)	A mid-age forest with abundant green ash and occasional basswood, sugar maple, ironwood, bur oak, and shagbark hickory. 20.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-282	282	106 m (turbine blade tip)	A mid-age forest with dominant maple, abundant white elm, American beech, and basswood. Contains 10.40 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-285	285	83 m (turbine blade tip)	Abundant white ash, with plantations of white pine (*Pinus strobus*). Also contains occasional large-tooth aspen (*Populus grandidentata*), white elm, white birch, blue beech, black cherry, and white spruce (*Picea glauca*). 12.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-326	326	37 m (turbine blade tip)	This woodland is a recently logged sugar maple forest, with few trees >30 cm dbh. Contains a sugar maple of approximately 30 cm dbh which contains a cavity approximately 10 m up the trunk. The cavity entrance is approximately 10 to 15 cm wide and 100 cm long.	May provide habitat for bat maternity colonies.
	BMC-342	342	117 m (turbine blade tip)	Abundant sugar maple, with occasional American beech, ironwood, bitternut hickory, white ash, and basswood. Contains 16.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-352	352	102 m (turbine blade tip)	Dominant sugar maple, with occasional American beech, white ash, basswood, black cherry, and hop hornbeam. Contains 12.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-358	358	77 m (turbine blade tip)	Abundant sugar maple and American beech, with occasional white ash, ironwood, black cherry, and white elm. Contains 14.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-372	372	59 m (turbine blade tip)	Dominant sugar maple, with occasional white ash, American beech, basswood, blue beech, hop hornbeam, and white elm. Contains 24.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-757	757	24 m (turbine blade tip)	This woodland largely consists of fresh-moist sugar maple hardwood deciduous forest, with some green ash deciduous swamp. Contains a dead white elm tree, approximately 30 cm dbh, with exfoliating bark.	May provide habitat for bat maternity colonies.
	BMC-648	648	0 m (overlapped by transmission line)	Dominated by bitternut hickory, with occasional sweet cherry, white elm, trembling aspen, ironwood, and English hawthorn. Contains 18.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	BMC-720	720	0 m (overlapped by transmission line)	Occasional sugar maple, basswood, freeman's maple, shagbark hickory, white elm, ironwood, American beech, and ash. Contains 10.00 cavity trees per hectare.	May provide habitat for bat maternity colonies.
	Generalized Candidate SWH	Varied	Varied	Ideal hibernating sites include wooded areas rich in dead organic materials, areas below the frost line and rock crevices.	May provide habitat for bat maternity colonies.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
Turtle Wintering Areas	TOW-01	759	11 m (access road)	This potential turtle over-wintering habitat consists of a deep pond with mineral soil substrate. The pond is located in a cultural plantation community and was estimated to be 3 m deep at the time of site investigations.	Over-wintering sites provide protection from harsh winter temperatures and support over-winter survival.
	TOW-03	236	59 m (access road)	This potential turtle over-wintering habitat consists of a deep pond with mineral soil substrate. The pond is located in a deciduous forest community and was estimated to be 3 m deep at the time of site investigations.	Over-wintering sites provide protection from harsh winter temperatures and support over-winter survival.
	Generalized Candidate SWH	255, 266 609, 720, 754	Varied	Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen. The water in these features must deep enough not to freeze and have soft mud substrates.	Over-wintering sites provide protection from harsh winter temperatures and support over-winter survival.
Reptile Hibernacula (30 m buffer included as habitat when determining distances)	RH-01	300	86 m (access road and collection line)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a large stone pile with the potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	RH-02	235	0 m (turbine construction footprint 27 m from rock pile)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a rock pile with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	RH-03	236	0 m (turbine construction footprint 28 m from cement slab pile)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a cement slab pile with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	RH-04	275	0 m (collection line 10 m from stone pile)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a stone pile with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	RH-05	321	0 m (collection line 11 m from rock pile)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a rock pile with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	RH-06	609	0 m (transmission line 27 m from foundation)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is an exposed old brick foundation with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	RH-07	723	0 m (transmission line >0.1 m from rock pile)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a rock pile with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	RH-08	232	0 m (collection line 16 m from rock pile)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival. This potential snake hibernaculum is a rock pile with potential to extend below the frostline.	Rock pile may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
	Generalized Candidate SWH	232,236, 661,695	Varied (>120 m from access roads or turbines)	Snake hibernacula are typically rock crevices, rock piles and abandoned foundations which allow snakes to enter ground below the frost line provide protection from the harsh winter temperatures and support over-winter survival.	Rock piles or old foundations may allow snakes to enter ground below the frost line, providing protection from harsh winter temperatures and supporting over-winter survival.
Colonial-nesting Bird Breeding Habitat (Tree/Shrub) (300 m buffer included as habitat when determining distances)	CNB-01	189	0 m (overlapped by Project Location)	Nesting colonies of herons generally occur within treed wetlands such as mixed or deciduous swamps or treed fen habitats. Active Great Blue Heron nests were observed by AECOM during 2011 breeding bird surveys and 2012 site investigations, both conducted as fence line surveys. The number of nests is unknown.	Provides nesting habitat that supports a colony of Great Blue Herons.
Deer Winter Congregation Areas	DWC-01	379	31 m (access road)	Woodlands will typically be greater than 100 ha in size; however woodlands less than 100 ha may be considered significant based on MNR studies or assessment. Large woodlands greater than 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha.	Provides winter habitat for deer; deer move to suitable woodlands in response to the onset of winter snow and cold in order to reduce or avoid the impacts of winter conditions.
Old Growth or Mature Forest Stands	Generalized Candidate SWH	Many	Varied	True old growth forest consists of very old forest that has never been cutover while mature forest stands consist of very large trees and a broad range of tree size classes, and large standing snags of abundant downed wood of variable sizes.	Old growth or mature forests may provide specialized habitats and resources for plant and wildlife species. A broad range of tree sizes creates a diversity of structure. Large standing snags are an important habitat for many wildlife species.
Other Rare Vegetation Communities	Generalized Candidate SWH	309	>0.1 m (collection line)	This rare vegetation community is a Fresh-Moist Black Walnut Lowland Deciduous Forest Type (FOD7-4), a rare forest type with a provincial ranking of S2S3. Dominant tree species found within this mid-age deciduous forest consist of black walnut, Freeman's maple, white ash, and white elm.	Rare forest types may provide specialized habitats and resources for plant and wildlife species. Mast (nuts) produced by black walnut is an important fall and winter food for forest wildlife species.
Waterfowl Nesting Areas	Generalized Candidate SWH	209	8 m (collection line) (>120 m from turbines)	This Significant Wildlife Habitat type is a combination of wetland and adjacent upland habitat. Typically upland vegetation communities composed of grasses, sedges, rushes, and low shrubs, or cavities in large hollow trees within forests or swamps; at least 120 m wide, so that predators have difficulty locating nests.	May provide nesting habitat for waterfowl species, as well as brood rearing habitat in close association with upland habitat.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
Woodland Raptor Nesting Habitat	Generalized Candidate SWH	WOD-117, WOD-131, WOD-331	Varied	Woodland raptors find shelter, build nests and hunt for prey in forested habitat. These woodlands are at least 30 ha in size and contain greater than 4 ha of interior forest habitat.	Large tract of unfragmented forest may provide important habitat for woodland raptors to use for shelter, build nests and hunt for prey.
Turtle Nesting Areas	Generalized Candidate SWH	209	21 m (collection line) (>120 m from access road)	Ideal turtle nesting habitat is located directly adjacent to a permanent water feature, is elevated to protect the nest from being inundated, and consists of sand or gravel as these are light enough to allow turtles to dig out nests. Gravel and clay substrate surrounds the permanent dug pool found in natural area 209. There is evidence of nesting turtles within gravel driveway along pond.	Nesting sites may support populations of turtles by providing breeding habitat suitable for the undertaking of critical life functions.
Seeps and Springs	Generalized Candidate SWH	232, 249, 266, 267, 273, 280, 309, 369, 609, 723	Varied	This type of Significant Wildlife Habitat consists of naturally vegetated areas with evidence of groundwater upwelling. In or within the 120 m Area of Investigation, these have varied plant species compositions, with the presence of seep indicator species such as water speedwell or watercress.	Wildlife may rely on open water available at seeps and springs during the winter. Seeps are also important for recharging to streams thereby contributing to fish habitat, and as habitat for a number of specialized plant species.
Amphibian Woodland Breeding Habitat	AWO-02	245	>0.1 m (access road)	This potential amphibian woodland breeding habitat consists of a vernal pool located within a green ash deciduous forest community. The water depth was 25 cm at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-03	198	115 m (access road)	This potential amphibian woodland breeding habitat consists of a pond located within a green ash deciduous swamp community. The water depth is unknown.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-04	225	7 m (collection line) (105 m from access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with 5% emergent vegetation located within a green ash deciduous swamp community. Logs surrounding the pool are 5-25 cm in diameter and the water depth was 25 cm at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-06	235	24 m (turbine construction footprint) (106 m of access road)	This potential amphibian woodland breeding habitat consists of a vernal pool in a freeman's maple deciduous swamp community. Fallen logs and/or logging debris have been piled by the landowner around the feature. A small amount of emergent vegetation is present and water depth was 30 cm at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-07	236	59 m (access road)	This potential amphibian woodland breeding habitat consists of a pond located within a deciduous forest community. The water in this pond is deep, estimate to be 3 m at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-08	236	46 m (access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with 25 cm of water present at the time of site investigations. The vernal pool is located in a deciduous forest. Logs measuring 10-20 cm in diameter are present in the feature.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-09	236	10 m (turbine construction footprint) (82 m from access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with 35 cm of water present at the time of site investigations. The vernal pool is located in a freeman's maple deciduous swamp forest. Logs measuring 10-30 cm in diameter are present within the feature.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	AWO-14	249	21 m (access road)	This potential amphibian woodland breeding habitat consists of an apparently dug pond with little emergent vegetation and minimal down woody material. The pond is located within a deciduous swamp community.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-17	258	37 m (turbine construction footprint) (95 m from access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with little emergent vegetation and water depth of 40 cm at the time of site investigations. Logs of 10-25 cm diameter occur within pool. The vernal pool is located within a deciduous forest community.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-24	300	37 m (access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with little emergent vegetation and 10-20 cm diameter logs within along its edges. The vernal pool is located within a deciduous swamp community and was 10 cm deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-25	300	37 m (access road	This potential amphibian woodland breeding habitat consists of a vernal pool with little emergent vegetation and minimal down woody material. The vernal pool is located within a deciduous swamp community and was 30 cm deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-26	321	>0.1 m (collection line) (100 m of access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with 70% cover of emergent vegetation and abundant 10-25 cm diameter logs within and adjacent to the feature. The vernal pool is located within a deciduous forest community and was 30 cm deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-30	392	10 m (access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with little emergent vegetation and 40 cm diameter logs present throughout. The vernal pool is located within a deciduous forest community and was 30 cm deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-35	648	0 m (transmission line in feature) (>120 m of access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with little emergent vegetation and minimal down woody material. The vernal pool is located within a deciduous forest community.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-33	720	0 m (transmission line in feature) (>120 m of access road)	This potential amphibian woodland breeding habitat consists of a pond with little emergent vegetation and minimal down woody material. The pond is located within a deciduous forest community and was 1 m deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-34	721	0 m (transmission line in feature) (>120 m of access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with 15% cover of emergent vegetation and minimal down woody material. The vernal pool is located within a deciduous forest community and was 20 cm deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	AWO-28	757	13 m (turbine construction footprint) (75 m of access road)	This potential amphibian woodland breeding habitat consists of a vernal pool with little emergent vegetation and several 10-24 cm diameter logs fallen in and around vernal pool. The vernal pool is located within a deciduous forest community and was 20 cm deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	AWO-27	759	11 m (access road and collection line)	This potential amphibian woodland breeding habitat consists of a pond with little emergent vegetation and minimal downed woody debris. The pond is located in cultural plantation community however adjacent to a deciduous forest and was estimated to be 3 m deep at the time of site investigations.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
	Generalized Candidate SWH	209, 210, 232, 236, 255, 266, 269, 280, 309, 342, 375	Varied	This type of Significant Wildlife Habitat can occur in woodland or swamp communities with a wetland, lake or pond, including breeding pools that may be permanent, seasonal, ephemeral, and located within or adjacent to (within 120 m of) the woodland.	Woodland breeding amphibians congregate in temporary wooded ponds in the spring where they mate and lay eggs in the water. The larvae then hatch and live in the water for several months until they emerge as adults.
Amphibian Wetland Breeding Habitat	AWE-29	379	23 m (access road)	This potential amphibian wetland breeding habitat consists of meadow marsh inclusion created by a drainage feature with evidence of pooling in a red pine cultural plantation. This feature had little emergent vegetation, minimal downed woody debris, and a water depth of 0.4 m at the time of site investigations.	Wetland breeding amphibians congregate in temporary or permanent standing water in spring where they mate and lay eggs. The larvae then hatch and live in the water for several months to over a year in the case of Green Frogs and Bullfrogs.
	Generalized Candidate SWH	236, 609, 754	Varied	This type of Significant Wildlife Habitat generally occurs in meadow marsh, shallow marsh, submerged shallow aquatic, mixed shallow aquatic, floating-leaved shallow aquatic or swamp thicket communities where standing water is present in the spring or throughout the year.	Wetland breeding amphibians congregate in temporary or permanent standing water in spring where they mate and lay eggs. The larvae then hatch and live in the water for several months to over a year in the case of Green Frogs and Bullfrogs.
Woodland Area-Sensitive Bird Breeding Habitat	Generalized Candidate SWH	WOD-131, WOD-331	Varied	This woodland consists of a Red Pine Coniferous Plantation Type (CUP3-1). This woodland unit contained mature forest and a greater than 4 ha of interior forest habitat that is suitable for area-sensitive birds.	Large, unfragmented forests may support populations of forest breeding birds that are area sensitive and require a minimum amount of suitable habitat in order to perform critical life functions.
Terrestrial Crayfish	Generalized Candidate SWH	225	47 m (collection line)	Chimney crayfish occur in areas of wet or seasonally wet clay-based soils that allow burrowing crayfish to form the tubes. Chimney crayfish habitat in meadow marsh or shallow marsh vegetation communities is Significant Wildlife Habitat. Crayfish burrows were observed in this shallow marsh vegetation community.	Chimney Crayfish burrows are used for hibernation by other wildlife species including amphibians, some snakes and a variety of invertebrates. They provide habitats required by multitude of other species to carry out critical life functions.
Habitat for Species of Conservation Concern: Plants	SCP-01	635	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a cultural meadow community. The dominant species observed include reed canary grass, goldenrod species, aster species and dame's rocket.	May provide habitat for the following plant species of conservation concern: • Round-leaved Hawthorn.
	SCP-02	637	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a cultural meadow community. The dominant species observed include goldenrod, reed canary grass, bird's foot trefoil, and wild mint.	May provide habitat for the following plant species of conservation concern: • Round-leaved Hawthorn.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	SCP-03	648	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a mid-age deciduous forest community. The canopy consists of bitternut hickory, white elm, ironwood and trembling aspen. The sub-canopy consists of bitternut hickory, ironwood, and white elm. The shrub layer consists of English hawthorn, white elm, bitternut hickory and wild red raspberry. The ground layer consists of garlic mustard, yellow avens, thicket creeper and violet species.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Green Dragon; • Harbinger-of-spring; • Pawpaw; • Round-leaved Groundsel; and • Slim-flowered Muhly.
	SCP-04	662	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a mid-age deciduous forest community. The canopy within this young forest consists of basswood and sugar maple, with some red maple and white elm. The sub-canopy consists of sugar maple and basswood. The shrub layer consists of wild red raspberry, white ash and blue beech. The ground cover consists of starry false solomon and spotted geranium.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Hairy Bedstraw; and, • Slim-flowered Muhly.
	SCP-05	720	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a young to mid-age deciduous forest community. The canopy layer is mainly sugar maple with fewer white elm, white ash and green ash. The sub-canopy consists of sugar maple, white elm, bitternut hickory and ironwood. The shrub layer consists of sugar maple, white ash and green ash. The ground cover consists mainly of garlic mustard with fewer spotted geranium, yellow trout lily and wild strawberry.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Green Dragon; • Harbinger-of-spring; • Pawpaw; and • Round-leaved Groundsel.
	SCP-06	721	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a mid-age deciduous forest community. The canopy within this mid-age forest consists of sugar maple, blue beech, ironwood and white ash. The sub canopy consists of sugar maple, blue beech and ironwood. The shrub layer consists of blue beech, white ash and sugar maple. The ground cover consists of yellow avens, poison ivy, spotted geranium and tall meadow-rue.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Green Dragon; • Harbinger-of-spring; • Pawpaw; • Round-leaved Groundsel.
	SCP-07	648	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a cultural meadow community. Dominant species observed during site investigations consist of reed canary grass, a goldenrod species, an aster species and garlic mustard.	May provide habitat for the following plant species of conservation concern: • Round-leaved Hawthorn.
	SCP-08	720	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a cultural meadow inclusion in a deciduous forest community.	May provide habitat for the following plant species of conservation concern: • Round-leaved Hawthorn.
	SCP-09	721	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a mid-age deciduous forest community. The canopy consists of white elm, green ash, ironwood and basswood. The sub-canopy consists of white elm, basswood and green ash. The shrub layer consists of white elm, basswood and green ash. The ground cover consists of yellow avens, thicket creeper, poison ivy and white avens.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Green Dragon; • Harbinger-of-spring; • Pawpaw; and, • Round-leaved Groundsel.
	SCP-10	648	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a poplar deciduous forest inclusion in a deciduous forest community dominated by bitternut hickory, white elm, ironwood and trembling aspen.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Harbinger-of-spring.

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	SCP-11	720	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a deciduous forest inclusion in a deciduous forest community dominated by mainly sugar maple with fewer white elm, white ash and green ash.	May provide habitat for the following plant species of conservation concern: • Burning Bush; • Green Dragon; • Harbinger-of-spring.
	SCP-12	326	>0.1 m (access road)	This confirmed Significant Wildlife Habitat consists of a mature deciduous forest. Dominant tree species observed include basswood, sugar maple, white ash, and American beech.	Confirmed habitat for Burning Bush.
	SCP-13	198	>0.1 m (access road)	This confirmed Significant Wildlife Habitat consists of a cultural meadow community. Dominant species observed during site investigations include Kentucky bluegrass and orchard grass.	Confirmed habitat for Field Thistle.
	SCP-14	757	78 m (access road)	This confirmed Significant Wildlife Habitat consists of a young deciduous forest. Dominant tree species include red pine with lesser amounts of Austrian pine, white spruce, and blue spruce.	Confirmed habitat for Cream Violet.
	SCP-15	189	114 m (turbine construction footprint)	This confirmed Significant Wildlife Habitat consists of a mature deciduous forest. Dominant tree species include bitternut hickory with equal amounts of shagbark hickory and ironwood.	Confirmed habitat for Narrow-leaved Sedge.
	SCP-16	375	29 m (access road)	This confirmed Significant Wildlife Habitat consists of a mid-age deciduous forest. Dominant tree species include sugar maple with lesser amounts of American beech, shagbark hickory and white ash.	Confirmed habitat for Perfoliate Bellwort.
	SCP-17	375	29 m (access road)	This confirmed Significant Wildlife Habitat consists of a mixed forest inclusion in a deciduous forest community. Dominant tree species include sugar maple, basswood, white ash, American beech and ironwood.	Confirmed habitat for Perfoliate Bellwort.
	Generalized Candidate SWH	Many	Varied	Varied; refer to Table 3.2 and Section 3.3.6.4 for descriptions of the attributes and composition of the preferred habitat for each species.	Any plant species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions.
Habitat for Species of Conservation Concern: Birds	SCB-01	648	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a poplar deciduous forest inclusion in a deciduous forest community dominated by bitternut hickory, white elm, ironwood and trembling aspen.	Any bird species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).
	SCB-02	662	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a young deciduous forest community. The canopy consists of basswood and sugar maple, with some red maple and white elm. The sub-canopy consists of sugar maple and basswood. The shrub layer consists of wild red raspberry, white ash and blue beech. The ground cover consists of starry false solomon and spotted geranium.	Any bird species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).

Type of Significant Wildlife Habitat	Feature ID	Natural Areas	Minimum Distance from Project Location[7]	Attributes and Composition	Function
	SCB-03	720	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a young to mid-age deciduous forest community. The canopy layer is mainly sugar maple with fewer white elm, white ash and green ash. The sub-canopy consists of sugar maple, white elm, bitternut hickory and ironwood. The shrub layer consists of sugar maple, white ash and green ash. The ground cover consists mainly of garlic mustard with fewer spotted geranium, yellow trout lily and wild strawberry.	Any bird species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).
	SCB-04	721	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a mid-age deciduous forest. Dominant tree species include sugar maple, blue beech, ironwood and white ash, as well as white elm, green ash and basswood.	Any bird species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).
	SCB-05	722	0 m (transmission line in feature)	This potential Significant Wildlife Habitat consists of a mid-age deciduous swamp. The canopy consists of Freeman's maple with a lesser amount of white elm. The sub-canopy layer consists of Freeman's maple, white elm and green ash. The shrub layer consists of white elm, green ash, choke cherry, and common buckthorn. The ground cover consists of green ash, enchanter's nightshade and white avens.	Any bird species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).
	Generalized Candidate SWH	Many	Varied	Varied; refer to Table 3.2 and Section 3.3.6.5 for descriptions of the attributes and composition of the preferred habitat for each species.	Any bird species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).
Habitat for Species of Conservation Concern: Insects	Generalized Candidate SWH	Many	Varied	Varied; refer to Table 3.2 and Section 3.3.6.4 for descriptions of the attributes and composition of the preferred habitat for each species.	Any species designated as Special Concern or ranked S1, S2 or S3 and not already recognized as Endangered or Threatened by COSSARO are provincially significant and considered to be species of conservation concern. Habitats of species of conservation concern are comprised of the habitats required by those species to undertake critical life functions (e.g., breeding habitat).
Amphibian Corridors	Location(s) to be determined following identification of significant amphibian breeding habitats			Many woodland and open wetland breeding amphibians move from their hibernation sites to breeding areas in spring and then to their summer habitats through naturally vegetated movement corridors.	These elongated naturally vegetated areas may be used by amphibians to move from one habitat to another. They may be important to allow seasonal migration of amphibians between breeding areas and their main home range.
Deer Movement Corridors	WOD-331	379	23 m (access road)	This potential deer movement corridor consists of WOD-331 which contains 1030.6 ha of forested ecosites and riparian areas that likely provide a movement corridor function to the identified deer winter congregation area (DWC-01) located within the Hay Swamp PSW.	Corridors are important for deer to be able to access seasonally important habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.

3.4 Summary of Corrections to Records Review

Table 3.37 summarizes corrections that were made to the Records Review based on the findings of site investigations.

Table 3.37 Summary of Corrections to Records Review

Natural Area No.	Correction	Reason for Correction
190	Vegetation Community changed from unevaluated ABCA wetland community to a Green Ash - Hawthorn Mineral Cultural Woodland Type (CUW1m).	AECOM conducted field investigations on October 14, 2011 and confirmed the ELC community to be CUW1M not a wetland community.
	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8).	AECOM conducted field investigations on October 14, 2011 and confirmed the ELC community to be FOD5-8 not a wetland community.
193	Vegetation Community changed from unevaluated ABCA wetland community to Fresh-Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5).	AECOM conducted field investigations on August 11th, and confirmed the ELC community to be FOD-6-5 not a wetland community.
203	Vegetation Community changed from unevaluated ABCA wetland community to Fresh - Moist Bur Oak Deciduous Forest Type (FOD9-3).	AECOM conducted field investigations on April 30th, 2012 and confirmed the ELC community to be FOD9-3 not a wetland community.
242	Vegetation Community changed from unevaluated ABCA wetland community to Fresh - Moist Sugar Maple - Lowland Ash Deciduous Forest Type (FOD6-1).	AECOM conducted field investigations on April 24th, 2012 and confirmed the ELC community to be FOD6-1 not a wetland community.
255	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh Poplar Mixed Forest Type (FOM5-2).	AECOM conducted field investigations on May 9, 2012 and confirmed the ELC community to be FOM5-2 not a wetland community.
266	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh White Ash - Paper Birch - Cottonwood - White Cedar Deciduous Forest Type (FOD4a).	AECOM conducted field investigations on April 24th, 2012 and confirmed the ELC community to be FOD4a not a wetland community.
280	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8).	AECOM conducted field investigations on April 24th, 2012 and confirmed the ELC community to be FOD5-8 not a wetland community.
	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh Large-tooth Aspen Deciduous Forest Type (FOD4e).	AECOM conducted field investigations on April 24th, 2012 and confirmed the ELC community to be FOD4e not a wetland community.
309	Vegetation Community changed from unevaluated ABCA wetland community to Fresh - Moist Black Walnut Lowland Deciduous Forest Type (FOD7-4).	AECOM conducted field investigations on October 3, 2011 and confirmed the ELC community to be FOD7-4 not a wetland community.
662	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type (FOD5-6).	AECOM conducted field investigations on May 31st, 2012 and confirmed the ELC community to be FOD5-6 not a wetland community.
701	Vegetation Community changed from unevaluated ABCA wetland community to Dry - Fresh Sugar Maple - White Ash Deciduous Forest Type (FOD5-8).	AECOM conducted field investigations on July 12th, 2012 and confirmed the ELC community to be FOD5-8 not a wetland community.

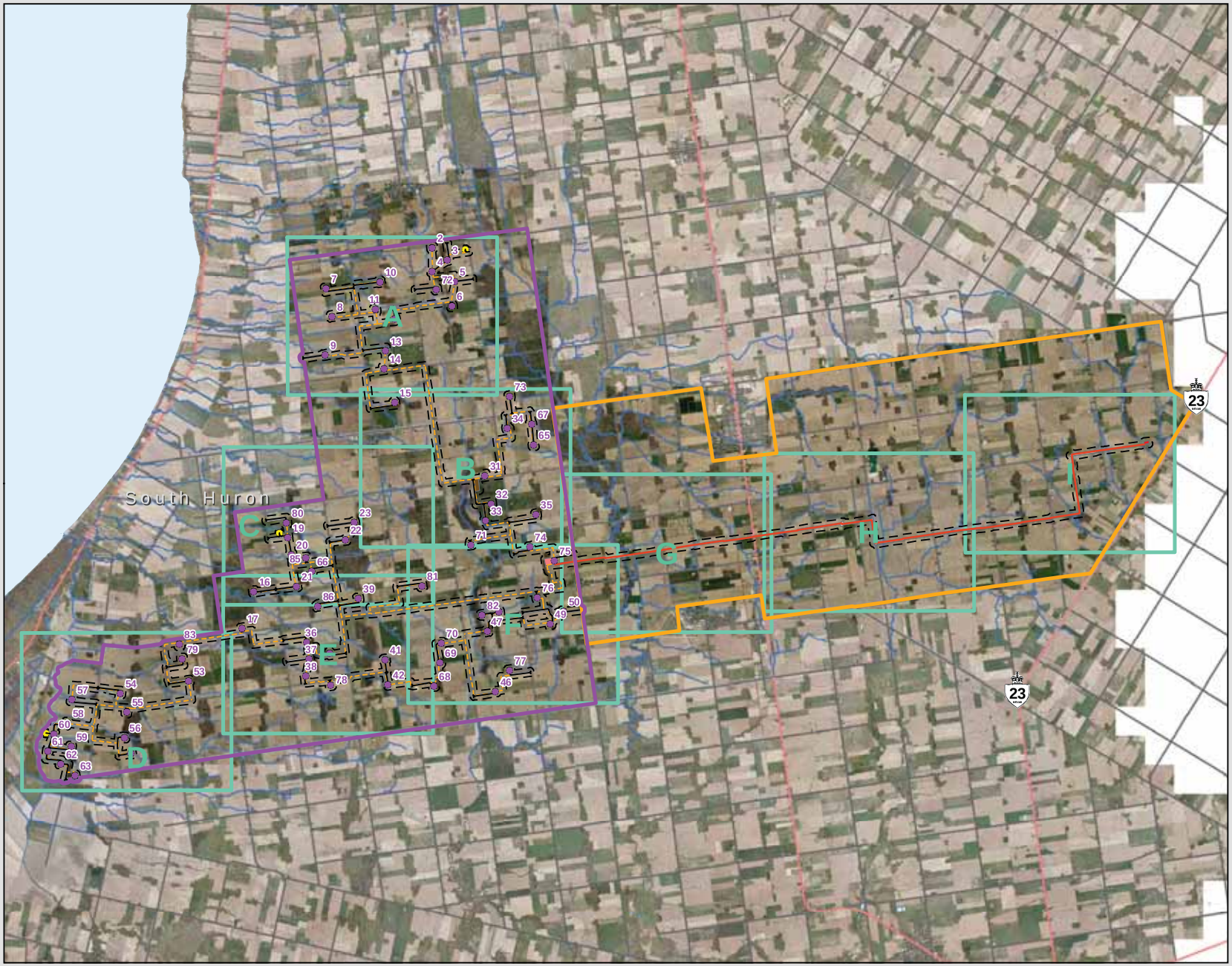
3.5 Summary of Key Findings of the Site Investigation

Table 3.38 summarizes the natural features identified through the Records Review and confirmed through site investigation as occurring in the Project Location or its associated 120 m Area of Investigation that were carried forward to the Evaluation of Significance.

Table 3.38 Summary of Natural Features Carried Forward to Evaluation of Significance

Feature	Results of Site Investigation
Wetlands	The following 14 wetland units or wetland complexes were confirmed in or within the 120 m Area of Investigation and were carried forward to Evaluation of Significance: • WET-006, WET-008, WET-009, WET-010, WET-011, WET-012, WET-014, WET-019, WET-021, WET-025, WET-032, WET-038, WET-049 and WET-053.

Feature	Results of Site Investigation
Woodlands	A total of 75 woodlands were confirmed in or within the 120 m Area of Investigation and were carried forward to Evaluation of Significance.
Valleylands	The following valleyland feature was confirmed in or within the 120 m Area of Investigation and was carried forward to Evaluation of Significance: • VAL-02
Candidate Significant Wildlife Habitat	The following potential Significant Wildlife Habitats were identified in or within the 120 m Area of Investigation and within 120 m of qualifying project infrastructure, and were therefore carried forward to Evaluation of Significance as candidate Significant Wildlife Habitat: • Waterfowl stopover and staging areas (terrestrial) (WSST-15 and WSST-36); • Bat maternity colonies (BMC-177, BMC-189, BMC-215, BMC-229, BMC-235, BMC-236, BMC-242, BMC-249, BMC-267, BMC-282, BMC-285, BMC-326, BMC-342, BMC-352, BMC-358, BMC-372, BMC-757, BMC-648 and BMC-720); • Turtle wintering areas (TOW-01 and TOW-03); • Reptile hibernacula (RH-01, RH-02, RH-03, RH-04, RH-05, RH-06, RH-07 and RH-08); • Colonially-nesting bird breeding habitat (tree/shrub) (CNB-01); • Deer winter congregation area (DWC-01); • Amphibian woodland breeding habitat (AWO-02, AWO-03, AWO-04, AWO-06, AWO-07, AWO-08, AWO-09, AWO-14, AWO-17, AWO-24, AWO-25, AWO-26, AWO-27, AWO-28, AWO-30, AWO-33, AWO-34 and AWO-35); • Amphibian wetland breeding habitat (AWE-29); • Habitats of plant species of conservation concern (SCP-01, SCP-02, SCP-03, SCP-04, SCP-05, SCP-06, SCP-07, SCP-08, SCP-09, SCP-10, SCP-11, SCP-12, SCP-13, SCP-14, SCP-15, SCP-16 and SCP-17); • Habitats of bird species of conservation concern (Red-headed Woodpecker) (SCB-01, SCB-02, SCB-03, SCB-04 and SCB-05); • Amphibian corridors (location(s) to be determined following identification of significant amphibian breeding habitats); and, • Deer movement corridors (WOD-331). The following candidate Significant Wildlife Habitats were identified in or within the 120 m Area of Investigation however not within 120 m of qualifying project infrastructure, and were therefore carried forward to the EIS as Generalized Candidate Significant Wildlife Habitat: • Bat maternity colonies (numerous); • Turtle wintering areas (natural areas 255, 266, 609, 720 and 754); • Reptile hibernacula (natural areas 236, 661 and 695); • Mature forest stands (numerous); • Other rare vegetation communities (natural area 309); • Waterfowl nesting areas (natural area 209); • Woodland raptor nesting habitat (Woodland units WOD-117, WOD-131 and WOD-331); • Turtle nesting areas (natural area 209); • Seeps and springs (natural areas 232, 249, 266, 267, 273, 280, 309, 369, 609 and 723); • Amphibian woodland breeding habitat (natural areas 209, 210, 232, 236, 255, 266, 269, 280, 309, 342 and 375); • Amphibian wetland breeding habitat (natural areas 236, 609 and 754); • Woodland area-sensitive bird breeding habitat (WOD-131 and WOD-331); • Terrestrial crayfish habitat (natural area 225); • Habitats of plant species of conservation concern (numerous); • Habitat of bird species of conservation concern (numerous); and, • Habitat of insect species of conservation concern (numerous).



Legend

- ELC Map Coverage
- Wind Energy Centre Study Area
- Transmission Line Study Area
- 120 m Area of Investigation
- Municipal Division

Project Location

- GE Turbine
- Permanent Meterological Tower
- Access Road
- Collection Line
- Transmission Line
- Breaker Switch Station
- Transformer Substation
- Temporary Laydown Area
- Waterbody

Basemapping from Ontario Ministry of Natural Resources
Orthophotography: 2006, 2010

N
W E
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Kilometers
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1:125,000

UTM Zone 17N, NAD 83

Goshen Wind Energy Centre
Natural Heritage Assessment Report

Ecological Land Classification Key Map

November 2012
Project 60155032

AECOM

Figure 3.1

Map Document: (N:\projects\0-aecom\60155032\0100\Final\GIS\Spatial\MXDs\ReportMXDs\NHA_Mapping\Bluewater\60155032_BLU_ELC_KeyMap.mxd)
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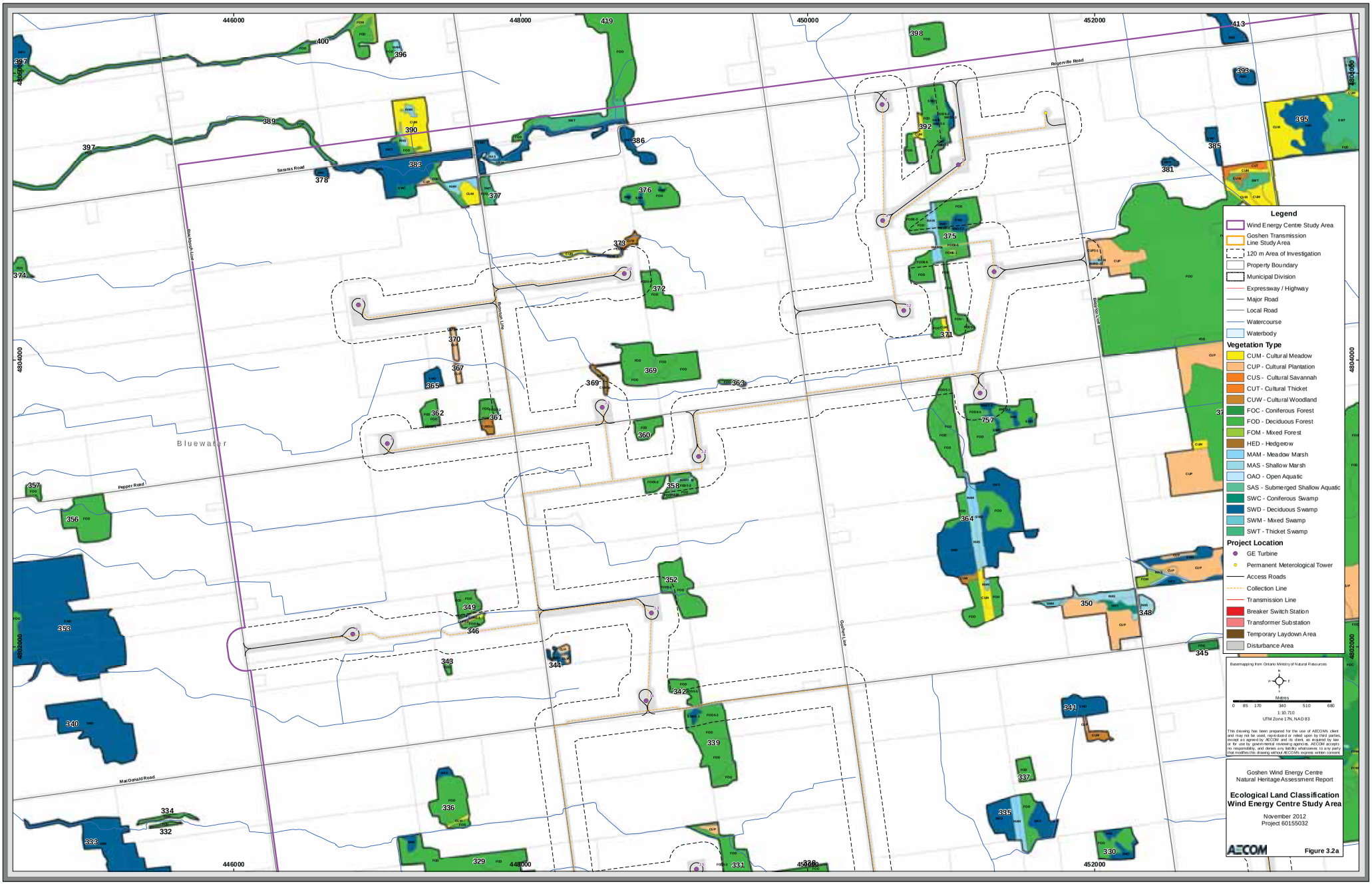
446000
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Rogerville Road
Sauriols Road
MacDonald Road
Pepper Road
Bluewater
Brookside Line
Bronson Line
Bailey Line
Gosfield Line
Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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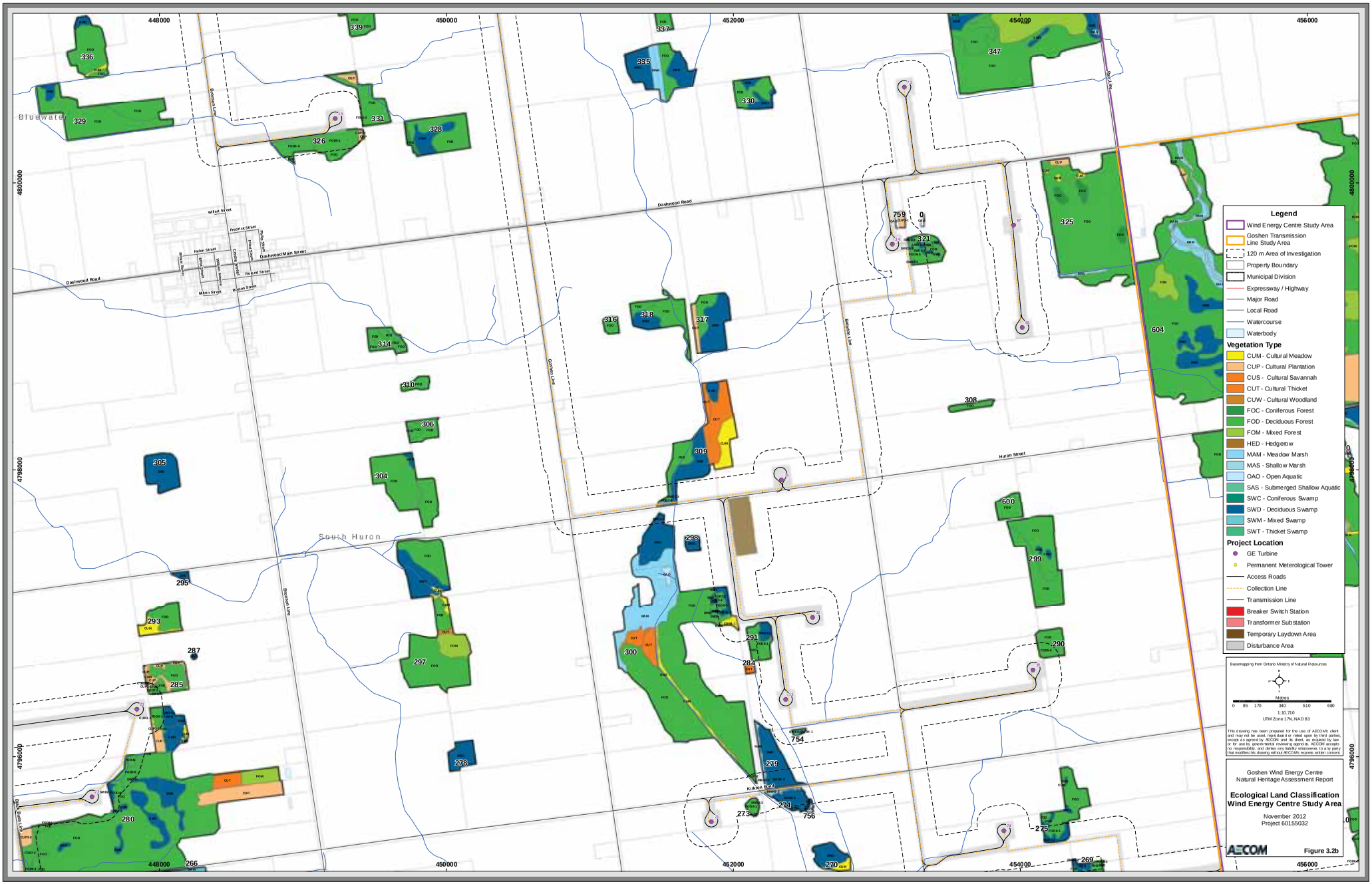
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2a


Bluewater
South Huron
Dashwood Road
Huron Street
Kirkton Road
Bayfield Line
Boundary Line
Goshen Line
Wilfort Street
Frederick Street
Helen Street
Dashwood Main Street
Roland Street
Boston Street
Milton Street
448000
450000
452000
454000
456000
4800000
4796000
Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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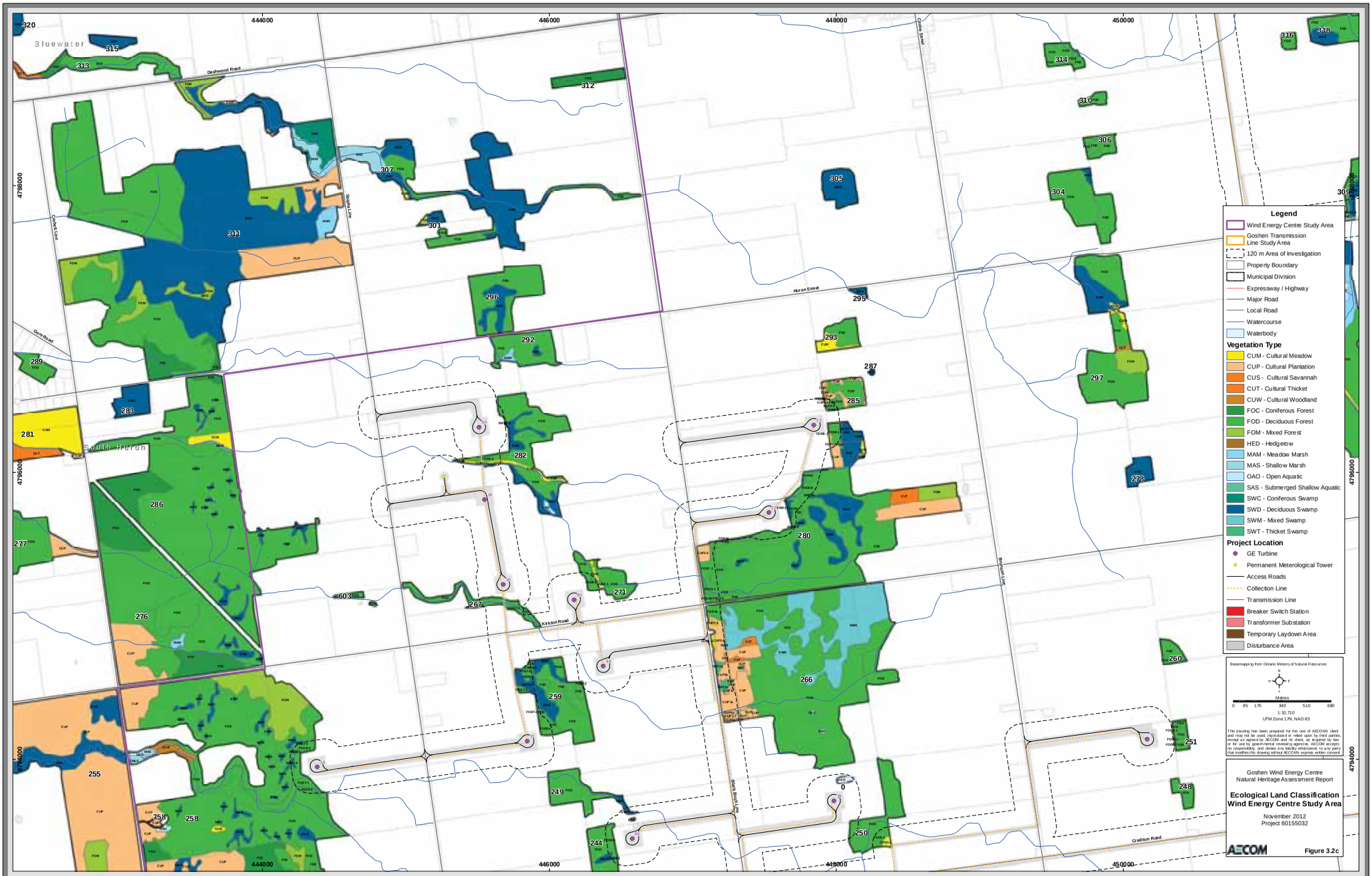
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2b


Bluewater
South Huron
Dashwood Road
Centre Line
Shipka Line
Huron Street
Ours Road
Kirkton Road
Creek Street
Bannockburn Line
Black Bush Line
Crediton Road
444000
446000
448000
450000
4798000
4796000
4794000
Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2c


Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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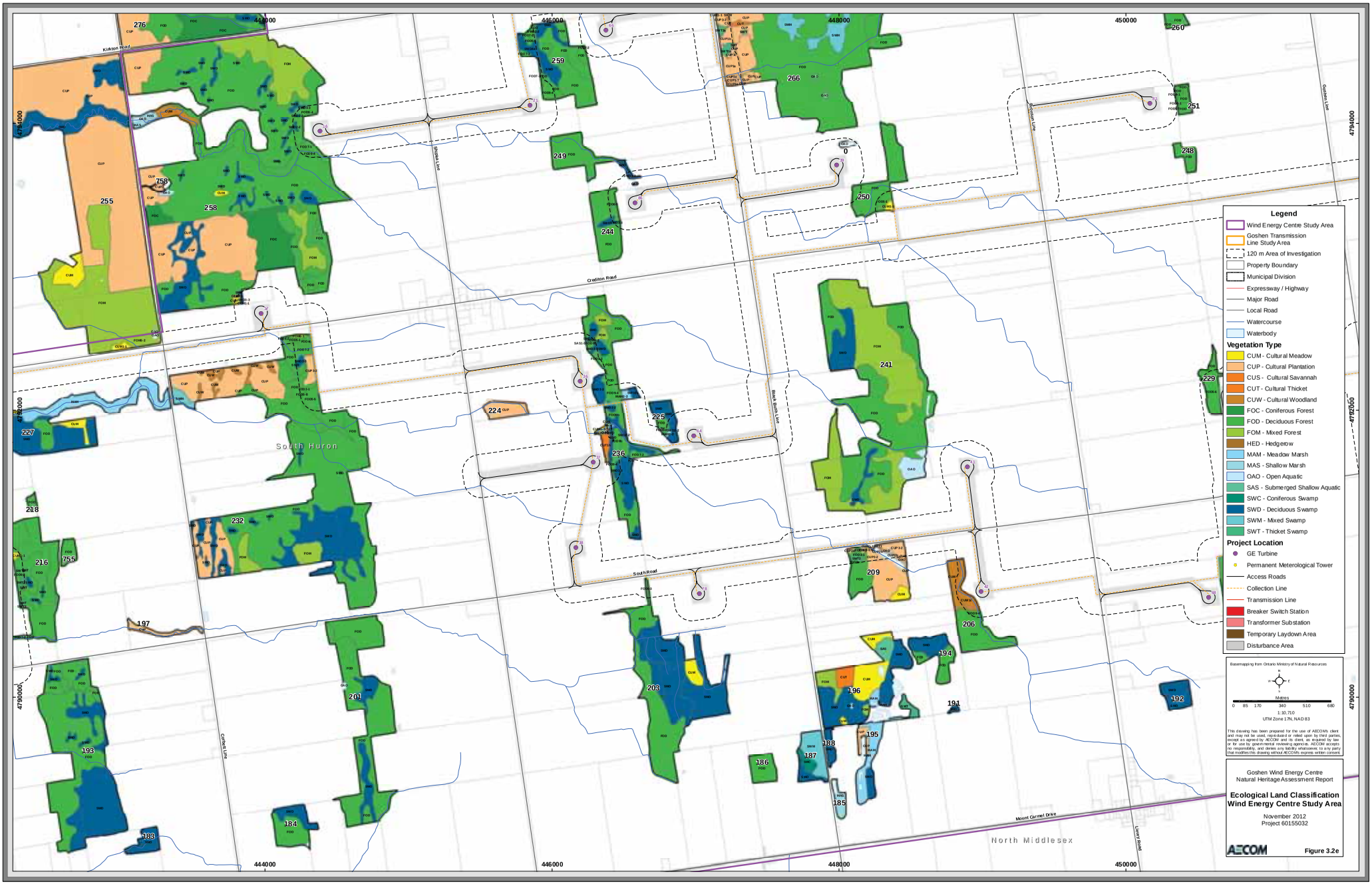
Lambton Shores
South Huron
North Middlesex
Crediton Road
South Road
Grand Bend Line
Bullock Line
Eagleson Line
Mollard Line
Greenway Drive
Greenway Road
Klondyke Road
Cold Storage Road
Goosemarsh Line
Hutchinson Road
Bullock Road
Hagmier Road
436000
438000
440000
442000
444000
4792000
4790000
4788000
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2d


Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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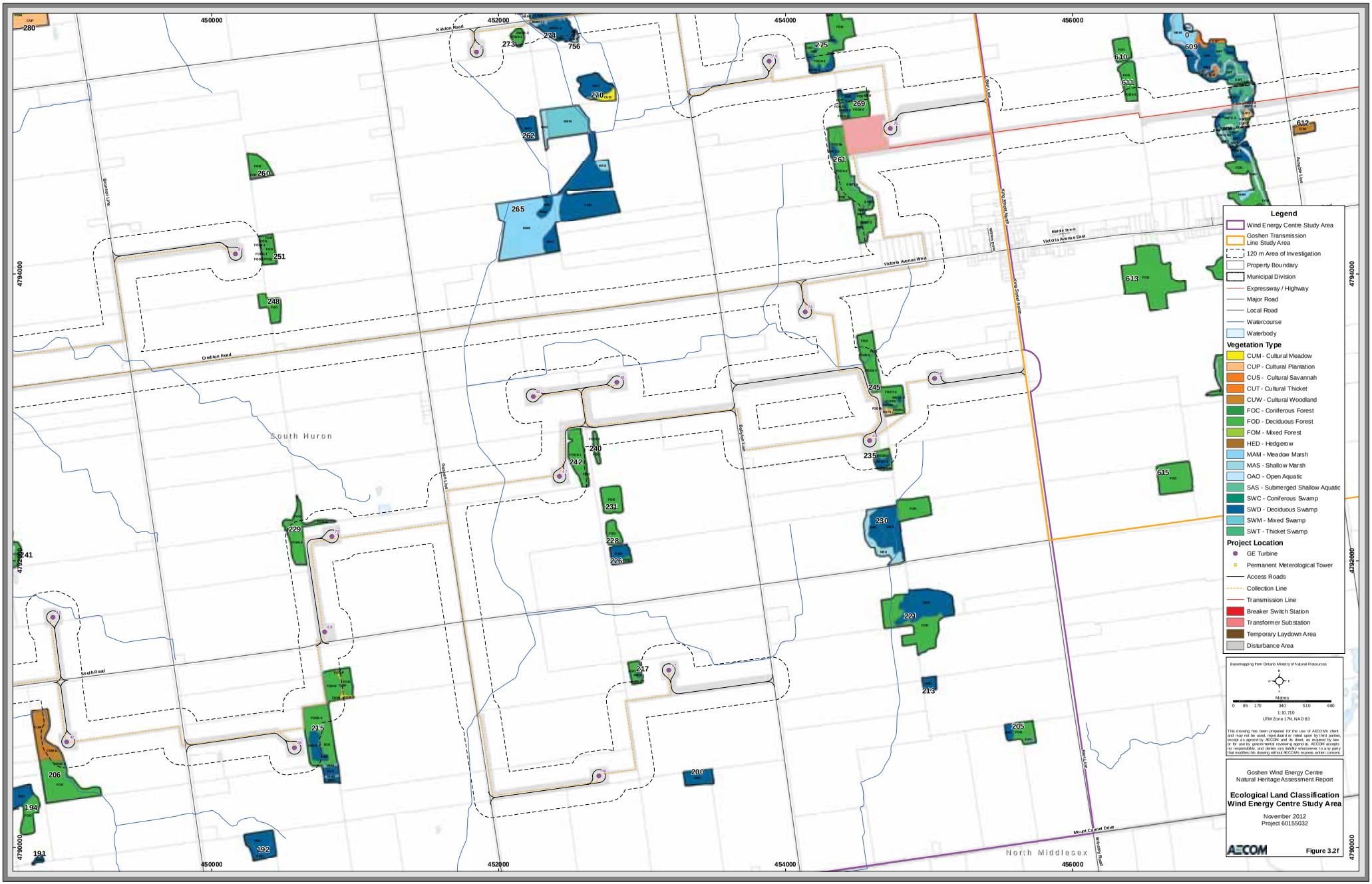
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2e
South Huron
North Middlesex
Kirkton Road
Crediton Road
South Road
Mount Carmel Drive
Goshen Line
Boundary Line
Base Line
Centre Line
Lower Road
444000
446000
448000
450000
4794000
4792000
4790000


450000
452000
454000
456000
4794000
4792000
4790000
Kirkton Road
Bronson Line
Crediton Road
South Road
Gorrie Line
Bolton Line
Victoria Avenue West
Middle Street
Victoria Avenue East
King Street North
King Street South
Ausable Line
Mount Carmel Drive
Bronson Road
South Huron
North Middlesex
Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
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MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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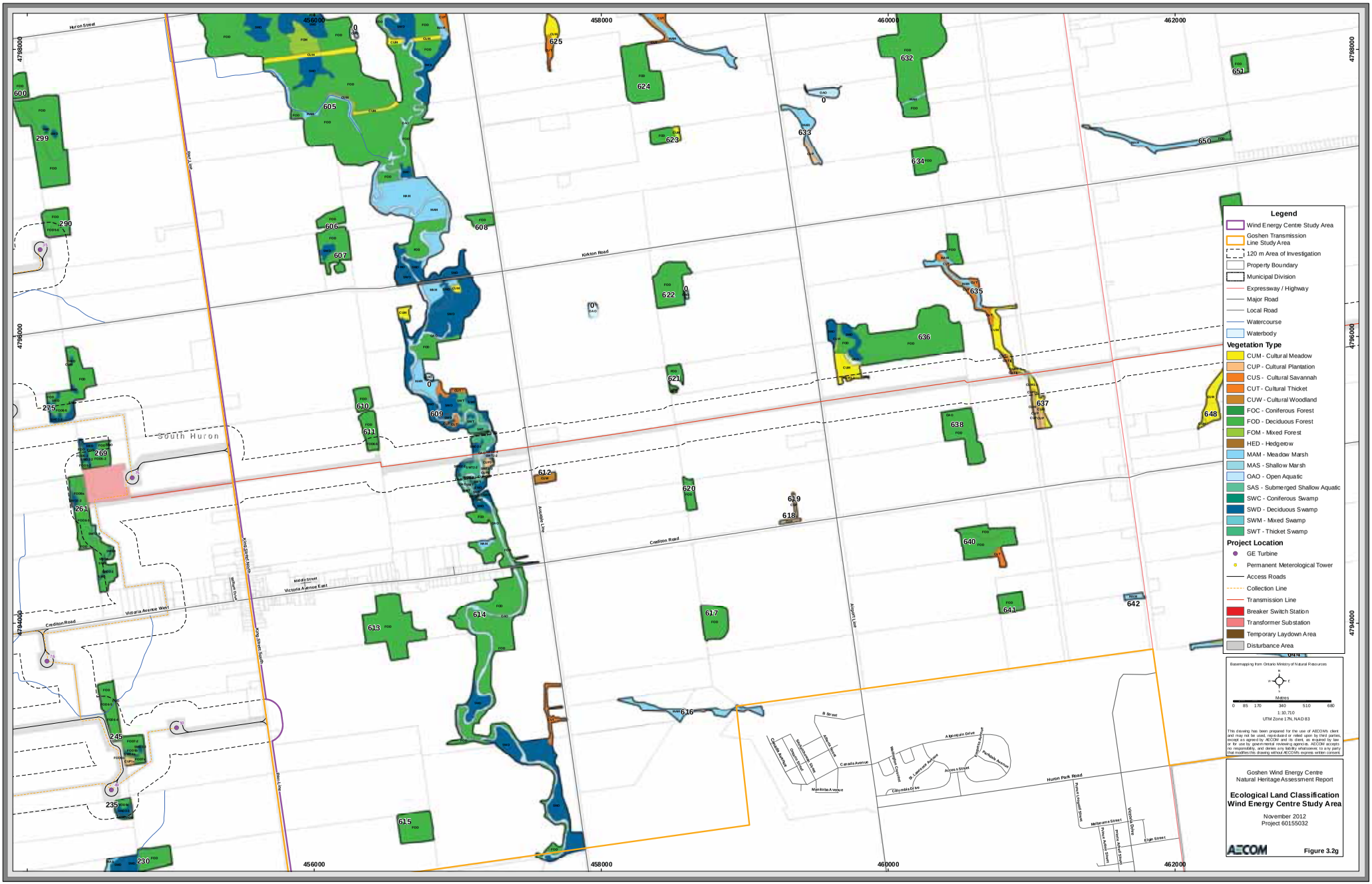
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2f


Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
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SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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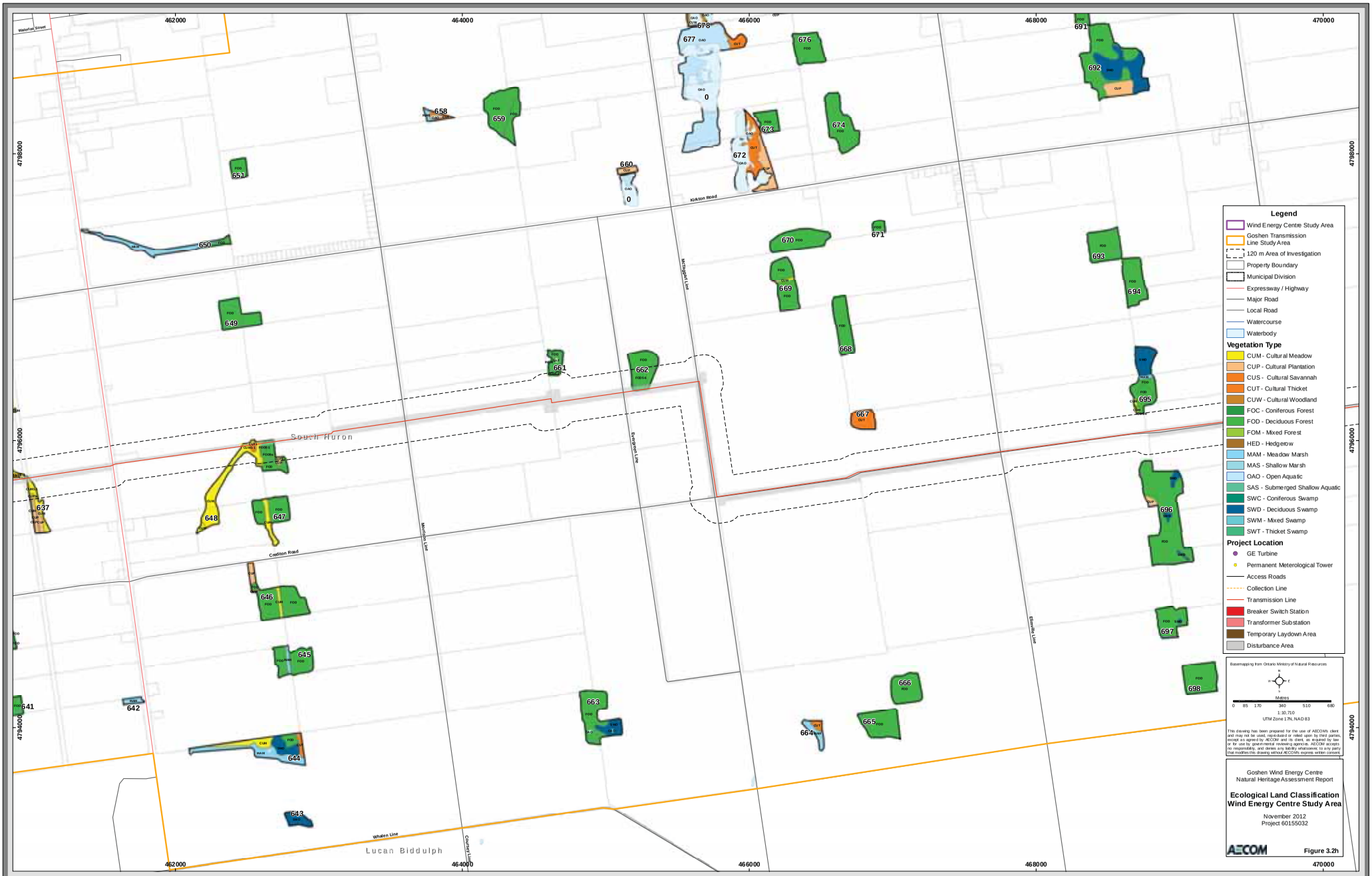
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2g
Huron Street
Kirkton Road
Creditton Road
Victoria Avenue West
Hinds Street
Victoria Avenue East
South Huron
456000
458000
460000
462000
4798000
4796000
4794000


462000
464000
466000
468000
470000
4798000
4796000
4794000
Waterloo Street
Kirkton Road
McKnight Line
Bourgeois Line
Morrison Line
Ellimville Line
Coulter Line
Whalen Line
Coulton Road
South Huron
Lucan Biddulph
Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2h


Legend
Wind Energy Centre Study Area
Goshen Transmission Line Study Area
120 m Area of Investigation
Property Boundary
Municipal Division
Expressway / Highway
Major Road
Local Road
Watercourse
Waterbody
Vegetation Type
CUM - Cultural Meadow
CUP - Cultural Plantation
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOC - Coniferous Forest
FOD - Deciduous Forest
FOM - Mixed Forest
HED - Hedgerow
MAM - Meadow Marsh
MAS - Shallow Marsh
OAO - Open Aquatic
SAS - Submerged Shallow Aquatic
SWC - Coniferous Swamp
SWD - Deciduous Swamp
SWM - Mixed Swamp
SWT - Thicket Swamp
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Transmission Line
Breaker Switch Station
Transformer Substation
Temporary Laydown Area
Disturbance Area
Basemapping from Ontario Ministry of Natural Resources
Metres
0 85 170 340 510 680
1:10,710
UTM Zone 17N, NAD 83
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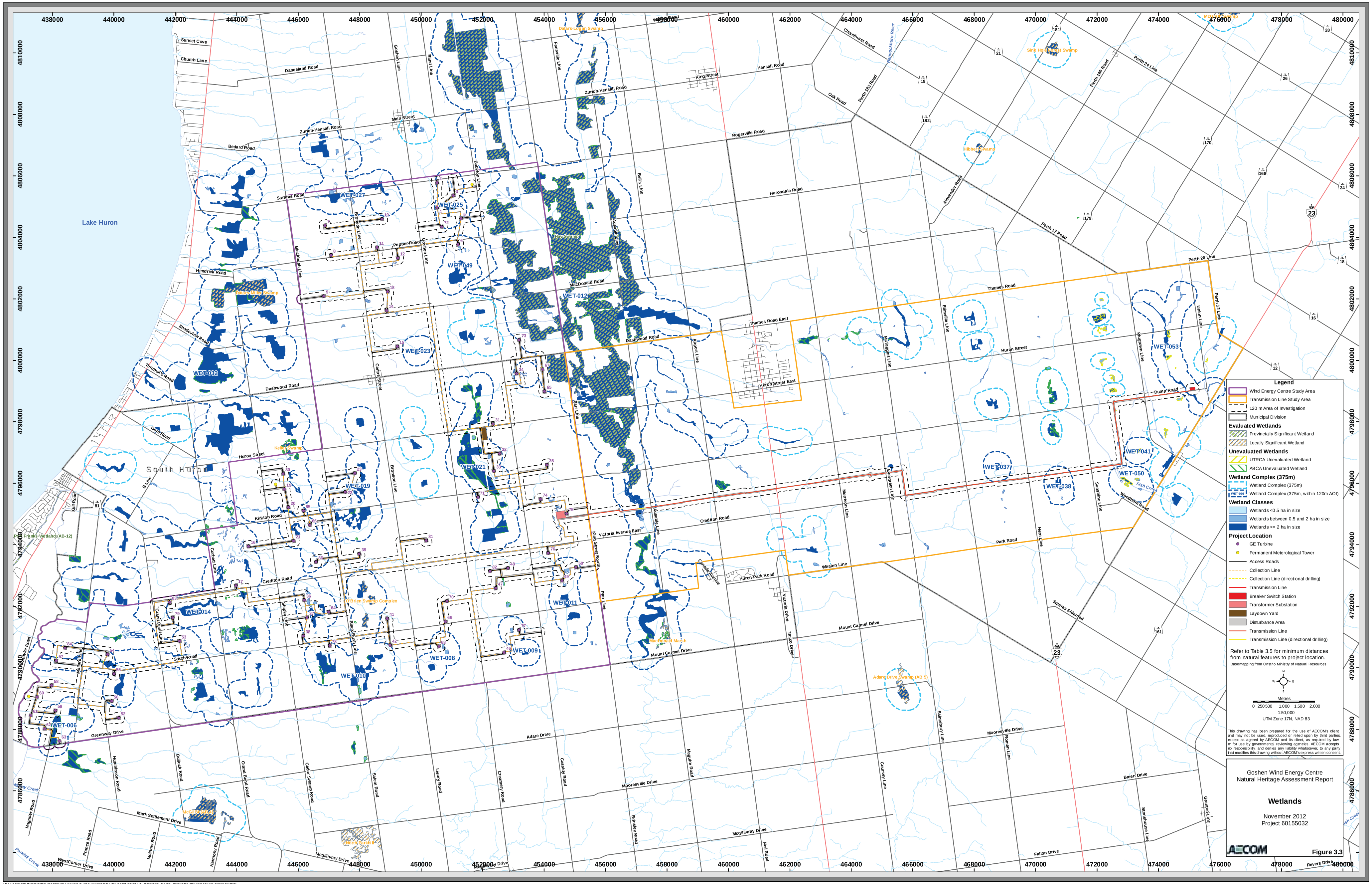
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Ecological Land Classification
Wind Energy Centre Study Area
November 2012
Project 60155032
AECOM
Figure 3.2i
West Perth
South Huron
Perth South
Huron Street
Hern Line
Sunshine Line
Plugtown Line
Union Line
Dump Road
Kirkton Road
Crediton Road
Woodham Road
Elimville Line
Perth 12 Line
Perth 8 Line
Park Avenue
Victoria Avenue
Mary Street
Davis Street
468000
470000
472000
474000
476000
4800000
4798000
4796000


Legend
Wind Energy Centre Study Area
Transmission Line Study Area
120 m Area of Investigation
Municipal Division
Evaluated Wetlands
Provincially Significant Wetland
Locally Significant Wetland
Unevaluated Wetlands
UTRCA Unevaluated Wetland
ABCA Unevaluated Wetland
Wetland Complex (375m)
Wetland Complex (375m)
Wetland Complex (375m, within 120m AOI)
Wetland Classes
Wetlands <0.5 ha in size
Wetlands between 0.5 and 2 ha in size
Wetlands >= 2 ha in size
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Collection Line (directional drilling)
Transmission Line
Breaker Switch Station
Transformer Substation
Laydown Yard
Disturbance Area
Transmission Line
Transmission Line (directional drilling)
Refer to Table 3.5 for minimum distances from natural features to project location.
Basemapping from Ontario Ministry of Natural Resources
Metres
0 250 500 1,000 1,500 2,000
1:50,000
UTM Zone 17N, NAD 83
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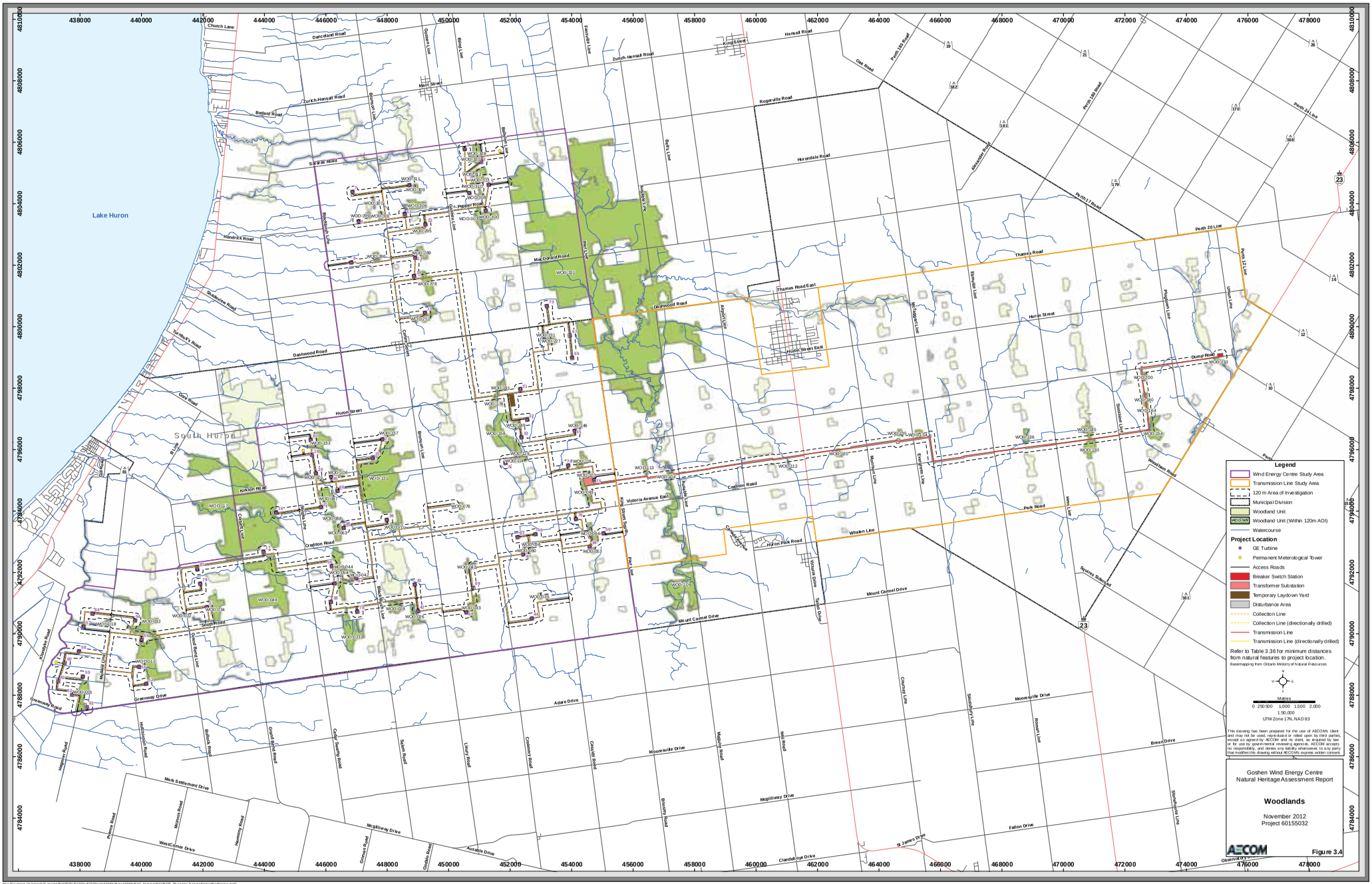
Goshen Wind Energy Centre
Natural Heritage Assessment Report
Wetlands
November 2012
Project 60155032
AECOM
Figure 3.3
Lake Huron
South Huron
WET-006
WET-008
WET-009
WET-010
WET-011
WET-012
WET-014
WET-019
WET-021
WET-023
WET-025
WET-027
WET-032
WET-037
WET-038
WET-041
WET-049
WET-050
WET-053
Franks Wetland (AB-12)
Adare Drive Swamp (AB-5)
O'Brien Swamp Complex
Fish Creek



Map Document: (N:\projects\Deacon\60155032\12.0\Final GIS\Spatial\MXDs\Report\MXDs\NHA_Mapping\fig60155032_Bluewater_NaturalFeaturesBuffer.mxd)
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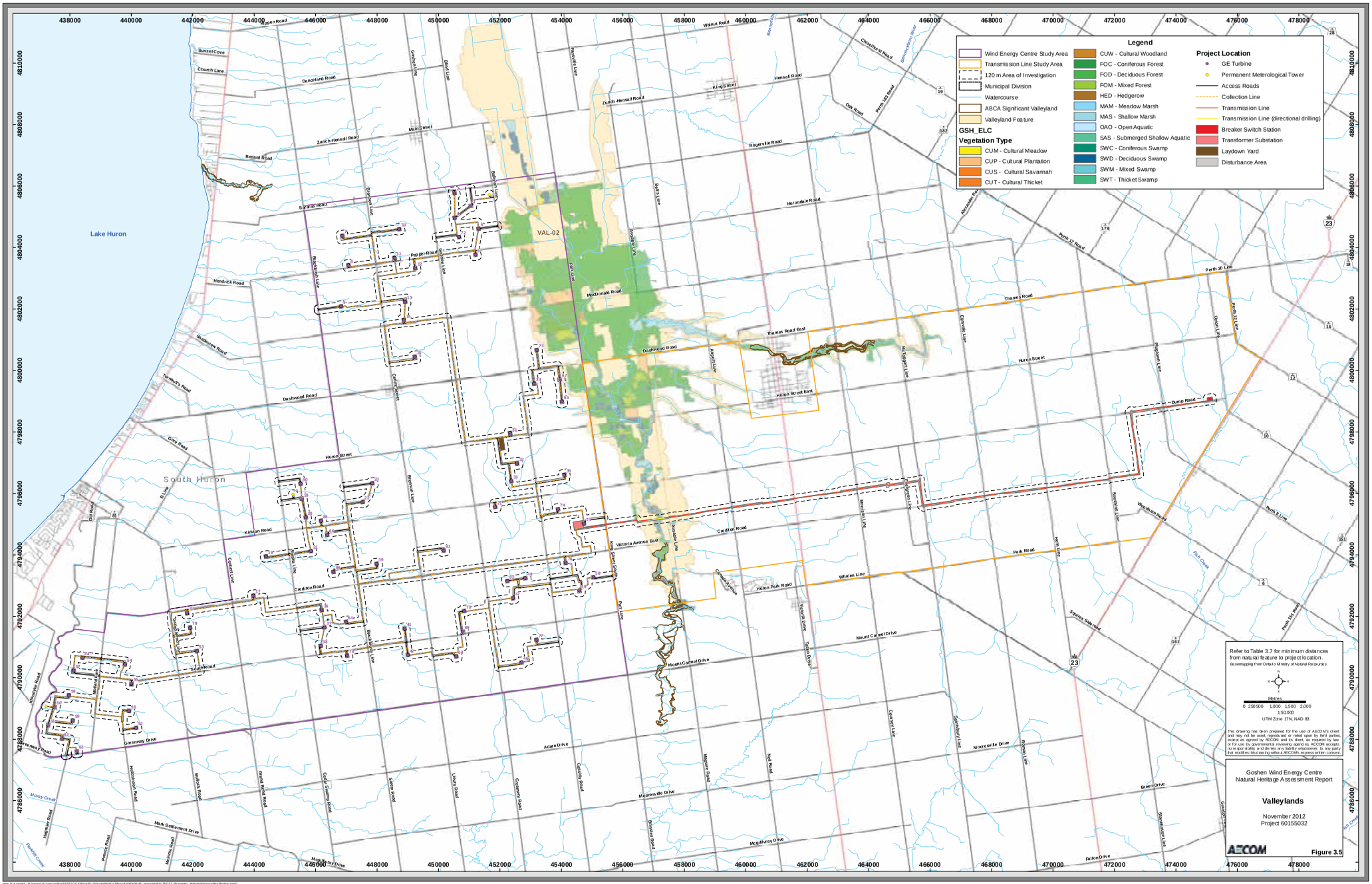

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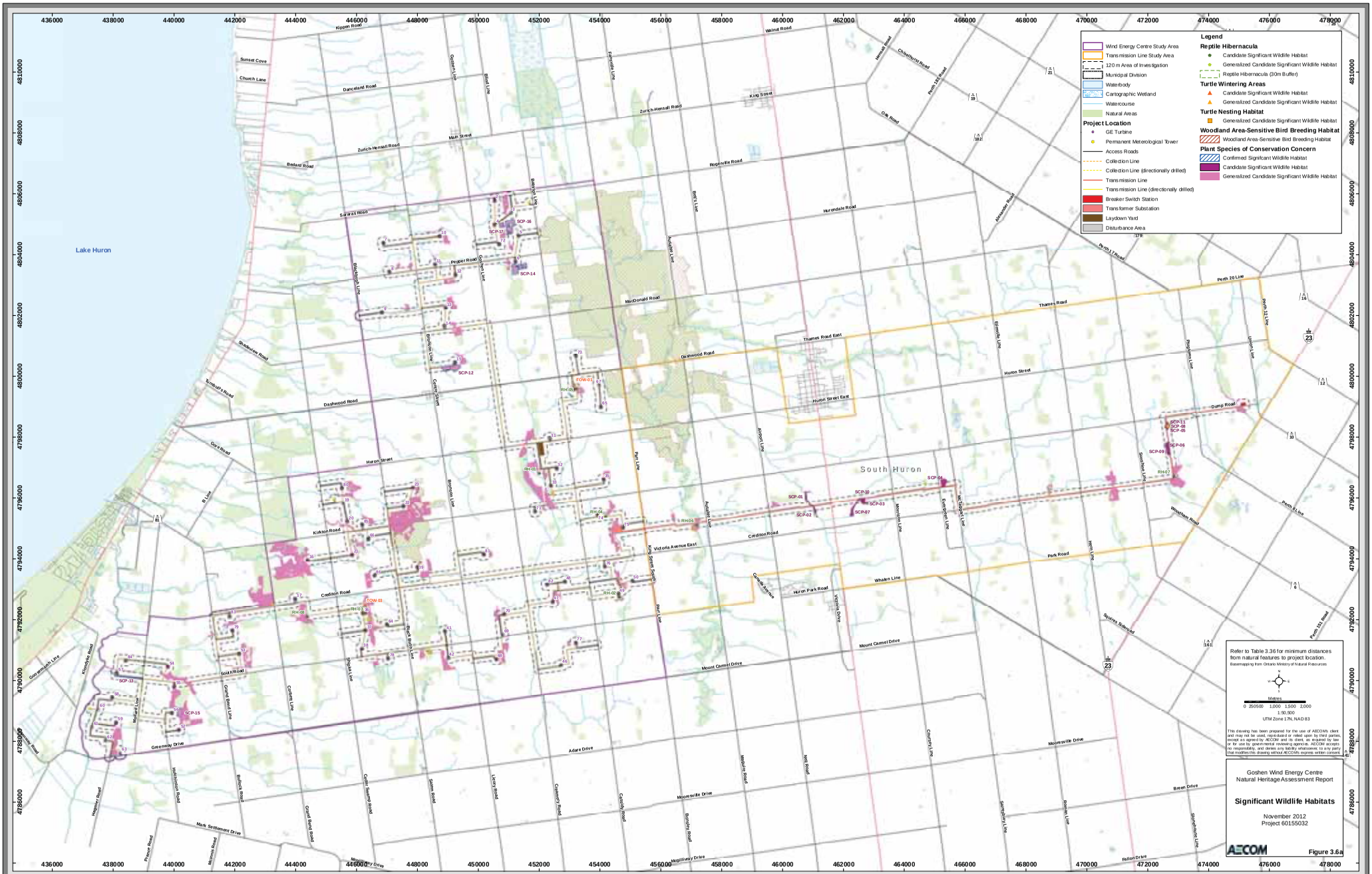

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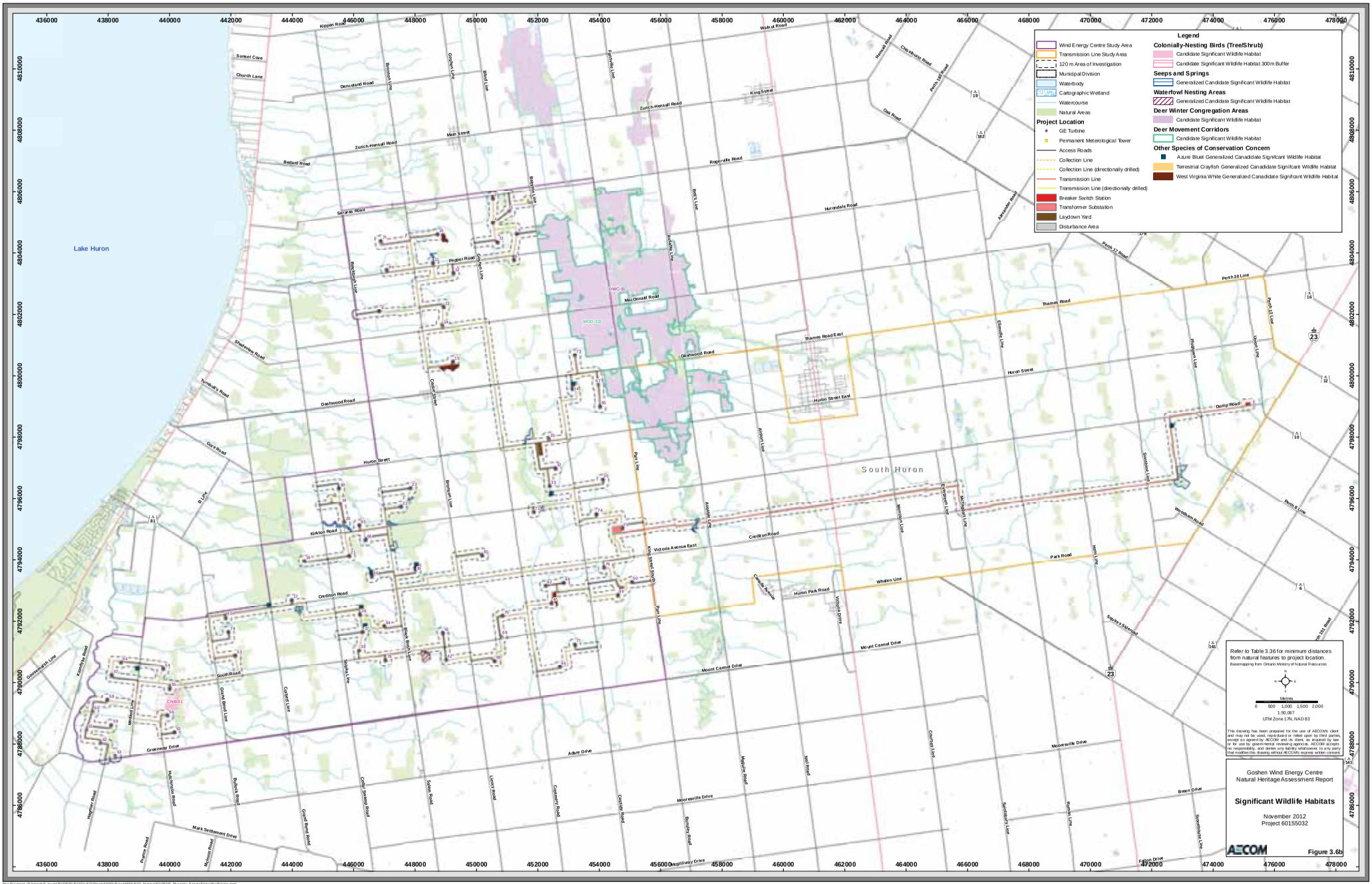

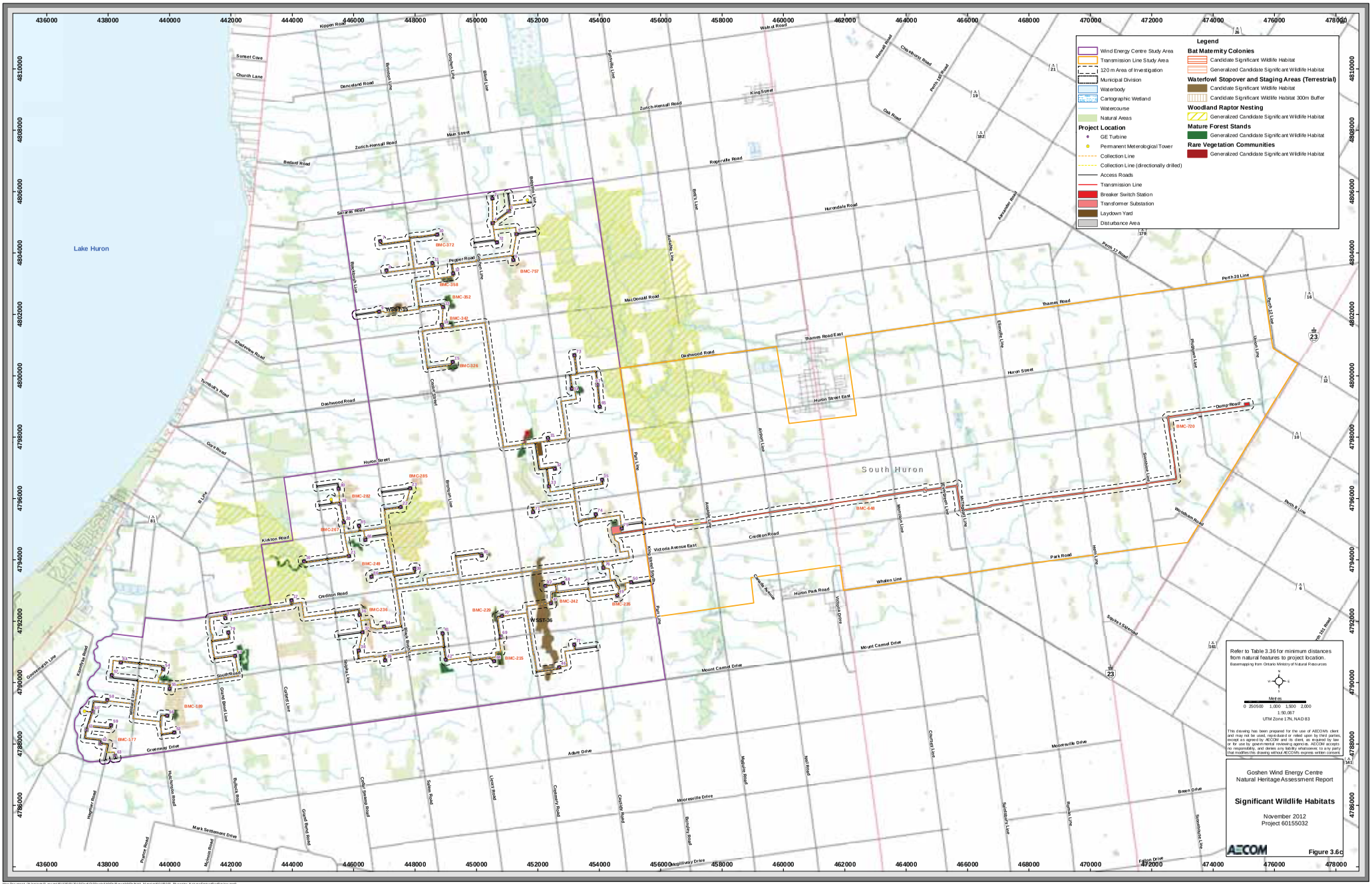

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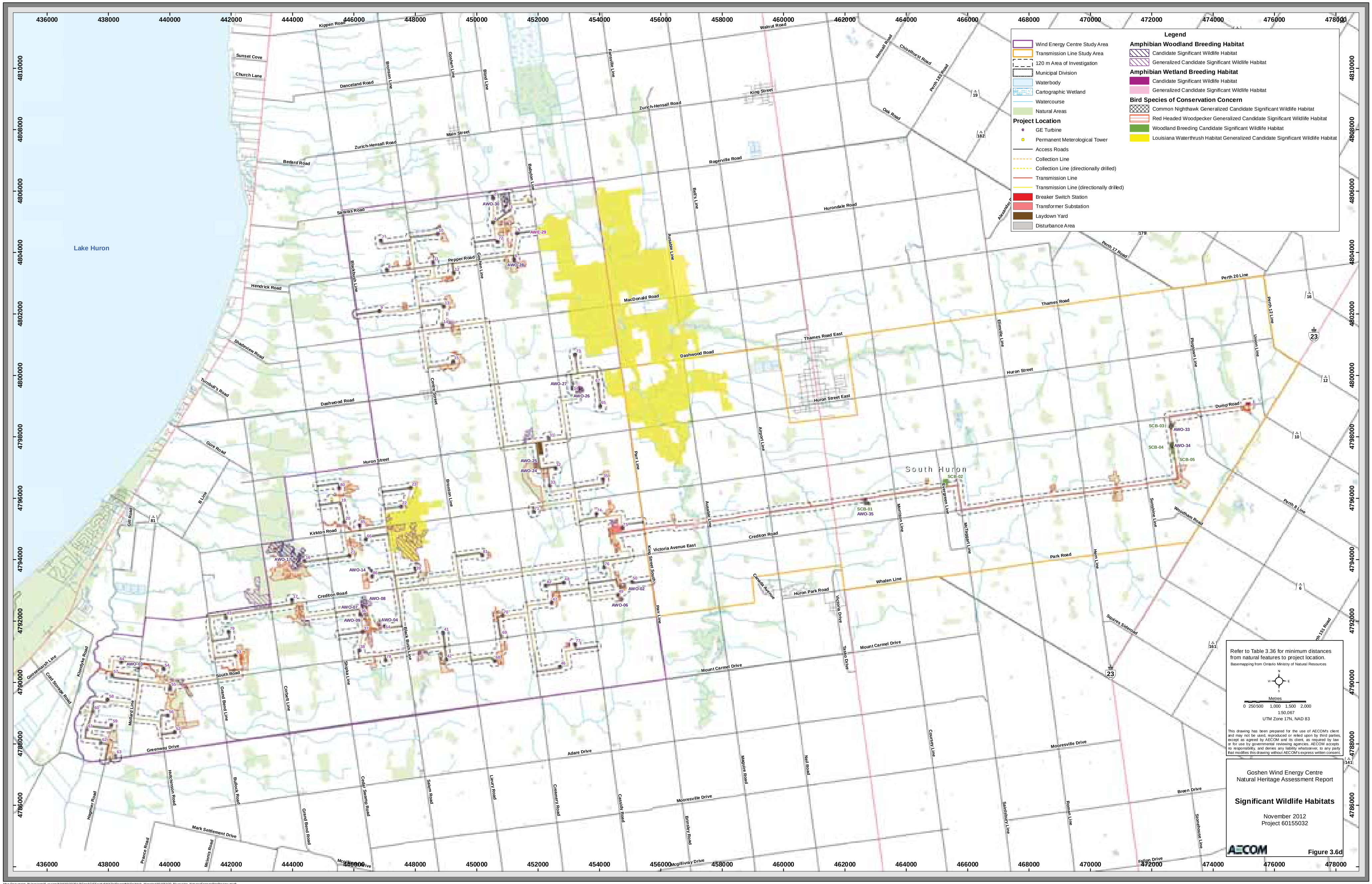

Legend
Wind Energy Centre Study Area
Transmission Line Study Area
120 m Area of Investigation
Municipal Division
Waterbody
Cartographic Wetland
Watercourse
Natural Areas
Project Location
GE Turbine
Permanent Meterological Tower
Access Roads
Collection Line
Collection Line (directionally drilled)
Transmission Line
Transmission Line (directionally drilled)
Breaker Switch Station
Transformer Substation
Laydown Yard
Disturbance Area
Amphibian Woodland Breeding Habitat
Candidate Significant Wildlife Habitat
Generalized Candidate Significant Wildlife Habitat
Amphibian Wetland Breeding Habitat
Candidate Significant Wildlife Habitat
Generalized Candidate Significant Wildlife Habitat
Bird Species of Conservation Concern
Common Nighthawk Generalized Candidate Significant Wildlife Habitat
Red Headed Woodpecker Generalized Candidate Significant Wildlife Habitat
Woodland Breeding Candidate Significant Wildlife Habitat
Louisiana Waterthrush Habitat Generalized Candidate Significant Wildlife Habitat
Lake Huron
South Huron
Refer to Table 3.36 for minimum distances from natural features to project location.
Basemapping from Ontario Ministry of Natural Resources
Metres
0 250 500 1,000 1,500 2,000
1:50,067
UTM Zone 17N, NAD 83
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Goshen Wind Energy Centre
Natural Heritage Assessment Report
Significant Wildlife Habitats
November 2012
Project 60155032
AECOM
Figure 3.6d