APPENDIX D NATURAL HERITAGE ASSESSMENT

Bornish Wind Energy Centre
Natural Heritage Records Review Report

Prepared for:
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Project No. 1231 Date: January 11, 2012

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Bornish Wind Energy Centre
Natural Heritage Records Review Report

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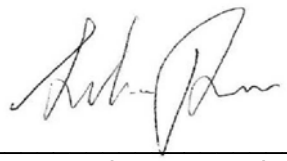
Report submitted on January 11, 2011



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1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in April 2011 by GL-Garrad Hasson on behalf of NextEra Energy Canada, ULC (NextEra) to conduct a natural environment resource assessment in accordance with the Renewable Energy Approval (REA) Regulation, Ontario Regulation 359/09. This assessment includes a records review, site investigation, evaluation of significance, and impact assessment of any potentially significant natural features or wildlife habitats at a proposed 77.7 MW wind energy generating facility in North Middlesex, Middlesex County Ontario. The analysis of the natural heritage features and biological factors affecting the proposed site is one issue being considered. Other factors, such as land ownership, social impacts, and cultural impacts are also being assessed by other team members, and will be addressed under separate covers as outlined by the REA Regulation.

The Bornish Wind Energy Centre ('the Project') will be owned and operated by Bornish Wind, LP, a wholly-owned subsidiary of NextEra. The Project is located in northwestern Middlesex County in the Township of North Middlesex, Ontario. The Bornish Wind Energy Centre is approximately 3.3km south of the Town of Parkhill, Ontario, with the general project area bound to the north by Nairn/Elginfield Road, to the south by Townsend Line, and to the east and west by Broken Front/Scout Road and Fort Rose Road, respectively. In addition, a transmission line is proposed to run north along Kerwood Road from the substation to Elginfield Road/Nairn Road. This transmission line is then proposed to continue eastward along Nairn Road to an existing 500 kV line and interconnection point located west of Petty Street. The general project 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 area was used to facilitate information collection and the records review.

The Bornish Wind Energy Centre is proposed to consist of up to forty-eight GE 1.6-100 (1.62 MW) turbines installed for a total installed capacity of 77.7 MW. The proposed GE 1.6-100 turbine is a 3-bladed, upwind, horizontal-axis turbine. The turbine has a total rotor diameter of 100 m, which results in a swept area of 7,854 m^2 and is designed to operate at between 9.75 and 16.18 revolutions per minute (rpm). The turbine rotor and

nacelle are mounted on top of an 80 m tubular tower that is manufactured in sections from steel plates. Each turbine is mounted on a steel reinforced concrete foundation and equipped with a transformer, which is located outside the base of the tower.

As identified in the REA Regulation, the proposed layout of these features is collectively referred to as the 'project location'. The project location is defined as per 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. temporary disturbance areas) and where permanent infrastructure will be located, including the air space occupied by turbine blades.

In accordance with Section 25 of the REA Regulation, NRSI has conducted a thorough records review of available background resources to identify any potentially significant natural features within 120 m of the project location. This includes areas within 120 m of turbine blade tip as well as any areas that may be used as temporary lay-down areas, crane pads, access roads, and collection, distribution, and transmission lines. For the purposes of this report, NRSI will refer to the areas within 120 m of the project location as the 'project area'.

Land use within the project area consists mainly of agriculture, with major crops including soybeans, corn, wheat and hay. Natural features are generally small and isolated from other features; however, several large contiguous woodlands are present within the Bornish project area. Habitats within the project area are expected to include woodlands, swamps, meadows, thickets, drainage ditches, ponds, creeks and hedgerows. See Figure 1 for a map of the project area and natural features.

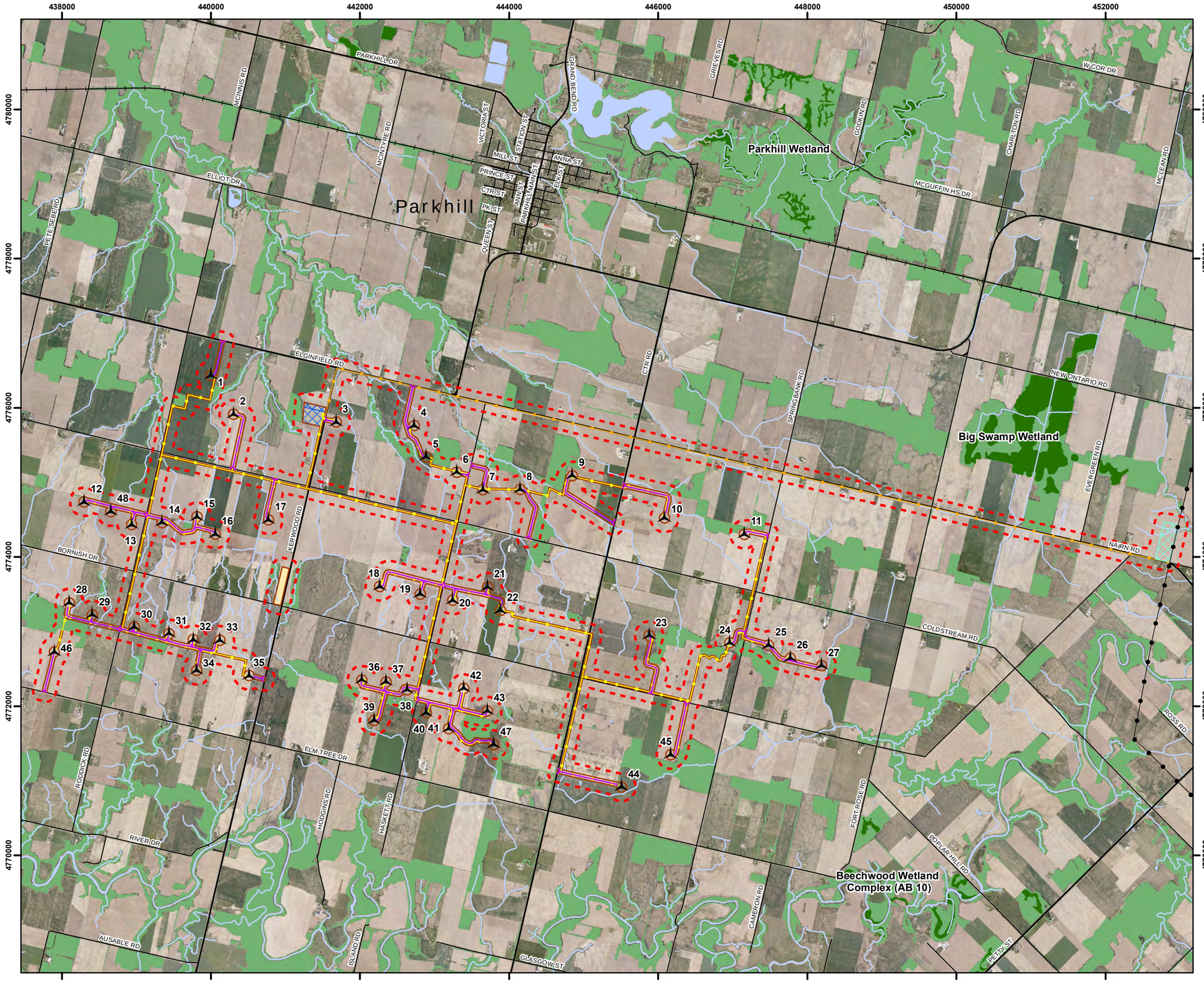
As part of this project, NRSI has considered all aspects relating to provincially Threatened and Endangered species. However, since these species are addressed as part of the Endangered Species Act (2007), they have not been discussed within any of these Natural Heritage Assessment reports. These species will be address in full detail,

including a description and results of field assessments, potential impacts, and recommended mitigation measures, as part of a separate Approval and Permitting Requirements Document (APRD) to be submitted to the MNR under a separate cover, where necessary.

Figure 1

Bornish Wind Energy Centre

Project Area and Natural Features



Legend

- Project Area (120m Buffer)
- Turbine
- Access Road
- Collector System
- Interconnection Line
- Project Location
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Primary Road
- Secondary Road
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Provincially Significant Wetland (PSW)
- Other Wetland
- Wooded
- ANSI, Life Science
- ANSI, Earth Science

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Project: 1231 March 30, 2012	NAD83 - UTM Zone 17 Scale: 1:50,000 (11x17")

0 1 2 3 Kms

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2.0 REA Requirements

Ontario Regulation (O. Reg.) 359/09 – Renewable Energy Approvals Under Part V.0.1 of the Act, (herein referred to as the REA Regulation) made under the Environmental Protection Act identifies the requirements for the development of renewable energy projects in Ontario. In accordance with the REA Regulation, the Bornish Wind Energy Centre, classified as a Class 4 wind facility, is required to complete a REA.

Section 25 of the REA Regulation requires proponents of Class 4 wind projects to undertake a natural heritage records review to identify whether the project location is:

1. in a provincial park or conservation reserve
2. within 120m of a provincial park or conservation reserve
3. in a natural feature
4. within 50 m of an area of natural and scientific interest (earth science), or
5. within 120 m of a natural feature that is not an area of natural and scientific interest (earth science)

Natural Features are defined in Section 1.1 of the REA Regulation to be all or part of

(a) an area of natural and scientific interest (ANSI) (earth science)
(b) an ANSI (life science)
(c) a coastal wetland
(d) a northern wetland
(e) a southern wetland
(f) a valleyland
(g) a wildlife habitat, or
(h) a woodland

Subsection 3 of Section 25 of the REA Regulation requires the proponent to prepare a report "setting out a summary of the records searched and the results of the analysis" (O. Reg. 359/09). This Natural Heritage Records Review Report has been prepared to meet these requirements.

Species at Risk (SAR) species that have been designated as Threatened or Endangered within Ontario, are warranted protection under the Endangered Species Act (2007). Although NRSI has considered these species during all stages of records review, site investigation, and evaluation of significance, they will be addressed in detail in a separate APRD to be submitted at a later date.

3.0 Records Review Methodology

In accordance with the REA Regulation, NRSI biologists consulted several information sources and agencies for the purposes of assessing natural features and wildlife habitat within 120 m of the project location. The results of this consultation process have been documented throughout the following report, and have been summarized in Table 1 below.

Table 1. Summary of Records Consulted for the Bornish Wind Energy Centre

Information Source	Consultation Date(s)	Type of Records Reviewed
Ministry of Natural Resources Renewable Energy Operations Team	August 30, 2011	Provincial Parks Conservation Reserves Areas of Natural and Scientific Interest (LS) Areas of Natural and Scientific Interest (ES) Woodlands Wetlands Valleylands Significant Wildlife Habitat
Environment Canada / Canadian Wildlife Service (Rob Read)	August 5, 2011 and September 19, 2011	No records received as of the date of this report
Middlesex County	September 15, 2011	Woodlands Wetlands
Upper Thames River Conservation Authority	September 15, 2011	Woodlands Wetlands
Ausable Bayfield Conservation Authority (Andrew Bicknell)	August 16, 2011, and September 14, 2011	Environmentally Significant Areas Woodlands Wetlands
Bird Studies Canada	September 21, 2011	Significant Wildlife Habitat
Ministry of Northern Development, Mines and Forestry	September 14, 2011	Significant Wildlife Habitat
Township of North Middlesex	September 15, 2011	Woodlands Wetlands Significant Wildlife Habitat
Ministry of Natural Resources, NHIC and Biodiversity Explorer	July 21, 2011 August 9, 2011	Areas of Natural and Scientific Interest (Life Science) Areas of Natural and Scientific Interest (Earth Science) Wetlands Significant Wildlife Habitat
Ministry of Natural Resources, Land Information Ontario	July 2011	Provincial Parks Conservation Reserves Areas of Natural and Scientific Interest (LS) Areas of Natural and Scientific Interest (ES) Woodlands Wetlands Significant Wildlife Habitat
Ministry of Northern Development, Mines, and Forestry	September 16, 2011	Significant Wildlife Habitat
Ontario Herpetofaunal Atlas	July 19, 2011	Significant Wildlife Habitat
Atlas of the Mammals of Ontario	July 19, 2011	Significant Wildlife Habitat

Ontario Breeding Bird Atlas	July 19, 2011 August 9, 2011	Significant Wildlife Habitat
Christmas Bird Count	September 21, 2011	Significant Wildlife Habitat
Bird Studies Canada, BirdMap Canada	September 21, 2011	Significant Wildlife Habitat
Avifaunal Report for the Bornish Wind Farm Project	August 26, 2011	Significant Wildlife Habitat
Bornish Bat Survey 2008	September 15, 2011	Significant Wildlife Habitat
Bornish Bat Survey 2009	September 15, 2011	Significant Wildlife Habitat

4.0 Natural Areas

For the purposes of the Natural Heritage Assessment reporting, NRSI has used the term natural area to identify features that have already been given a provincial or federal designation, including provincial parks, conservation reserves, and ANSIs. Information obtained on each of these natural areas has been outlined below.

4.1 Provincial Parks and Conservation Reserves

There are no provincial parks or conservation reserves located within 120 m of the project location (OMNR 2011).

4.2 Areas of Natural and Scientific Interest – Life Science

There are no Life Science ANSIs located within 120 m of the project location (OMNR 2011).

4.3 Areas of Natural and Scientific Interest – Earth Science

There are no Earth Science ANSIs located within 120 m of the project location (OMNR 2011).

4.4 Other Natural Areas

Three Environmentally Significant Areas (ESA) have been identified within 120 m of the project location. All three of these ESAs have been identified through correspondence with the Ausable-Bayfield Conservation Authority. Each is briefly discussed below, and will be examined in more detail during the site investigation phase of this project.

One ESA, WILLW-2-C, contains a 15.6 ha wetland that is split between two woodlands. These woodlands were previously connected before the field was cleared and cultivated and contain several wet sections and a few areas of standing water. This is not a high quality wetland, but does serve to protect the tributary and aid in improving water quality (Ausable-Bayfield Conservation Authority n.d.). Basemapping suggests that this ESA is overlapping with the project area.

The second ESA, WILLW-1-C, contains a 10.6 ha wetland within a larger woodland. This woodland has been greatly disturbed but contains some areas of wetland

vegetation. Disturbance includes drainage and cutting of trails, which has caused large areas to be cleared of its natural vegetation. The Maschelein Drain runs through the centre of the woodlot, which contains standing water and cattails. Hydrologically, this wetland performs stream recharge functions to the south (Ausable-Bayfield Conservation Authority n.d.). Available basemapping indicates that this ESA overlaps with the project location.

The final ESA, WILLW-5-C, is found south of proposed wind turbine #T1. This woodland contains a 12.5 ha wetland, which is a floodplain wetland along the tributary of Ptsebe Creek. The tributary has been cut down into the surrounding till and has produced a depression that is seasonally wet (Ausable-Bayfield Conservation Authority n.d.). Available basemapping suggests that this ESA overlaps with the project area.

5.0 Woodlands

Information collected from available background resources indicate the project area contains approximately 15% woodland cover, which is somewhat higher than the 12% cover for Middlesex County (Middlesex County 2003). There are no large woodland complexes in the project area however, extensive woodlands are found along the Ausable River to the west of the project area.

NRSI has identified that 40 woodlands (OMNR 2011), are within 120 m of the project location. These woodlands are expected to be primarily dominated by mid-aged to mature deciduous tree species; however, young woodlands, treed plantations, or occasional coniferous woodlands may also be present within 120 m of the project location. Available basemapping indicate that these wooded areas range in size from less than1 ha to 137.2 ha.

Four of these wooded areas have been initially identified as overlapping with the proposed access roads, proposed cabling, and/or a turbine (blade tip) and an additional woodland may overlap with a turbine blade tip. In some instances directional drilling may be used to go under these habitats. The extent to which the project location overlaps with woodlands is variable and will be further examined and addressed in the site investigation phase of the project when site-specific feature boundaries are confirmed.

The remaining 35 woodlands are expected to be deciduous forests, and are present within 120 m of the project location. These woodlands are scattered throughout the project area, and are found within 120 m of all types of project components, including turbines, access roads, cabling and transmission line (see Figure 1Figure 1). Species associations and distances of these woodlands to the project area should be confirmed during the site investigation phase of this project.

6.0 Wetlands

Information collected from the sources identified above suggests that the project location does not overlap with any known wetlands.

The Ontario Ministry of Natural Resources has identified the Big Swamp provincially significant wetland (PSW), which is located approximately 2.5 km northeast of the eastern extent of the project area and the Beechwood PSW is located approximately 2.5 km southeast of the eastern extent of the project area. Both of these habitats are considered provincially significant wetlands, but are located well beyond 120 m of the project location.

As discussed in Section 4.0 above, 3 ESAs have been identified within the Bornish Wind Energy Centre project area. Each of these three ESAs have been identified as having wetland communities present within their wooded boundaries. Specific mapping of the wetland communities was not provided to NRSI, however general ESA boundaries indicate that the project area may overlap with each of the 3 ESA boundaries. The extent of wetland within each of these natural features will be examined in more detail during the site investigation phase of the project to delineate wetland boundaries as they relate to the project area.

7.0 Valleylands

Information pertaining to valleylands is generally maintained by the local Conservation Authorities. Through correspondence with the Ausable Bayfield Conservation Authority, no specific information on valleylands within 120 m of the project location was provided to NRSI. Furthermore, the background information provided by the MNR did not specifically identify any known valleylands within the Bornish project area.

A more detailed review of potential valleylands will occur as part of the site investigation phase of this project.

8.0 Wildlife Habitat

As part of the REA process, NRSI biologists have examined available records associated with the presence of wildlife habitat within the project area. For the purposes of this series of Natural Heritage Assessment reports, NRSI has separated the discussion on wildlife habitat into four categories, following the Significant Wildlife Habitat Technical Guide (OMNR 2000). These four categories are seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of species of conservation concern, and animal movement corridors. Each of these wildlife habitat categories are described in the following sections.

8.1 Seasonal Concentration Areas

The records review process did not reveal any known seasonal concentration areas, as summarized in Table 2. The presence of potential seasonal concentration areas within the project area will be confirmed during the site investigation phase of the project.

Although no confirmed seasonal concentration areas have been identified, background information has indicated that several concentration areas have the potential to be present within the project area. Each of these habitats is discussed in Table 2 below, including information on whether further consideration is required during the site investigation phase of this project.

Table 2. Summary of Seasonal Concentration Areas Identified Near the Bornish Wind Energy Centre Project Area

Seasonal Concentration Areas	Present Within Project Area	Details	Site Investigation Required (Y/N)
Winter Deer Yards	No	Winter deer yards are not common in the general area	No
Moose Late Winter Habitat	N/A	Does not apply to projects in Ecoregion 7E	N/A
Colonial-Nesting Bird Breeding Habitat (swallows)	Unknown	Unknown	Yes
Colonial-Nesting Bird Breeding Habitat (tree/shrub)	Unknown	Unknown	Yes
Colonial-Nesting Bird	Unknown	Unknown	Yes

Breeding Habitat (ground)			
Waterfowl Stopover and Staging Areas (terrestrial)	Unknown	Unknown	Yes
Waterfowl Stopover and Staging Areas (aquatic)	Unknown	Unknown	Yes
Waterfowl Nesting Habitat	Unknown	Unknown	Yes
Shorebird Migratory Stopover Areas	N/A	Project area is not located within 5km of Great Lakes	N/A
Landbird (including songbird) Migratory Stopover Areas	N/A	Project area is not located within 5 km of Great Lakes	N/A
Raptor Winter Feeding and Roosting Areas	Unknown	Unknown	Yes
Wild Turkey Winter Range	N/A	Does not apply to the location of the project	N/A
Turkey Vulture Summer Roosting Areas	N/A	Does not apply to the location of the project	N/A
Reptile Hibernacula (snakes)	Unknown	Potential habitat to be determined	Yes
Bat Hibernacula	Unknown	No known abandoned mines are present but there is inferred karst topography and potential caves within the project area	Yes
Bat Maternity Colonies	Unknown	There are 40 woodlands within the project area that will be further examined during the site investigation	Yes
Migratory Butterfly Stopover Areas	N/A	Project area is not located within 5 km of Great Lakes	N/A

8.2 Rare Vegetation Communities and Specialized Wildlife Habitat

The records review process did not reveal any known rare vegetation communities and/or specialized wildlife habitat; however, their presence within 120 m of the project location will be confirmed during the site investigation phase of the project.

Although it is unknown whether any rare vegetation communities or specialized wildlife habitats are present within 120 m of the project location, background information has indicated that many of these natural features have the potential to be present. Each of these rare vegetation communities and specialized wildlife habitats is discussed in Table

3 below, including information on whether further consideration is required during the site investigation phase of this project.

Table 3. Summary of Rare Vegetation Communities and Specialized Wildlife Habitat Identified Near the Bornish Wind Energy Centre Project Area

Wildlife Habitat	Present Within Project Area	Details	Site Investigation Required (Y/N)
Alvars	Unknown	Unknown	Yes
Tall-grass Prairies	Unknown	Unknown	Yes
Savannahs	Unknown	Unknown	Yes
Rare Forest Types	Unknown	There are 40 woodlands within the project area that will be further examined during the site investigation.	Yes
Talus Slopes	Unknown	Unknown	Yes
Rock Barrens	Unknown	Unknown	Yes
Sand Barrens	Unknown	Unknown	Yes
Great Lakes Dunes	N/A	Project not located close enough to Great Lakes to qualify	N/A
Forests Providing High Diversity of Habitats	N/A	Does not apply to the location of the project	N/A
Old-growth or Mature Forest Stands	Unknown	There are 40 woodlands within the project area that will be further examined during the site investigation.	Yes
Foraging Areas with Abundant Mast	N/A	Does not apply to the location of the project	N/A
Turtle Nesting Habitat	Unknown	Unknown	Yes
Turtle-Over-wintering Habitat	Unknown	Unknown	Yes
Woodland Raptor Nesting Habitat	Unknown	There are 7 woodlands within the project area that are at least 30 ha in size.	Yes
Osprey Nesting, and Bald Eagle Foraging, and Perching Habitat	Unknown	Unknown	Yes
Moose Calving Areas	N/A	Does not apply to projects in Ecoregion 7E	N/A
Moose Aquatic Feeding Zone	N/A	Does not apply to projects in Ecoregion 7E	N/A
Mineral Licks	N/A	Does not apply to the location of the project	N/A
Mink, Otter, Marten,	Unknown	Riparian areas for mink	Yes

and Fisher Denning Sites		dens need to be considered during the site investigation. Otter, marten and fisher denning sites are not applicable to Ecoregion 7E	(Mink Only)
Amphibian Breeding Habitat (woodland)	Unknown	There are 40 woodlands within the project area that will be further examined for suitable habitat during site investigation	Yes
Amphibian Breeding Habitat (wetland)	Unknown	All woodlands within the project area will be investigated for wetland habitat	Yes
Highly Diverse Areas	N/A	Does not apply to the location of the project	N/A
Cliffs	No	Basemapping and Ontario Geological Survey mapping indicate there are no cliffs within the project area	No
Seeps and Springs	Unknown	Unknown	Yes

8.3 Habitats of Species of Conservation Concern

Species of conservation concern include all species that have been designated as a species of Special Concern according to the Species At Risk in Ontario (SARO) or have been given a provincial S-Rank of S1-S3, but have not been designated as either Endangered or Threatened within Ontario. Species At Risk (provincially Threatened or Endangered) will be addressed separately in an Approval and Permitting Requirements Document to address the Endangered Species Act (2007).

A summary of habitats of species of conservation concern that are located near the Bornish Wind Energy Centre can be found below in Table 4.

Table 4. Summary of Habitats of Species of Conservation Concern Identified Near the Bornish Wind Energy Centre Project Area

Wildlife Habitat	Present Within Project Area	Details	Site Investigation Required (Y/N)
Marsh Bird Breeding Habitat	Unknown	Unknown	Yes
Woodland Area Sensitive Breeding Birds	Unknown	Several woodlands with interior habitat are present within the project area.	Yes
Open Country Breeding Bird Habitat	Unknown	Unknown	Yes
Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	Yes
Terrestrial Crayfish	Unknown	Unknown	Yes
Special Concern Species	Unknown	Several special concern species could be found within the project area, which are discussed later in this report	Yes
S1-S3, and SH Species and Communities	Unknown	Several species could be found within the project area, which are discussed later in this report	Yes

A query of the above information sources has identified a total of 73 species of conservation concern that have been identified within the vicinity of the project area. These records include 21 historical sightings, prior to 1980, which are expected to represent historical populations that are unlikely to be present within 120 m of the project location. The remaining 52 current (1980-2010) species records represent a variety of species groups, including 7 birds, 4 reptiles, 1 mammal, 35 plant species and 5 other species of conservation concern, including 3 damselflies, 1 dragonfly and 1 butterfly species. Each of these species is discussed in more detail in the following sections.

8.3.1 Birds

NRSI has identified a total of 7 bird species of conservation concern that have the potential to occur within the vicinity of the project area. Each of these 7 species is identified below in Table 5. Bird Species of Conservation Concern Identified Near the Bornish Wind Energy Centre.

Table 5. Bird Species of Conservation Concern Identified Near the Bornish Wind Energy Centre Project Area

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
Clangula hyemalis	Long-tailed Duck[3]	S3B		
Haliaeetus leucocephalus	Bald Eagle[3]	S2N, S4B	SC	NAR
Larus marinus	Great Black-backed Gull[3]	S2B		
Melanerpes erythrocephalus	Red-headed Woodpecker[2]	S4B	SC	THR
Seiurus motacilla	Louisiana Waterthrush[1,2]	S3B	SC	SC
Vermivora chrysoptera	Golden-winged Warbler[2]	S4B	SC	THR
Wilsonia citrina	Hooded Warbler[2]	S3B	SC	THR

[1] Biodiversity Explorer Record (OMNR 2011)
[2] Ontario Breeding Bird Atlas (Cadman et. al 2007)
[3] Christmas Bird Count (Audubon 2010)

Provincial Rank (S-Rank)
S1: Critically Imperiled
S2: Imperiled
S3: Vulnerable
S4: Apparently Secure
SH: Historic

COSEWIC and SARO Status
END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not at Risk

Habitats for these species may be considered significant wildlife habitat, and will be reviewed in more detail during the site investigation and evaluation of significance phases of this project. Due to the potential for habitats of these species to represent significant wildlife habitat, brief habitat descriptions for each species have been provided below.

Long-tailed Duck

This species breeds in subarctic and arctic wetlands and spends the winter in coastal marine waters and large freshwater lakes (Robertson and Lavard 2002). This habitat does not exist within the project area and will not be carried forward to the site investigation.

Bald Eagle

This species requires large continuous areas of deciduous or mixed woods near large lakes or rivers, while it requires an area of 255 ha for nesting, shelter, feeding and roosting. Bald eagles (Haliaeetus leucocephalus) prefer open woods with 30-50% canopy cover and will nest in trees 50 to 200 m from the shore of a waterbody. The bald eagle requires tall, dead or partially dead trees within 400 m of nest for perching (OMNR 2000). This habitat does not exist within the project area and will not be carried forward to the site investigation.

Great Black-backed Gull

The great black-backed gull (Larus marinus) requires flat rocky coastal islands, moorlands, rocky beaches or cliffs and nests in solitary or in small (rarely large) colonies (OMNR 2000). This habitat does not exist within the project area and will not be carried forward to the site investigation.

Red-headed Woodpecker

The red-headed woodpecker (Melanerpes erythrocephalus) lives in open woodlands and woodland edges, especially in oak savannahs and riparian forest. They can be found in fields or pastures, orchards and small woodlots (OMNR 2000). These habitats contain a higher density of dead trees, which they commonly use for nesting and perching (OMNR 2008). As well, red-headed woodpeckers require a tree with a diameter at breast height of at least 40 cm for tree cavity nesting and require around 4 ha for territory (OMNR 2000). Habitat for this species may be present within the project area in the form of woodland edges, fields, pastures and small woodlots and will be carried forward to the site investigation.

Louisiana Waterthrush

This species is usually found in steep, forested ravines with fast-flowing streams, woodland swamps or large tracts of deciduous or mixed forests. Canopy cover is essential and this bird nests on the ground (OMNR 2000). Habitat for this species may exist in the form of woodland swamps, but this species would likely inhabit areas closer to the Ausable River where steep, forested ravines exist in fast-flowing water, which is outside of the project area. Therefore, this species and its habitat will not be carried forward to the site investigation.

Golden-winged Warbler

This species has a preferred breeding habitat in areas of early successional vegetation, such as shrubby, grassy abandoned, fields with small deciduous trees bordered by low woodland and wooded swamps, alder bogs, deciduous damp woods, shrubbery clearings in deciduous woods with saplings and grasses or brier-woodland edges (OMNR 2000). Can also be found in field edges, hydro or utility right-of-ways, or recently logged areas (OMNR 2008). Golden-winged warbler requires more than 10 ha of continuous habitat (OMNR 2000). Habitat for the golden-winged warbler may be present within the project area in the form of fallow fields bordered by woodland areas and wooded swamps, deciduous damp woods and shrubbery clearings in deciduous woods and will be carried forward to the site investigation.

Hooded Warbler

In Ontario, the hooded warbler (Wilsonia citrina) breeds mainly in the Carolinian Zone of southwestern Ontario, in the interiors of large upland tracts of mature deciduous and mixed forest along stream bottoms, and in ravines. It selects habitats in which small openings in the forest canopy have permitted a dense growth of low understory shrubs, and it abandons areas once the vegetation becomes too thin or too tall (OMNR 2008). Habitat for the hooded warbler likely exists outside of the project area, along the Ausable River and will not be carried forward to the site investigation.

As a result of the review of species of conservation concern that may be present within the project area and preferred habitats of each species, NRSI biologists have determined that several of these species have the potential to be present within, or near, the project area. Most of these species, if present, are most likely to be breeding within

the nearby woodlands, hedgerows, pastures, or hay fields, and are unlikely to use the active agricultural fields and row crops, including soybeans, corn, and wheat.

8.3.2 Herpetofauna

A total of 4 herpetofauna species of conservation concern, all reptile species, have been documented within the vicinity of the project area. Each of these species, including provincial and federal status, has been identified in Table 6 below.

Table 6. Herpetofauna Species of Conservation Concern Identified Near the Bornish Wind Energy Centre Project Area

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
Chelydra serpentina serpentina	Common Snapping Turtle[2]	S3	SC	SC
Graptemys geographica	Northern (Common) Map Turtle[1,2]	S3	SC	SC
Lampropeltis t. triangulum	Eastern Milksnake[1,2]	S3	SC	SC
Thamnophis sauritus septentrionalis	(Eastern) Ribbonsnake[2] (Great Lakes population)	S3	SC	SC

[1] Biodiversity Explorer Record (OMNR 2010)
[2] Ontario Herpetofauna Summary Atlas (Oldham and Weller 2000)

Provincial Rank (S-Rank)	COSEWIC and SARO Status
S1: Critically Imperiled	END: Endangered
S2: Imperiled	THR: Threatened
S3: Vulnerable	SC: Special Concern

Habitats of these species are considered candidate significant wildlife habitat, and will be reviewed in more detail during the site investigation and evaluation of significance phases of this project. Due to the potential for habitats of these species to represent significant wildlife habitat, brief habitat descriptions for each species have been provided below.

Common Snapping Turtle

This species resides in habitat that consists of permanent or semi-permanent fresh water, marshes, swamps or bogs or rivers and streams with soft muddy banks or bottoms. The common snapping turtle (Chelydra serpentina serpentina) uses soft soil or clean dry sand on south-facing slopes for nest sites, which can be some distance from water and often hibernate together in groups in mud under water. They will also take advantage of man-made structures for nest sites, including roads (especially with gravel shoulders), dams and aggregate pits (OMNR 2008). The home range size is required to be approximately 28 ha in size (OMNR 2000). Habitat for this species is potentially present within the project area in the form of streams with possibly muddy banks or bottoms and will be carried forward to the site investigation.

Northern (Common) Map Turtle

This turtle species can be found in large bodies of water with soft bottoms and aquatic vegetation. This species will bask in groups on logs, rocks, beaches or sandy edges and uses soft soil or clean dry sand for nest sites that can be some distance from water. The home range size is larger for females (about 70 ha) than males (around 30 ha) and includes hibernation, basking, nesting and feeding areas, while aquatic corridors (e.g. streams) are required for movement (OMNR 2000). Habitat for this species does not exist within the project area, as there are no large bodies of water present. Habitat for this species will not be carried forward to the site investigation.

Eastern Milksnake
This snake is found in farmlands, meadows, hardwood or aspen stands, pine forests with brushy or woody cover, river bottoms or bog woods and often hides under logs, stones, boards or in outbuildings. This species will often use communal nest sites (OMNR 2000). Habitat for this species may be present within the project area in the form of farmlands, meadows, hardwoods stands and pine forests (plantations) and will be carried forward to the site investigation.

(Eastern) Ribbonsnake (Great Lakes Population)
The eastern ribbonsnake (Thamnophis sauritus septentrionalis) prefers sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water, wet meadows, grassy marshes or sphagnum bogs or borders of ponds, lakes or streams. This species hibernates in groups (OMNR 2000). Habitat for this species is potentially present within the project area in the form of grassy areas with low dense vegetation near or along streams and will be carried forward to the site investigation.

8.3.3 Mammals

A detailed records review has identified one mammal species of conservation concern that may occur within the vicinity of the Bornish Wind Energy Centre. This species, woodland vole, has been identified by the Atlas of Mammals of Ontario (Dobbyn 1994) as occurring within the general vicinity of the project area. This species has a provincial S-Rank of S3?, indicating potentially vulnerable populations within Ontario, and both a provincial (SARO) and federal (COSWEIC) status of Special Concern. NRSI biologists will continue to examine potential habitats and document all mammal species encountered during the site investigation and evaluation of significance phases of this project.

Habitats of species are considered candidate significant wildlife habitat, and should be reviewed in more detail during the site investigation and evaluation of significance phases of this project. Due to the potential for habitats of these species to represent

significant wildlife habitat, brief habitat descriptions for this species has been provided below.

Woodland Vole

This mammal species is found in mature deciduous forest in the Carolinian forest zone with loose sandy soil and deep humus, as well as grasslands, meadows and orchards with groundcover of duff or grass (OMNR 2000). Habitat for the woodland vole (Microtus pinetorum) may be present within the project area in the form of mid-age to mature deciduous forest, grasslands and meadows and will be carried forward to the site investigation.

8.3.4 Vegetation

A total of 35 vegetation species of conservation concern have been documented since 1980 within the vicinity of the project area. Each of these species, including provincial and federal status, has been identified in Table 7 below.

Table 7. Vegetation Species of Conservation Concern Identified Near Bornish Wind Energy Centre Project Area

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
Allium tricoccum var. burdickii	Narrow-leaved Wild Leek[1]	S1?		
Arisaema dracontium	Green Dragon[1]	S3	SC	SC
Aristida longespica var. longespica	Slim-spiked Three-awned Grass[1]	S2		
Arnoglossum plantagineum	Tuberous Indian-plantain[1]	S3	SC	SC
Astragalus neglectus	Cooper's Milk-vetch[1]	S3		
Carex careyana	Carey's Sedge[1]	S2		
Carex meadii	Mead's Sedge[1]	S2		
Carex tetanica	Rigid Sedge[1]	S3		
Conioselinum chinense	Chinese Hemlock Parsley[1]	S2		
Coreopsis tripteris	Tall Tickweed[1]	S2		
Cypripedium arietinum	Ram's-head Lady's-slipper[1]	S3		
Diarrhena obovata	Ovate Beak Grass[1]	S1		
Elymus curvatus	Awnless Wild Rye[1]	S2S3		
Erigenia bulbosa	Harbinger-of-spring[1]	S3?		
Euonymus atropurpureus	Burning Bush[1]	S3		
Fraxinus profunda	Pumpkin Ash[1]	S2?		
Galium pilosum	Hairy Bedstraw[1]	S3		
Gentianella quinquefolia	Stiff Gentian[1]	S2		
Hypoxis hirsute	Yellow Stargrass[1]	S3		
Liatris aspera	Tall Blazing Star[1]	S2		
Lithospermum latifolium	American Gromwell[1]	S3		
Lythrum alatum	Winged Loosestrife[1]	S3		
Muhlenbergia tenuiflora	Slim-flowered Muhly[1]	S2		

Packera paupercula var. pseudotomentosa	False Tomentose Balsam Groundsel[1]	S2S3		
Panicum rigidulum	Redtop Panic Grass[1]	S3		
Phlox subulata	Moss Phlox[1]	S1?		
Pycnanthemum tenuifolium	Slender Mountain-mint[1]	S3		
Ratibida pinnata	Gray-headed Prairie Coneflower[1]	S3		
Scirpus expansus	Woodland Bulrush[1]	S1		
Scutellaria parvula var. missouriensis	Leonard's Small Skullcap[1]	S3		
Solidago riddellii	Riddell's Goldenrod[1]	S3	SC	SC
Solidago rigida ssp. rigida	Stiff Goldenrod[1]	S3		
Triosteum perfoliatum	Perfoliate Tinkersweed[1]	S1		
Vernonia gigantea	Giant Ironweed[1]	S1?		
Viola striata	Striped Cream Violet[1]	S3		

[1] Biodiversity Explorer Record (OMNR 2010)

Provincial Rank (S-Rank)	COSEWIC and SARO Status
S1: Critically Imperiled	END: Endangered
S2: Imperiled	THR: Threatened
S3: Vulnerable	SC: Special Concern

Habitats of these species are considered candidate significant wildlife habitat, and should be reviewed in more detail during the site investigation and evaluation of significance phases of this project. Due to the potential for habitats of these species to represent significant wildlife habitat, brief habitat descriptions for each species have been provided below.

Narrow-leaved Wild Leek

This species is found in rich woods (OMNR 2000), which may be present within the project area and will be carried forward to the site investigation.

Green Dragon

Green dragon (Arisaema dracontium) is found in wet bottomlands along rivers and creeks (OMNR 2000). Habitat for this species is potentially present within the project area in the form of wet bottomlands along creeks and will be carried forward to the site investigation.

Slim-spiked Three-awned Grass

This species can be found in dry to moist sandy fields and sandy openings in prairies (OMNR 2000). Habitat for this species may be present in the form of dry to moist sandy fields within the project area and will be carried forward to the site investigation.

Tuberous Indian-plantain

These plants prefer open sunny areas in wet, calcareous meadows or shoreline fens, specifically along Lake Huron (COSEWIC 2002). Habitat for this species

does not exist within the project area and will not be carried forward to the site investigation.

Cooper's Milk-vetch
This plant prefers open woods and is frequently found on limestone plains (OMNR 2000). Habitat for this species is potentially present in the form of open woods within the project area and will be carried forward to the site investigation.

Carey's Sedge
This plant is found in mesic to dry-mesic hardwood forests and floodplain woods (OMNR 2000). Habitat for this species is potentially present within the project area in the form of mesic to dry-mesic hardwood forests and floodplain woods and will be carried forward to the site investigation.

Mead's Sedge
Mead's sedge (Carex meadii) is found in the prairies (OMNR 2000). Habitat for this species does not exist within the project area and will not be carried forward to the site investigation.

Rigid Sedge
This sedge prefers moist grasslands, sandy shores and ditches, prairies and seepages (OMNR 2000). Habitat for this sedge does not likely exist within the project area and will not be carried forward to the site investigation.

Chinese Hemlock Parsley
These plants can be found in calcareous cedar swamps, wet borders of streams and rivers, seepage slopes in wet coniferous woods, swampy thickets, moist clearings and damp roadsides – in northern Ontario in Salix-Alnus thickets, moist Populus stands and moist sandy shorelines (OMNR 2000). Habitat for this plant species may be present within the project area in the form of wet borders of streams and damp roadsides and will be carried forward to the site investigation.

Tall Tickweed
These plants are located in damp prairies, thickets and open woods (OMNR 2000). Habitat for this species is potentially present in the form of thickets and open woods within the project area and will be carried forward to the site investigation.

Ram's-head Lady's-slipper
This plant grows in cedar woodlands on limestone plains, in wooded fens and on sandy sites (OMNR 2000). Habitat for this species does not likely occur within the project area and will not be carried forward to the site investigation.

Ovate Beak Grass
This grass is found in riparian woodlands (OMNR 2000), which are potentially present within the project area and will be carried forward to the site investigation.

Awnless Wild Rye
This grass is found in moist or damp soils of open forests, thickets, grasslands, ditches, and disturbed ground and especially on bottomland (USDA n.d.). Habitat for this species may be present within the project area in the form of open forests,

thickets, grasslands, ditches and bottomland and will be carried forward to the site investigation.

Harbinger-of-Spring
This plant grows in rich, moist deciduous woods, open, wooded river floodplains and bottomlands, as well as streambanks and limestone shingle shores (OMNR 2000). Habitat for this species may be present in the form of rich, moist deciduous woods and streambanks within the project area and will be carried forward to the site investigation.

Burning Bush
This species can be found in dry to moist thickets and woods (OMNR 2000), which are potentially present within the project area and will be carried forward to the site investigation.

Pumpkin Ash
This plant thrives in moist woods (OMNR 2000), which are potentially present within the project area and will be carried forward to the site investigation.

Hairy Bedstraw
These plants grow in dry, sandy woods and thickets and can occasionally be found in dry sandy fields (OMNR 2000). Habitat for this species does not likely occur within the project area and will not be carried forward to the site investigation.

Stiff Gentian
Stiff gentian can be found in moist soil, roadsides, streambanks, edges of woods and prairie habitats (OMNR 2000). Habitat for this plant species may be present in the form of moist roadsides, streambanks and edges of woods within the project area and will be carried forward to the site investigation.

Yellow Stargrass
This plant grows in dry open sandy woods and wet to dry meadows and prairies (OMNR 2000). Habitat for this species is potentially present in the project area in the form of wet to dry meadows and will be carried forward to the site investigation.

Tall Blazing Star
Tall blazing star (Liatris aspera) can be found in open, sandy woods, dry roadsides and sandy prairies (OMNR 2000). Habitat for this species potentially occurs within the project area in the form of dry roadsides and will be carried forward to the site investigation.

American Gromwell
These plants grow in river floodplains, woods and open areas near edges of woods (OMNR 2000). Habitat for this plant species may be present in the form of open areas near edges of woods within the project area and will be carried forward to the site investigation.

Winged Loosestrife
This grows in wet meadows, moist prairies, open woods and wet disturbed areas (OMNR 2000). Habitat for this plant is potentially present within the project area in

the form of wet meadows and open woods and will be carried forward to the site investigation.

Slim-flowered Muhly

Slim-flowerd muhly (Muhlenbergia tenuiflora) is found in rich, deciduous forests, often on rocky or sandy soil (OMNR 2000). Habitat for this species potentially occurs in the form of rich, deciduous forests within the project area and will be carried forward to the site investigation.

False Tomentose Balsam Groundsel

This plant is found in dry sandy, or gravelly to rocky soils in grasslands, barrens, savannas, wooded bluffs, and dunes (Mahoney & Kowal 2008). Habitat for this species does not likely occur within the project area and will not be carried forward to the site investigation.

Redtop Panic Grass

This grass grows in sandy and rocky shores of lakes and rivers in acidic soil (OMNR 2000). Habitat for this species does not exist within the project area and will not be carried forward to the site investigation.

Moss Phlox

This plant is found in open, sandy woods and sandy roadsides and lakeshores (OMNR 2000). Habitat for moss phlox may occur within the project area in the form of sandy roadsides and will be carried forward to the site investigation.

Slender Mountain-mint

This grows in dry open areas (OMNR 2000), which are potentially present within the project area and will be carried forward to the site investigation.

Gray-headed Prairie Coneflower

This plant is found in prairies in open sandy woods (OMNR 2000). Habitat for this species does not occur within the project area and will not be carried forward to the site investigation.

Woodland Bulrush

This bulrush grows near seeps and stream edges (OMNR 2000), of which streams edges are found within the project area and will be carried forward to the site investigation.

Leonard's Small Skullcap

These plants thrive in prairies and rocks outcrops (OMNR 2000), which do not exist within the project area and will not be carried forward to the site investigation.

Riddell's Goldenrod

This species of goldenrod grows in wet, marshy ground, old fields and prairies (OMNR 2000). Habitat for this plant species potentially occurs within the project area in the form of old fields and will be carried forward to the site investigation.

Stiff Goldenrod

Stiff goldenrod is found in dry, sandy soils in prairies and waste places (OMNR 2000). Habitat for this species does not occur within the project area and will not be carried forward to the site investigation.

Perfoliate Tinkersweed
This plant grows in rich deciduous woods (OMNR 2000), which are potentially present within the project area and will be carried forward to the site investigation.

Giant Ironweed
These plants are found in mesic prairies, thickets, moist woods, roadsides and grassy meadows (OMNR 2000). Habitat for this species may be present within the project area in the form of thickets, moist woods, roadsides and grassy meadows and will be carried forward to the site investigation.

Striped Cream Violet
This plant grows in rich, floodplain forests and low, wet woods (OMNR 2000), which potentially occur in the project area and will be carried forward to the site investigation.

8.3.5 Other Wildlife

A total of 5 other wildlife species of conservation concern, including 3 species of damselflies, 1 dragonfly species, and 1 species of butterfly, have been documented within the vicinity of the project area. Each of these species, including provincial and federal status, has been identified in Table 8 below.

Table 8. Other Wildlife of Conservation Concern Identified Near the Bornish Wind Energy Centre Project Area

Scientific Name	Common Name	S-Rank	SARO Status	COSEWIC Status
Argia sedula	Blue-ringed Dancer[1]	S2		
Argia translata	Dusky Dancer[1]	S2		
Asterocampa clyton	Tawny Emperor[1]	S2S3		
Enallagma basidens	Double-striped Bluet[1]	S3		
Gomphus graslinellus	Pronghorn Clubtail[1]	S3		

[1] Biodiversity Explorer Record (OMNR 2010)

Provincial Rank (S-Rank)	COSEWIC and SARO Status
S1: Critically Imperiled	END: Endangered
S2: Imperiled	THR: Threatened
S3: Vulnerable	SC: Special Concern

Habitats of these species are considered candidate significant wildlife habitat, and should be reviewed in more detail during the site investigation and evaluation of significance phases of this project. Due to the potential for habitats of these species to

represent significant wildlife habitat, brief habitat descriptions for each species have been provided below.

Blue-ringed Dancer
This species is found near large rivers, creeks and streams that are often well vegetated and can also be found around lakes and ditches (Lam 2004). Habitat for this species potentially occurs within the project area in the form of creeks and streams that are well vegetated and the presence of ditches and will be carried forward to the site investigation.

Dusky Dancer
This damselfly can be found on various-sized rivers, creeks, streams and wind-swept lakes with wind action, and rarely found near ponds (Lam 2004). Habitat for this species does not likely occur within the project area and will not be carried forward to the site investigation.

Tawny Emperor
The tawny emperor butterfly can be found in open woodlands and roadsides where there is hackberry (Holmes et al. 1991). Habitat for this species is found within the project area in the form of open woodlands and roadsides where hackberry may exist. Habitat for this species may be present within the project area and will be carried forward to the site investigation.

Double-striped Bluet
The double-striped bluet is found at lakes and ponds and is often found in temporary habitats with little vegetation. They can also be occasionally found in slow streams (Lam 2004). Habitat for this species potentially occurs in the form of slow streams within the project area and will be carried forward to the site investigation.

Pronghorn Clubtail
This dragonfly is found near ponds, lakes and slow streams (Jones et al. 2008). Habitat for this dragonfly may be present within the project area in the form of ponds and slow streams and will be carried forward to the site investigation.

A detailed records review has identified no other wildlife species of conservation concern that may occur within the vicinity of the project area. NRSI biologists will continue to examine potential habitats and document all wildlife species encountered during the site investigation and evaluation of significance phases of this project.

8.4 Animal Movement Corridors

The records review process did not reveal any known animal movement corridors within 120 m of the project location. Available basemapping indicated that there were several linear features, including treed fencerows and naturalized drains, within 120 m of the

project location. The suitability of these features to be amphibian animal movement corridors will be examined during the site investigation phase of the project.

9.0 Summary of Records Review

In accordance with the REA Regulation, NRSI biologists have completed a comprehensive review of available background information pertaining to the Bornish Wind Energy Centre project area. This complete review has been provided in the preceding sections, and has been summarized in Tables 9-11 below.

The results of the records review of natural areas, including provincial parks, woodlands, and wetlands are provided in Table 9 below. This table identifies which natural features need to be carried forward to the site investigation phase of the project based on information collected during this review.

Table 9. Summary of Natural Feature Records Review

Natural Feature	Present Within Project Area	Present Within Project Location	Carried Forward to Site Investigation (Y/N)
Provincial Park	No	No	No
Conservation Reserve	No	No	No
Earth Science ANSI	No	No	No
Life Science ANSI	No	No	No
Wetland	Yes	Yes	Yes
Woodland	Yes	Yes	Yes
Valleyland	Unknown	Unknown	Yes

The results of the records review of wildlife habitat are provided in Table 10 below. This table summarizes the presence of the full range of potential wildlife habitats within the project area. The purpose of this table is to guide the site investigation to further refine what types of wildlife habitats are within the project area. Any wildlife habitats that have already been confirmed to be either not applicable to the project area or known to not occur within the project area will not be discussed in subsequent Natural Heritage Assessment reports for the Bornish Wind Energy Centre.

Table 10. Summary of Wildlife Habitat Records Review

Wildlife Habitat	Present Within Project Area	Present Within Project Location	Site Investigation Required (Y/N)
Winter Deer Yards	No	No	No
Colonial-Nesting Bird Breeding Habitat (swallows)	Unknown	Unknown	Yes

Colonial-Nesting Bird Breeding Habitat (tree/shrub)	Unknown	Unknown	Yes
Colonial-Nesting Bird Breeding Habitat (ground)	Unknown	Unknown	Yes
Waterfowl Stopover and Staging Areas (terrestrial)	Unknown	Unknown	Yes
Waterfowl Stopover and Staging Areas (aquatic)	Unknown	Unknown	Yes
Waterfowl Nesting Habitat	Unknown	Unknown	Yes
Shorebird Migratory Stopover Areas	N/A	N/A	No
Landbird (including songbird) Migratory Stopover Areas	N/A	N/A	No
Raptor Winter Feeding and Roosting Areas	Unknown	Unknown	Yes
Wild Turkey Winter Range	N/A	N/A	No
Turkey Vulture Summer Roosting Areas	N/A	N/A	No
Reptile Hibernacula (snakes)	Unknown	Unknown	Yes
Bat Hibernacula	Unknown	Unknown	Yes
Bat Maternity Colonies	Unknown	Unknown	Yes
Amphibian Breeding Habitat (woodland)	Unknown	Unknown	Yes
Amphibian Breeding Habitat (wetland)	Unknown	Unknown	Yes
Migratory Butterfly Stopover Areas	N/A	N/A	No
Alvars	Unknown	Unknown	Yes
Tall-grass Prairies	Unknown	Unknown	Yes
Savannahs	Unknown	Unknown	Yes
Rare Forest Types	Unknown	Unknown	Yes
Talus Slopes	Unknown	Unknown	Yes
Rock Barrens	Unknown	Unknown	Yes
Sand Barrens	Unknown	Unknown	Yes
Great Lakes Dunes	N/A	N/A	No
Forests Providing High Diversity of Habitats	N/A	N/A	No
Old-growth or Mature Forest Stands	Unknown	Unknown	Yes
Foraging Areas with Abundant Mast	N/A	N/A	No
Turtle Nesting Habitat	Unknown	Unknown	Yes
Turtle-Over-wintering Habitat	Unknown	Unknown	Yes
Woodland Raptor Nesting Habitat	Unknown	Unknown	Yes
Osprey Nesting/Bald Eagle, Foraging, and Perching Habitat	Unknown	Unknown	Yes
Moose Calving Areas	N/A	N/A	No
Moose Aquatic Feeding Zone	N/A	N/A	No
Mineral Licks	N/A	N/A	No
Mink, Otter, Marten, and Fisher Denning Sites	Unknown	Unknown	Yes (Mink Only)
Highly Diverse Areas	N/A	N/A	No
Cliffs	No	No	No
Seeps and Springs	Unknown	Unknown	Yes

Amphibian Movement Corridors	Unknown	Unknown	Yes
Marsh Bird Breeding Habitat	Unknown	Unknown	Yes
Woodland Area Sensitive Breeding Birds	Unknown	Unknown	Yes
Open Country Breeding Bird Habitat	Unknown	Unknown	Yes
Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	Yes
Terrestrial Crayfish	Unknown	Unknown	Yes
Special Concern Species	Unknown	Unknown	Yes
S1-S3, and SH Species and Communities	Unknown	Unknown	Yes

Following a full review of available records applicable to the Bornish Wind Energy Centre, the following table has been prepared to outline the results of the records review as it specifically relates to the REA Regulation. Table 11, below, outlines the presence of natural areas and wildlife habitat that have the potential to overlap with, or occur within the project area.

Table 11. Summary of Records Review of the Bornish Wind Energy Centre

Criteria	Result
1. Within 120 m of a Provincial Park or Conservation Reserve	The project area is not located within 120 m of a Provincial Park or Conservation Reserve.
2. In a Natural Feature	The results of this records review indicate the project location (i.e. disturbance area, cabling, access roads etc…) of the Bornish Wind Energy Centre overlaps with 9 woodlands. These woodlands are expected to consist of deciduous forest with vegetation associations that are representative of this region of southwestern Ontario. The extent to which project locations overlap natural areas is variable and will be further examined and addressed in the site investigation phase of the project.
3. Within 50 m of a ANSI-ES	No ANSI-ES is located within 50 m of the project area.
4. Within 120m of a Natural Feature	
a) ANSI-LS	No ANSI-LS is located within the project area.
b) Coastal Wetland	No coastal wetlands are located within the project area.
c) Northern Wetland	No northern wetlands are found within the project area.
d) Southern Wetland	Three southern wetlands within designated ESA lands have been identified within the project area. Wetlands may also be located within woodland boundaries.
e) Valleyland	No known valleylands are located within the project area.
f) Wildlife Habitat	40 woodlands are located within the project area and could provide several types of Significant Wildlife Habitat (SWH). Other natural features such as naturalized drainage ditches and hedgerows have been identified within the project area and could also provide SWH. These

	features will be surveyed to determine if they are used for animal movement corridors or provide habitat for species of conservation concern. All of these wildlife habitats should be examined during the site investigation phase and/or the evaluation of significance phase of this project to identify other habitat features and identify the significance of each natural feature.
g) Woodland	40 woodlands are located within the project area, including 9 that may overlap with a project component. Basemapping indicate these wooded areas range in size from less than 1 ha to 137.2 ha. These woodlands are expected to be primarily dominated by mid-aged to mature deciduous tree species; however, young woodlands, treed plantations, or occasional coniferous woodlands may also be present within the project area.

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Appendix I
Ontario Ministry of Natural Resources Records Review

REOT

District NHA Records Review for Renewable Energy Projects

Nextera: Bornish

Wind, Solar, Biomass

Ministry of Natural Resources

Renewable Energy Operation Team

August 29, 2011

NHA Records Review

Project Name:	**Bornish Wind Energy Centre**			
Project Location:	**MNR District** Aylmer	**Municipality** Municipality of North Middlesex Middlesex County	**Geo.Twp, Lot(s) & Con(s)**	See attached map/shapefile
Applicant:	Nextera Energy Canada (contact: Tom Bird Thomas.bird@nexteraenergy.com)	**Phone #:** 905-335-4904 x15 **Address:** 5500 North Service Road, Suite 205 Burlington, ON L7L 6W6		
Consultant:	NRSI (contact: Andrew Ryckman aryckman@nrsi.on.ca)	**Phone #:** 519-725-2227 **Address:** 225 Labrador Drive, Unit 1 Waterloo, ON N2K 4M8		
Generation type:	☒ wind onshore	☐ wind offshore	☐ solar	☐ biomass/biogas
Nameplate Capacity:	75 **MW**			
Name of MNR Records Reviewer:	Heather Riddell Revised by Amy Cameron Jan 24, 2012			
Date Records Compiled:	August 24, 2011			
What Ecodistrict is the project located in?	7E			

Feature Type	**Present within 120m of project location** (yes, no, unknown, N/A)	**Present within project location** (yes, no, unknown, N/A)	**MNR Comments** (comments may expand on information provided and/or may include relevant records within the vicinity that were not within project location or 120m of project area)	**Information Source** (NHIC, district staff, etc. Include the data layer name where possible)
Provincial Park	No	No	Indicate that there are no PP in the records review report and do not carry forward to site investigation.	NRVIS – PP/CR layer
Conservation Reserve	No	No	Indicate that there are no CR in the records review report and do not carry forward to site investigation.	NRVIS – PP/CR layer
Earth Science ANSI*	No	No	Indicate that there are no Earth Science ANSIs in the records review report and do not carry forward to site investigation.	NRVIS – ANSI layer
Life Science ANSI	No	No	Ausable River Valley Life Science ANSI is located approximately 1.6 km from the western extent of the project location. Indicate that there are no Life Science ANSIs in the records review report and do not carry forward to site	NRVIS – ANSI layer

					investigation.	
Wetland			Unknown	Unknown	Big Swamp PSW is located approximately 2.5 km northeast of the eastern extent of the project location. Beechwood PSW is located approximately 2.5 km southeast of the eastern extent of the project location. There are no evaluated wetlands identified in or within 120 m of the project location; however, all woodlands in or within 120 m of the project location should be investigated thoroughly to determine if they contain wetland communities. This determination should be made based on criteria within the Ontario Wetland Evaluation Manual. Carry forward to site investigation.	NRVIS – evaluated wetland layer
Woodland			Yes	Yes	There are 40 polygons identified as wooded areas within 120 m of the project location. This includes approximately 12 hedgerows and two plantations. It appears there are nine wooded areas (five hedgerows) within which the proposed access roads are proposed, one wooded area that may intersect with turbine 43, and six wooded areas that appear to be intersected by proposed distribution cabling (two hedgerows). Carry forward to site investigation.	NRVIS – SWOOP imagery
Valleyland			Unknown	Unknown	13 watercourses appear to be crossed by or within 120 m of the project location. The District Office does not possess Valleylands mapping. Recommend contacting the conservation authority for Valleylands data.	Conservation Authority likely has mapping available. Contact Ausable Bayfield Conservation Authority to obtain this information.
_ASignificant Wildlife Habitat	**Habitats of Seasonal Concentrations of Animals**	**Winter deer yards**	No	No	Winter deer yards are not common in the general area. Include this information in Records Review report and do not carry forward to site investigation.	
		Colonial-Nesting bird breeding habitat (bank and cliff swallows)	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Colonial-Nesting bird	Unknown	Unknown	No records available – information lacking. Carry	

		breeding habitat (tree/shrub)			forward to site investigation.	
		Colonial-Nesting bird breeding habitat (ground)	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Waterfowl stopover and staging areas (terrestrial)	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Waterfowl stopover and staging areas (aquatic)	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Waterfowl nesting habitats	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Shorebird migratory stopover areas	Does not apply to the project location		Project location is greater than 5km from the Great Lakes shoreline. Include this information in Records Review and do not carry forward to site investigation.	
		Landbird (songbird) migratory stopover areas	Does not apply to the project location		Project location is greater than 5 km from Great Lakes shoreline (SWHTG). Include this information in Records Review and do not carry forward to site investigation.	
		Raptor winter feeding and roosting areas	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Wild turkey winter range	Not required			
		Turkey vulture summer roosting areas	Not required			
		Reptile hibernacula (snakes)	Unknown	Unknown	No records available – information lacking. . Carry forward to site investigation. Hedgerows, woodlands and drains could contain rock piles or piled debris that could be considered candidate snake hibernacula. The area within 120 m of the project location should be searched for these types of habitat features.	
		Bat hibernacula	Unknown	Unknown	No records available – information lacking. A search of MNDM AMIS database for abandoned mines and information about caves and karst topography within 1120m of the project location is required by the applicant to complete the records review for this feature. Carry forward to site investigation.	
		Bat maternity colonies	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Amphibian breeding habitat (woodland)	Unknown	Unknown	Carry forward to site investigation. Woodlands located in and within 120 m of the project location could contain vernal pools (SWHTG).	
		Amphibian breeding habitat (wetland) **Note: includes Bullfrog concentration areas**	Unknown	Unknown	Carry forward to site investigation. Woodlands located in and within 120 m of the project location should be further investigated in the field to	

					determine if they are potential wetlands as per the Ontario Wetland Evaluation System manual.	
		Migratory butterfly stopover areas	Does not apply to the project location		Project location is greater than 5 km from Great Lakes (SWHTG). Include this information in Records Review and do not carry forward to site investigation.	
	Rare Vegetation Communities or Specialized Habitats for Wildlife	**Alvars**	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Tall-grass prairies	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Savannahs	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Rare forest types	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Talus slopes	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Rock barrens	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Sand barrens	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Great Lake dunes	Does not apply to the project location		Given the distance from any Great Lakes. Include this information in Records Review and do not carry forward to site investigation.	
		Forests providing high diversity of habitats	Not required			
		Old-growth or mature forest stands	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Foraging areas with abundant mast	Does not apply to project location		No records available – information lacking. Carry forward to site investigation.	
		Turtle nesting habitat	Unknown	Unknown	No records available – information lacking.. Carry forward to site investigation.	
		Turtle over-wintering habitat	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Woodland raptor nesting habitat	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Osprey nesting, foraging and perching habitat	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Moose calving areas	Does not apply to the project location		Include this information in Records Review and do not carry forward to site investigation.	
		Mineral licks	Does not apply to the project location		Include this information in Records Review and do not carry forward to site investigation.	
		Mink, otter, marten, and fisher denning sites	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Highly diverse areas	Not required			
		Cliffs	No	No	Include this information in Records Review and do not carry forward to site investigation.	
		Seeps and	Unknown	Unknown	No records available –	

		springs			information lacking. Carry forward to site investigation.	
	Animal Movement Corridor	**Amphibian Movement Corridor**	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
	Species of Conservation Concern (list all that apply)	**Marsh Bird Breeding Habitat**	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Area Sensitive Breeding Birds (woodlands)	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation. Applicant should refer to the Breeding Bird Atlas Squares for further data to complete the records review.	
		Open Country Breeding Bird Habitat	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation. Applicant should refer to the Breeding Bird Atlas Squares for further data.	
		Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation. Applicant should refer to the Breeding Bird Atlas Squares for further data.	
		Terrestrial Crayfish	Unknown	Unknown	No records available – information lacking. Carry forward to site investigation.	
		Special Concern Species	Unknown	Unknown	Milksnake, Green Dragon, False Rue Anemone, and Eastern Ribbonsnake are common in the area. Carry forward to site investigation.	
		S1-S3, SH species and communities	Unknown	Unknown	No records available – information lacking. Review data available through Biodiversity Explorer. Carry forward to site investigation.	

Is any portion of the project located within the Oak Ridges Moraine Plan Area? ☐ Yes ☒ No

If yes, are any of the following features known to be present on or within 120m of the project location?

- ☐ Sand Barrens
- ☐ Savannagh
- ☐ Tallgrass Prairie
- ☐ Unknown

Is the project location within the Protected Countryside (Greenbelt)? ☐ Yes ☒ No

If yes, are any of the following features known to be present on or within 120m of the project location?

- ☐ Sand Barrens
- ☐ Savannah
- ☐ Tallgrass Prairie
- ☐ Alvar
- ☐ Unknown

* Earth Science ANSI only needs to be considered if it is located within 50m of the project location

Appendix II
Biodiversity Explorer Query Results

Unique Identifier (Element	EO ID	Scientific Name	English Name	French Name	G-rank	S-rank	COSEWIC	SARO	Canada General Status	Ontario General Status	UTM Zone	Easting (nearest km)	Northing (nearest km)	EO Rank	EO Rank Date	First Observed Date	Last Observed Date
180419	654	Seiurus motacilla	Louisiana Waterthrush		G5	S3B	SC	SC	Sensitive	Sensitive	17	427000	4785000	H	1/1/2009	1983	5/17/1984
180419	4538	Seiurus motacilla	Louisiana Waterthrush		G5	S3B	SC	SC	Sensitive	Sensitive	17	434000	4772000	E	########	########	4/30/1990
180753	91663	Graptemys geographica	Northern Map Turtle		G5	S3	SC	SC	Sensitive	Sensitive	17	435000	4769000	H	1/1/2009		6/9/1986
180770	91197	Lampropeltis triangulum	Milksnake		G5	S3	SC	SC	Sensitive	Sensitive	17	434000	4774000	H	1/1/2009		5/19/1982
182542	90680	Thamnophis sauritus	Eastern Ribbonsnake		G5	S3	SC	SC	Sensitive	Sensitive	17	435000	4775000	E			5/22/1989
182542	90761	Thamnophis sauritus	Eastern Ribbonsnake		G5	S3	SC	SC	Sensitive	Sensitive	17	427000	4786000	H	1/1/2009		5/31/1987
181235	41686	Argia sedula	Blue-ringed Dancer		G5	S2					17	434000	4770000	E	########	########	7/9/1999
181236	41690	Argia translata	Dusky Dancer		G5	S2					17	435000	4769000	E	########	########	7/22/1999
181246	41731	Enallagma basidens	Double-striped Bluet		G5	S3					17	435000	4769000	E	########	9/8/1991	9/8/1991
181123	66885	Gomphus graslinellus	Pronghorn Clubtail		G5	S3					17	435000	4769000	E	########	########	6/28/1992
180854	22859	Erynnis brizo	Sleepy Duskywing		G5	S1					17	430000	4787000	E	########	########	5/23/1992
181020	22755	Asterocampa clyton	Tawny Emperor		G5	S2S3					17	455000	4779000	E		########	6/11/1990
32002	32817	Allium tricoccum var. burdickii	Narrow-leaved Wild Leek		G5T4T5	S1?					17	447000	4778000	C	5/8/2001	4/9/1991	4/9/1991
32002	32814	Allium tricoccum var. burdickii	Narrow-leaved Wild Leek		G5T4T5	S1?					17	433000	4771000	E	5/8/2001	########	4/25/1990
24000	2791	Arisaema dracontium	Green Dragon		G5	S3	SC	SC			17	434000	4773000	C	########	########	8/20/2002
24000	2792	Arisaema dracontium	Green Dragon		G5	S3	SC	SC			17	431000	4787000	D	########	########	2000
24000	17333	Arisaema dracontium	Green Dragon		G5	S3	SC	SC			17	433000	4778000	H	1/1/2009	1984	6/11/1988
22062	6007	Aristida longespica var. longespica	Slim-spiked Three-awned Grass		G5T5?	S2					17	448000	4784000	E			9/19/1989
168288	1909	Arnoglossum plantagineum	Tuberous Indian-plantain		G4G5	S3	SC	SC			17	433000	4770000	H	1/1/2009	1950	8/8/1987
83030	34919	Astragalus neglectus	Cooper's Milk-vetch		G4	S3					17	502000	4977000	E	########	########	9/15/1992
83030	64743	Astragalus neglectus	Cooper's Milk-vetch		G4	S3					17	435000	4769000	E			7/25/1999
23094	2843	Carex careyana	Carey's Sedge		G4G5	S2					17	434000	4772000	H	1/1/2009	1987	4/28/1987
23296	2941	Carex meadii	Mead's Sedge		G4G5	S2					17	435000	4769000	H	1/1/2009	1988	6/11/1988
23438	5853	Carex tetanica	Rigid Sedge		G4G5	S3					17	447000	4778000	E		########	5/20/1991
129028	60085	Conioselinum chinense	Chinese Hemlock Parsley		G5	S2					17	431000	4775000	H	1/1/2009		9/8/1984
168364	1820	Coreopsis tripteris	Tall Tickweed		G5	S2					17	446000	4771000	E			9/19/1989
39024	5964	Cypripedium arietinum	Ram's-head Lady's-slipper		G3	S3					17	424000	4784000	C	########	7/1/1978	1994
39024	22251	Cypripedium arietinum	Ram's-head Lady's-slipper		G3	S3					17	440000	4789000	H	4/7/2004		1986-PRE
22194	6046	Diarrhena obovata	Ovate Beak Grass		G4G5	S1					17	433000	4772000	E		########	8/15/1990
22736	64638	Elymus curvatus	Awnless Wild Rye		G4G5	S2S3					17	432000	4772000	E			9/15/1992
129038	63849	Erigenia bulbosa	Harbinger-of-spring		G5	S3?					17	434000	4774000	H	1/1/2009		4/28/1987
129038	1649	Erigenia bulbosa	Harbinger-of-spring		G5	S3?					17	441000	4770000	H	1/1/2009	1988	3/31/1988
129038	64109	Erigenia bulbosa	Harbinger-of-spring		G5	S3?					17	447000	4778000	E			4/9/1991
129038	63689	Erigenia bulbosa	Harbinger-of-spring		G5	S3?					17	433000	4771000	H			5/10/1982
100008	2003	Euonymus atropurpureus	Burning Bush		G5	S3					17	427000	4785000	H	1/1/2009	1983	11/21/1983
141016	32628	Fraxinus profunda	Pumpkin Ash		G4	S2?					17	424000	4784000	E		1994	1994
161026	2619	Galium pilosum	Hairy Bedstraw		G5	S3					17	428000	4785000	H	1/1/2009	1977	11/21/1983
161026	5599	Galium pilosum	Hairy Bedstraw		G5	S3					17	447000	4778000	E		########	8/24/1993
143030	33011	Gentianella quinquefolia	Stiff Gentian		G5	S2					17	435000	4769000	E		########	9/17/1991
32050	3222	Hypoxis hirsuta	Yellow Stargrass		G5	S3					17	426000	4786000	H	1/1/2009	1983	6/24/1983
168594	1857	Liatris aspera	Tall Blazing Star		G4G5	S2					17	428000	4785000	H	1/1/2009	1983	11/21/1983
149032	34051	Lithospermum latifolium	American Gromwell		G4	S3					17	433000	4771000	E		########	8/15/1990
149032	34050	Lithospermum latifolium	American Gromwell		G4	S3					17	432000	4772000	E		########	9/15/1992
121006	5451	Lythrum alatum	Winged Loosestrife		G5	S3					17	447000	4778000	E		########	8/15/1990
121006	64233	Lythrum alatum	Winged Loosestrife		G5	S3					17	446000	4771000	E			9/19/1989
121006	63898	Lythrum alatum	Winged Loosestrife		G5	S3					17	441000	4779000	E			8/15/1990
22440	3467	Muhlenbergia tenuiflora	Slim-flowered Muhly		G5	S2					17	433000	4771000	E		1990	8/15/1990
17241	64161	Packera paupercula var. pseudotomentosa	False Tomentose Balsam Groundsel		G5TNR	S2S3					17	441000	4779000	E			5/20/1991
22470	6107	Panicum rigidulum	Redtop Panic Grass		G5	S3					17	447000	4778000	E		########	8/15/1990
147010	2497	Phlox subulata	Moss Phlox		G5	S1?					17	426000	4785000	H			5/24/1906
151116	64401	Pycnanthemum tenuifolium	Slender Mountain-mint		G5	S3					17	441000	4779000	E	########	9/9/1990	9/9/1990
168662	5173	Ratibida pinnata	Gray-headed Prairie Coneflower		G5	S3					17	441000	4779000	E		########	8/15/1990
23652	5919	Scirpus expansus	Woodland Bulrush		G4	S1					17	432000	4772000	E		########	9/15/1992
151148	5436	Scutellaria parvula var. missouriensis	Leonard's Small Skullcap		G4T4	S3					17	441000	4779000	D	9/8/1999	########	8/15/1990
168762	5202	Solidago riddellii	Riddell's Goldenrod		G5	S3	SC	SC			17	447000	4778000	BC	########	########	8/24/1993
168762	5200	Solidago riddellii	Riddell's Goldenrod		G5	S3	SC	SC			17	435000	4769000	B	########	########	9/17/1991
168762	5201	Solidago riddellii	Riddell's Goldenrod		G5	S3	SC	SC			17	432000	4772000	B	########	########	9/15/1992
168768	5206	Solidago rigida ssp. rigida	Stiff Goldenrod		G5T5	S3					17	438000	4780000	E		9/9/1990	9/9/1990
168768	64509	Solidago rigida ssp. rigida	Stiff Goldenrod		G5T5	S3					17	436000	4780000	E			9/9/1990
162054	5299	Triosteum perfoliatum	Perfoliate Tinkersweed		G5	S1					17	432000	4772000	E		########	9/15/1992
168858	1901	Vernonia gigantea	Giant Ironweed		G5	S1?					17	426000	4786000	H	1/1/2009	1983	11/21/1983
115068	33732	Viola striata	Striped Cream Violet		G5	S3					17	447000	4779000	E		########	5/11/1993
115068	2760	Viola striata	Striped Cream Violet		G5	S3					17	434000	4773000	E		########	5/5/1992