NORTHLAND POWER

Belleville South Solar Project

Draft Natural Heritage Site Investigation Report

March 18, 2011

Northland Power Inc.
on behalf of
Northland Power Solar
Belleville South L.P.
Toronto, Ontario

DRAFT Natural Heritage Site Investigation Report

Belleville South Solar Project

H334844-0000-07-124-0037
Rev. 0
March 18, 2011

Project Report

March 18, 2011

Northland Power Inc.
Belleville South Solar Project

DRAFT Natural Heritage Site Investigation Report

Table of Contents

List of Tables

List of Figures

blank back

1. Introduction

1.1 Project Description

Northland Power Solar Belleville South L.P. (hereinafter referred to as "Northland") is proposing to develop a 10-megawatt (MW) solar photovoltaic (PV) project titled Belleville South Solar Project (hereinafter referred to as the "Project"). The Project will be located on approximately 40 hectares (ha) of land, located in the single-tier municipality of the Corporation of the County of Prince Edward (Figure 1.1).

1.2 Legislative 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 Renewable Energy Approval (REA) requirements for renewable energy projects in Ontario. Per Section 4 of the REA Regulation, ground-mounted solar facilities with a nameplate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities and require a REA.

Section 26 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage site investigation for the purpose of determining

- whether the results of the analysis summarized in the (natural heritage records review) report prepared under Subsection 25(3) are correct or require correction, and identifying any required corrections
- whether any additional natural features exist, other than those that were identified in the Natural Heritage Records Review report prepared under Subsection 25(3); and
- the boundaries, located within 120 m of the Project location, of any natural feature that was identified in the records review or the site investigation; and
- the distance from the Project location to the boundaries determined under clause (c).

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 26 of the REA Regulation requires the proponent to prepare a report setting out the following:

1. A summary of any corrections to the report prepared under Subsection 25(3) and the determinations made as a result of conducting the site investigations under Subsection (1).
2. Information relating to each natural feature identified in the records review and in the site investigations, including the type, attributes, composition and function of the feature.
3. A map showing
   i. the boundaries mentioned in clause (1) (c)
   ii. the location and type of each natural feature identified in relation to the Project location, and
   iii. the distance mentioned in clause (1) (d).
4. The dates and times of the beginning and completion of the site investigation.
5. The duration of the site investigation.
6. The weather conditions during the site investigation.
7. A summary of methods used to make observations for the purposes of the site investigation.
8. The name and qualifications of any person conducting the site investigation.
9. Field notes kept by the person conducting the site investigation.

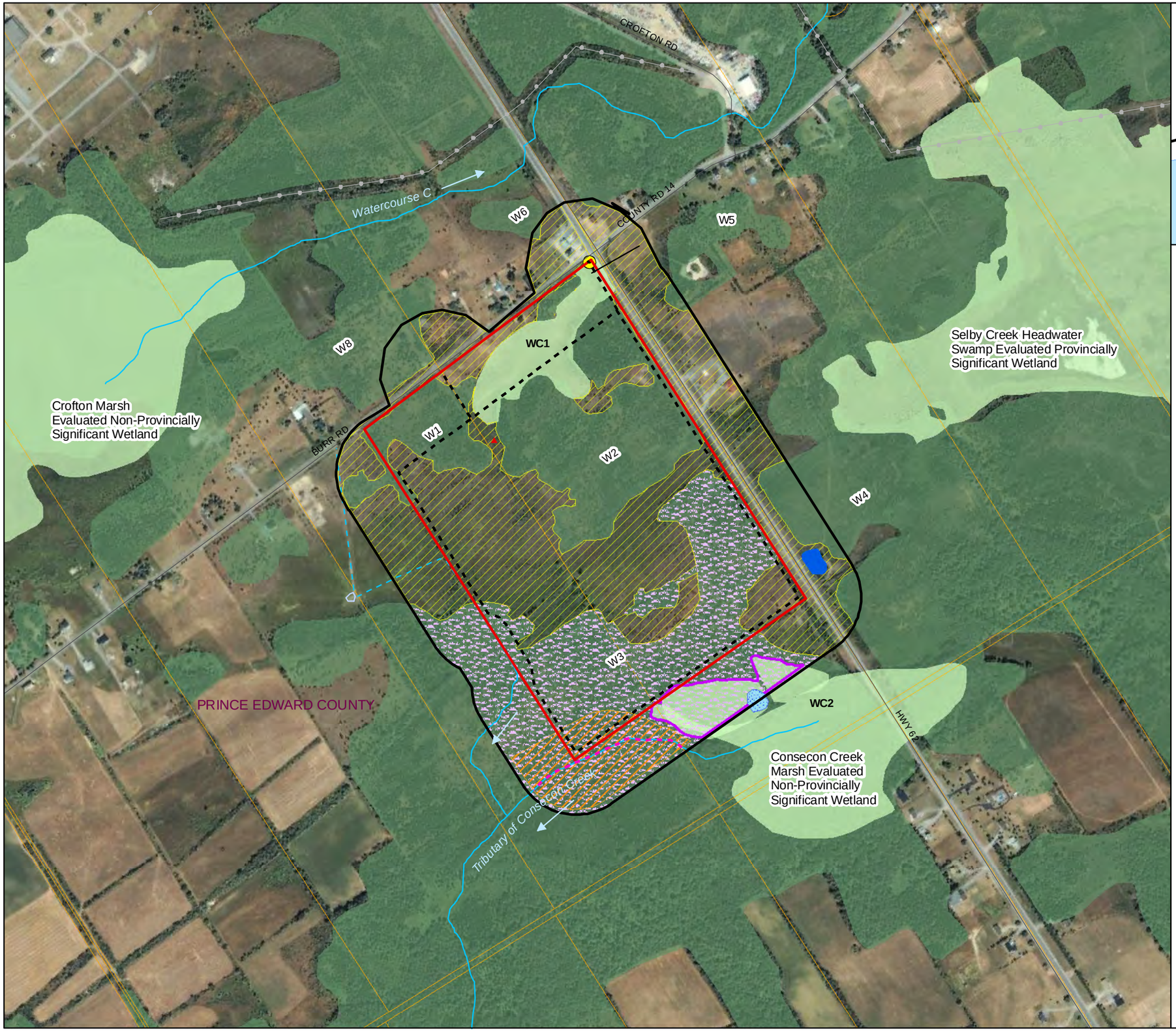
This Natural Heritage Site Investigations Report has been prepared to meet these requirements.

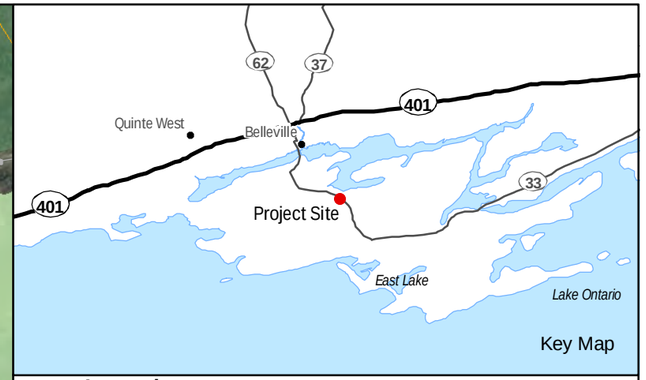
2. Summary of Results of Records Review

Table 2.1 summarizes the results of the records review (Hatch Ltd., 2010a).

Table 2.1 Summary of Records Review Determinations

Determination to be Made	Yes/No	Description
Is the Project in a natural feature?	Yes	There are woodlands identified on the Project location.
Is the Project within 50 m of an ANSI (earth science)?	No	The nearest earth science ANSI is located several kilometres from the Project location.
Is the Project within 120 m of a natural feature that is not an ANSI (earth science)?	Yes	There are woodlands and the Consecon Creek Marsh Evaluated Non-Provincially Significant Wetland (ENPSW) located within 120 m of the Project location.





Legend

- Milksnake Observation July 2010
- Roads
- Transmission Line
- Available Lands
- 120m from Project Location
- Parcels

Natural Heritage Features

- Dug-out Pond
- Wetland (WC1 Identifier)
- Woodland (W1 Identifier)
- Woodland Supporting Amphibian Breeding Habitat
- Amphibian Breeding Habitat (Wetland)
- Area-Sensitive Breeding Bird Habitat
- Milksnake Foraging Habitat
- Western Chorus Frog Habitat
- Amphibian Movement Corridor

Project Components

- Project Location
- Connection Point With Existing Distribution Line

NORTH

Notes:
1. OBM and NRVIS data downloaded from LIO, with permission.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery from Google Earth Pro.

0 50 100 200 Metres

1:7,500

Figure 1.1

Northland Power Inc.

Belleville South Solar Project

Project Location and Natural Heritage Features

HATCH

P:\NORTHLAND\333751\DATABASES\334844\GIS\Belleville South - Land Investigtaion.mxd

BLANK BACK

3. Site Investigation Methodology

3.1 Hatch Site Visit

3.1.1 Date, Time and Duration of Site Investigation

- Date: June 14, 2010
- Start Time 1: 15:00 hours
- Duration: approximately 4 hours
- Start Time 2: 21:00 hours
- Duration: approximately 1 hour

3.1.2 Weather Conditions During Site Investigation

- Temperature: 22°C
- Beaufort Wind: 2
- Cloud Cover: 100%

3.1.3 Name and Qualifications of Person Conducting Site Investigation

The site investigation was completed by Martine Esraelian.

Martine Esraelian, B.Sc. is an Environmental Scientist specializing in species at risk and terrestrial ecosystems. She has a B.Sc. from Trent University where she specialized in Conservation Biology and Ecological Management and an Ecosystem Management Technician diploma from Sir Sandford Fleming College. During her time at Trent University, she completed a 1-yr internship with the Ministry of Natural Resources (MNR) which involved developing a genetic-based protocol for the extraction of DNA from unknown turtle eggshells to assist with species identification. The project entailed extensive molecular genetics research and intensive lab work to develop a protocol able to supplement existing conservation management practices.

She offers expertise across the full breadth of the field from environmental assessments and technical analysis of environmental data to conservation management, corporate and government consulting, and community outreach. Martine has liaised with all levels of government, the community, and a portfolio of clients that includes consulting firms, planners, and high-profile developers. She has both technical and hands-on experience conducting site investigations (terrestrial and aquatic), evaluations of significance, environmental and agricultural impact studies, constraint analyses, water quality and soil assessments, species at risk, wildlife management and fisheries studies to meet regulatory requirements.

Martine has a wide range of field experience related to terrestrial and aquatic ecosystems and species at risk. She has conducted reptile and amphibian surveys, small-mammal trapping, benthic invertebrate monitoring and fisheries inventories (seine netting and electrofishing). She has conducted detailed natural areas inventories which involve species identification of flora and fauna,

vegetation community mapping, identifying rare vegetation communities and significant wildlife habitats.

Martine has project management and fieldwork experience for a number of species at risk monitoring projects. Some of the species she has been involved with include: fowler's toad, eastern massasauga rattlesnake, eastern ratsnake, queensnake, eastern ribbonsnake, milksnake, blanding's turtle, map turtle, spotted turtle, snapping turtle, Jefferson salamander, northern dusky and mountain alleghany dusky salamander, butternut, flowering dogwood, swamp rose mallow and spoon-leaved moss.

Martine is a certified Butternut Health Assessor and also holds a certificate in the Ecological Land Classification (ELC) system.

3.1.4 Survey Methods

For the site investigation, the entire site was searched by the observer on foot in order to document natural features. Photographs of the site were taken. Any observations of wildlife, vegetation or natural features were noted. Natural features were identified in consideration of the criteria identified within Regulation, the Natural Heritage Reference Manual [Ministry of Natural Resources (MNR, 2009)] and the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000).

Vegetation communities on and within 120 m of the Project location were generally characterized according to the Ecological Land Classification for Southern Ontario.

Areas of Natural and Scientific Interest, both earth and life science, were not considered during the site investigation as these features are identified solely by the MNR and none are identified within 120 m of the Project location.

Criteria for identification of natural features are outlined in Table 3.1.

A copy of the field notes kept by the observer is provided in Appendix A.

3.2 Natural Resource Solutions Inc. Site Visit

NRSI conducted a site investigation in order to determine boundaries and evaluate significance of wetland communities. Names, qualifications and survey methodologies are identified within their report provided in Appendix B.

3.2.1 Date, Time and Duration of Site Investigation

- Date: August 10, 2010
- Start Time: 0850 hours
- Duration: 8 hours

3.2.2 Weather Conditions During Site Investigation

- Temperature: 24 °C
- Beaufort Wind: 1 (0 to 5.6 km/h)
- Cloud Cover: 100%.

Table 3.1 Natural Features and the Criteria for Identification Considered During the Site Investigation

Natural Feature	Criteria/Methodology for Identification
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 • is seasonally or permanently covered by shallow water or has the water table close to or at the surface, and • has hydric soils and vegetation dominated by hydrophytic or water-tolerant plants. Wetlands were identified in relation to the criteria established in the Ontario Wetland Evaluation System.
Woodland	Areas that have, per hectare, at least • 1000 trees of any size • 750 trees measuring over 5 cm in diameter • 500 trees measuring over 12 cm in diameter; or • 250 trees measuring over 20 cm in diameter; and that does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees. Woodlands were identified through the use of Ecological Land Classification.
Valleyland	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. Valleylands were identified based on observations of site topography.
Wildlife Habitat	An 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. Criteria and methodologies for identification of wildlife habitats are provided within the Significant Wildlife Habitat Technical Guide (MNR, 2000) and associated addendum (MNR, 2009).

4. Results of Site Investigation

4.1 Valleyland

No valleylands were identified on or within 120 m of the Project location during the site investigation.

4.2 Wetland

There was a single wetland community identified with occurrence on the Project location. This wetland community is characterized as reM4 [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]. This wetland community is contiguous with another small wetland community within 120 m of the Project location, characterized as reM5 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]. This wetland complex is referred to as Wetland Complex 1. In

addition, it was determined that these wetland communities should be complexed with the Crofton Marsh Evaluated Non-Provincially Significant Wetland (see Figure 1.1), located more than 120 m northwest of the Project location.

Within 120 m south of the Project location, three wetland communities were identified (see Figure 1.1), hereafter referred to as Wetland Complex 2. These wetland communities were characterized as

- reM1 [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]
- neM3 [ELC: Mixed Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
- neM2 [ELC: Forb Mineral Shallow Marsh Ecosite (MASM2)].

In addition, these wetland communities within 120 m south of the Project location were determined to be part of the complex of the Consecon Creek Marsh Evaluated Non-Provincially Significant Wetland (see Figure 1.1), located within and beyond 120 m from the Project location.

Additional information on these wetland communities, including description of species observed during the site investigations, is provided within Appendix B.

Wildlife habitat functions of the various wetland communities are addressed in Section 4.3, where applicable. Other functions that the wetland may provide include:

- Primary production – Primary productions describes the relationship whereby plants absorb sunlight to create energy; this is often the starting point of energy flow through a food chain. Wetland communities, particularly those near flowing water sources which constantly provide new nutrients to the system, are regarded as having high primary production when compared to other ecosystems. As such, the wetland communities within 120 m of the Project location provide primary production functions
- Watershed protection – Wetland communities provide protection of watersheds through (i) filtration of surface water inflow thereby improving water quality, (ii) flood control by trapping water flowing into a watercourse, and slowly releasing it, and (iii) protecting the shoreline of the watercourse from erosion by slowing the flow of water along the banks.
- Preservation of biodiversity – Wetland communities help preserve biodiversity by providing habitat for wetland obligate species of flora and fauna.
- Fish habitat – open water communities within the Wetland Complex 2 provide habitat for fish communities
- Support of natural cycles – wetland communities provide an important component of support for carbon, nitrogen and water

4.3 Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) identifies four main types of wildlife habitat:

- habitat for seasonal concentrations of animals

- rare or specialized habitats for wildlife
- habitat for species of conservation concern,
- wildlife movement corridors.

Each of these types of wildlife habitat have several specific wildlife habitats associated with them. In order to determine which of the specific wildlife habitats were to be considered during the site investigation, the Draft Significant Wildlife Habitat Ecoregion Criteria Schedules (MNR, 2009) were consulted for Ecoregion 6E, which encompasses the Project location.

In order to use the Ecoregion Criteria Schedules, Ecological Land Classification was completed for all lands on and within 120 m of the Project location. A map of the ELC communities on and within 120 m of the Project location is provided in Figure 4.1.

Wildlife habitats considered during the site investigation are discussed by wildlife habitat type below.

4.3.1.1 Habitats of Seasonal Concentrations of Animals

Habitats of Seasonal Concentrations of Animals that were considered during the site investigations as a result of suitable habitat types identified through ELC Ecosite Codes include the following.

Waterfowl Stopover and Staging Areas (Terrestrial) – ELC Code: Cultural Meadow (CUM)

Habitat characteristics of terrestrial waterfowl stopover and staging areas were considered during the site investigation. No evidence of seasonally flooded areas (i.e., agricultural fields with vegetation communities consistent with areas that would be exposed to seasonal flooding) were detected during the site investigation. As a result, based on the results of the site investigation there is no evidence of this habitat type on or within 120 m of the Project location

Waterfowl Stopover and Staging areas (Aquatic) – ELC Code: Meadow Marsh (MAMM) and Shallow Marsh (MASM)

Locations of these habitat types (meadow marsh and shallow marsh) on and within 120 m of the Project location are limited to occurrences within 120 m of the southern boundary of the Project location, and on and within 120 m of the northeastern corner (see Figure 4.1).

Based on the small size of the wetland communities present on and within 120 m of the Project location, it is unlikely that these features would be capable of supporting large numbers of waterfowl (more than 100). Further, the abundance of large wetland communities present within the regional area indicates that these small areas of habitat located near major roadways would not be preferred habitats for migrating waterfowl.

Therefore, based on the results of the site investigation, there is no evidence that this habitat type is found on or within 120 m of the Project location.

Colonial-Nesting Bird Breeding Habitat – ELC Code: Cultural Meadow (CUM)

Cultural meadows on and within 120 m of the Project location were searched for eroding banks, sandy hills, steep slopes, rock faces or piles. None of these habitat features were identified on or

within 120 m of the Project location. Therefore, suitable habitat to support colonial-nesting bird breeding was not found on or within 120 m of the Project location.

Shorebird Migratory Stopover Area – ELC Code: Meadow Marsh (MAM)
Characteristics of the meadow marsh habitat identified within 120 m of the Project location were considered in relation to provision of shorebird migratory stopover areas. The wetland was not identified as having a muddy or unvegetated shoreline that would identify preferred shorebird foraging habitat. Therefore, the results of the site investigation determined that there is no evidence of shorebird migratory stopover areas on or within 120 m of the Project location.

Songbird Migratory Stopover Area – ELC Code: Coniferous Forest (FOC), Deciduous Forest (FOD)
Songbird migratory stopover areas are found within woodlands located within 5 km of Lake Ontario. As the Project location is more than 5 km from the shoreline of Lake Ontario, conditions supportive of this habitat type are not present on or within 120 m of the Project location.

Raptor Wintering Area – ELC Code: Coniferous Forest (FOC), Deciduous Forest, Cultural Meadow (CUM)
This combined habitat type features suitable raptor roosting sites in proximity to winter feeding areas.

The coniferous forest communities identified within 120 m of the Project location were generally identified as immature forest communities (see Section 4.4). Immature forest communities are not preferred raptor winter roosting or resting sites as immature forests lack the closed canopies of mature forests and therefore reduced shelter functions.

As a result of the age range of the forest communities, it is determined that there is no presence of raptor wintering area on or within 120 m of the Project location.

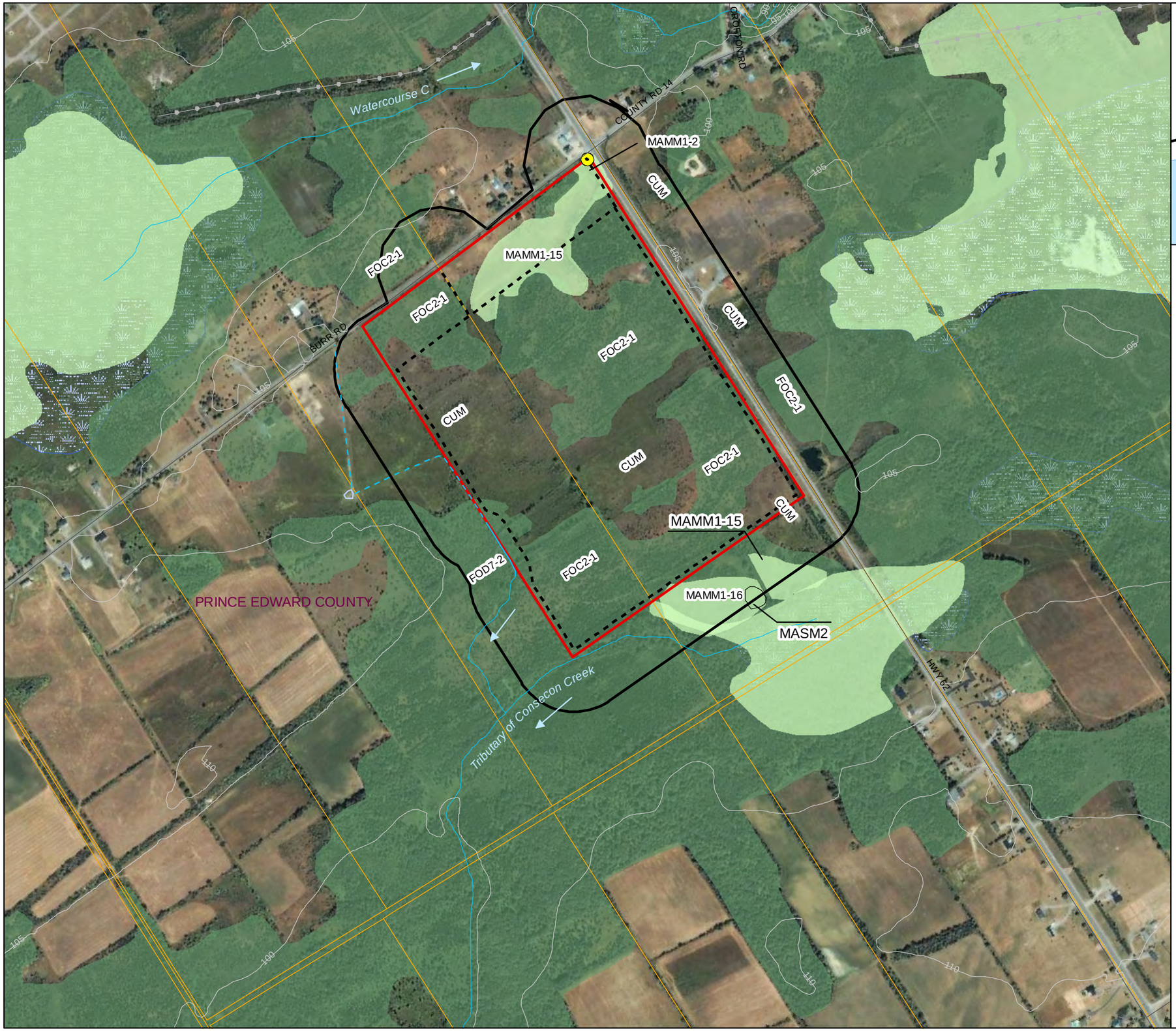
Bat Maternal Colonies – No ELC Codes

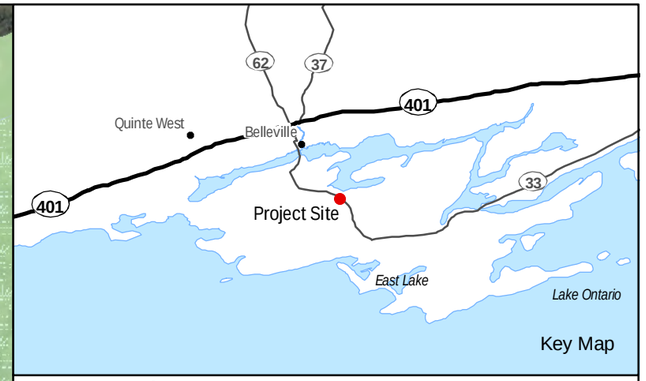
Bat maternal colonies are often found in trees with loose bark, or tree cavities/hollow trees. Given that the majority of trees on and within 120 m of the Project location are cedar trees, a species which does not commonly have loose bark or tree cavities/hollow snags, this habitat type is determined to not be present. In addition, deciduous woodland communities within 120 m of the Project location were composed of immature (i.e., no hollow snags or tree cavities) ash trees, a species that is not associated with loose bark.

As a result, this habitat type is not found on or within 120 m of the Project location.

Butterfly Migratory Route/Stopover Area – ELC Code: Coniferous Forest (FOC), Cultural Meadow (CUM)
Butterfly stopover areas are found within fields and woodlands located within 5 km of Lake Ontario. As the Project location is more than 5 km from the shoreline of Lake Ontario, conditions supportive of this habitat type are not present on or within 120 m of the Project location.

Snake hibernaculum – No ELC Code Specified
Snake hibernaculum are found in association with rock piles or steep slopes, stone fences, and crumbling foundations. There was a single rock pile noted in the northern-western extent of the Project location (see Figure 4.2). The material within the rock pile was considered to be too granular, and too compacted, to provide crevices capable of supporting snake hibernation.





Legend

- Roads
- Transmission Line
- Topographic Contour (5m interval)
- Watercourse
- Grassed Waterway
- Available Lands
- Project Location
- 120m from Project Location
- Parcels
- Evaluated Wetland
- Unevaluated Wetland
- Woodland

Project Components

- Connection Point With Existing Distribution Line

Ecological Land Classification

CUM	Cultural Meadow
FOC2-1	Dry-Fresh Red Cedar Coniferous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
MAMM1-15	Bulrush Graminoid Mineral Meadow Marsh Type
MAMM1-16	Mixed Graminoid Mineral Meadow Marsh Type
MAMM1-2	Cattail Graminoid Mineral Meadow Marsh Type
MASM2	Forb Mineral Shallow Marsh Ecosite

Notes:
1. OBM and NRVIS data downloaded from LIO, with permission.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery from Google Earth Pro.

NORTH

0 50 100 200 Metres

1:7,500

Figure 4.1
Northland Power Inc.
Belleville South Solar Project
Ecological Land Classification

HATCH

P:\NORTHLAND\33375\1\DATABASES\33484\GIS\Belleville South - Land Investigation\EC.mxd

Therefore, no evidence of conditions supportive of snake hibernaculum were identified during the site investigation on or within 120 m of the Project location.

However, it is acknowledged that Prince Edward County commonly has areas with shallow bedrock exposures, whereby fissures within the bedrock may provide suitable conditions for snake hibernculum. Often, these features would not be visible on the surface, and may become exposed and therefore available for use as a result of construction activities. As a result, though an evaluation of significance is not required for this feature, monitoring measures will be incorporated within the Environmental Effects Monitoring Plan identified within the Environmental Impact Study to ensure that the construction workforce is aware of both (i) the possibility of large numbers of snakes being present on the Project location during construction in the spring or fall, and (ii) that suitable snake hibernacula habitat may become present during construction and to be aware of these features. This will include identification of measures to be undertaken should either large numbers of snakes or suitable hibernaculum habitats be identified.

Figure 4.2 View of the Rock Pile within the Northwestern Extent of the Project Location

Deer Wintering Areas – ELC Code: Coniferous Forest (FOC)

Deer wintering areas are found in woodlands with canopy cover of more than 60%. Based on interpretation of aerial photography of the coniferous forest on and within 120 m of the Project location, a dense canopy cover is not observed. Though specific densities were not recorded in the field, observers identified the woodlands as low densities based on recollections from the site investigation.

Further, snow depths within the area must be greater than 40 cm for more than 60 days in a typical winter. The nearest climate monitoring station to the Project location is Belleville where average snowfall at month's end in the winter is less than 20 cm (Environment Canada, 2010).

Therefore, conditions suitable for provision of deer wintering areas are not identified on or within 120 m of the Project location.

Amphibian Breeding Habitat (woodland) – ELC Code: Coniferous Forest (FOC), Deciduous Forest (FOD)

Woodlands on and within 120 m of the Project location were searched for permanent, seasonal or ephemeral wetland breeding pools. Ephemeral or seasonal breeding pools were searched for based on characteristics of vegetation communities, i.e., presence of species requiring wet environments). No vegetation communities that would indicate the presence of ephemeral or seasonal breeding pools, or permanent breeding pools, were identified within the woodlands within 120 m of the Project location. Therefore, based on the site investigations, there is no evidence that amphibian breeding habitat is present within the woodlands on or within 120 m of the Project location.

Amphibian Breeding Habitat (wetland) – ELC Code: Meadow Marsh (MAM), Shallow Marsh (MAS)

Surveys of the wetland community determined that this habitat type is found within the wetland communities present on and within 120 m of the Project location. Further, Green Frogs were recorded within the shallow marsh community located within 120 m south of the Project location. No frogs were recorded in the other habitat types. Therefore, the shallow marsh habitat type is carried forward to the evaluation of significance. Further, as the wetland community associated with this open water habitat is surrounded by a woodland community, the woodland surrounding the wetland is also identified as significant wildlife habitat supporting the amphibian breeding pond.

In addition, there is a manmade pond within 120 m of the Project location across County Road 62, opposite the southeast corner of the Project location. The characteristics of this pond (manmade, isolated from the wetland community, adjacent to the roadway), indicated that though this feature likely provides some breeding habitat for amphibians, it does not meet the requirement of significant wildlife habitat.

4.3.1.1.1 Conclusion

Of the seasonal concentration areas, only amphibian breeding habitat (wetland) was identified on or within 120 m of the Project location.

4.3.1.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

4.3.1.2.1 Rare Vegetation Communities

Rare vegetation communities include alvars, tall-grass prairies, savannahs, rare forest types, talus slopes, rock barrens, sand barrens, Great Lakes dunes, and old growth forest. Of these habitat types, ELC Ecosite Codes were only identified in respect of Old Growth Forest. This is discussed further below.

Old Growth Forest – ELC Code: Coniferous Forest (FOC), Deciduous Forest (FOD)

Characteristics of old-growth forest were considered in relation to forest communities identified on and within 120 m of the Project location. Based on observations during the site investigation, forest communities were not described as mature forest communities (i.e., not structurally complex, limited

age classes), and therefore this habitat type is not found on or within 120 m of the Project location. See Section 4.4 for further discussion of the woodland communities.

4.3.1.2.2 Specialized Habitat for Wildlife

Specialized wildlife habitats include

- areas that support species that have highly specific habitat requirements
- areas with high species and community diversity
- areas that provide habitat that greatly enhances species survival.

Habitats of Seasonal Concentrations of Animals that were considered during the site investigations include the following.

Waterfowl Nesting Area – ELC Code: Meadow Marsh (MAM), Shallow Marsh (MAS)
Area searches of suitable waterfowl breeding habitat were conducted during the waterfowl breeding season for evidence of occupancy by waterfowl. No waterfowl were recorded, though it is acknowledged that surveys were conducted during the latter half of the breeding season.

Areas of shallow marsh and meadow marsh present within 120 m of the Project location were not identified as containing sufficient open water habitats to support waterfowl foraging, and therefore an absence of waterfowl nesting habitat is noted from the potential habitat areas.

Therefore, based on habitat conditions observed during the site investigation, the presence of such habitat on or within 120 m of the Project location is not supported.

Osprey Nesting, Foraging and Perching Habitat – no ELC Code (Woodlands Adjacent to Wetlands)
Wetland habitats present on and within 120 m of the Project location were determined to not be suitable for Osprey foraging given the small amount of open water recorded within most communities. Therefore, though forest communities are located adjacent to wetlands, this habitat type does not support osprey foraging and therefore does not meet the requirements of this habitat type.

Woodland Raptor Nesting Habitat (Woodland) –
ELC Code: Coniferous Forest (FOC), Deciduous Forest (FOD)
Characteristics of the woodlands on and within 120 m of the Project location were considered in relation to potential for provision of raptor nesting habitat. Woodlands must be greater than 10 ha in size in order to provide this wildlife habitat. Woodlands 2 and 3 on and within 120 m of the Project location, and Woodland 4 and 7 within 120 m of the Project location are all greater than 10 ha in size.

Woodland communities on and within 120 m of the Project location are predominantly composed of immature red cedar, a habitat type that is not commonly associated with raptor nesting (Szuba and Naylor, 1998). The exception to nesting within red cedar is Sharp-shinned hawks, which are uncommonly known to nest within dense groves of red cedar (Szuba and Naylor, 1998); given that red cedar forest communities on and within 120 m of the Project location were described as being of low density, based on recollections from field visits and interpretation of satellite imagery, this habitat type is not suitable for raptor nesting.

The section of deciduous woodland was also described as immature, and therefore would not contain trees of a sufficient size to support raptor nesting.

As a result, this habitat type is not found on or within 120 m of the Project location.

Turtle Nesting and Over-wintering Areas –
ELC Code: Meadow Marsh (MAM), Shallow Marsh (MAS)
Turtle nesting areas consists of sand and/or gravel habitats in proximity to the identified wetlands. Though some areas of sand and or gravel substrate were recorded during the site investigation in the northeastern corner of the Project location, these areas were identified as too compact to support turtle nesting, and isolated from wetland communities capable of supporting turtles (i.e., those within 120 m south of the Project location). Therefore, such habitat types were not identified on or within 120 m of the Project location during the site investigation.

Turtle over-wintering areas consist of permanent waterbodies, large wetlands, and bog or fens with adequate dissolve oxygen. No large permanent waterbodies were identified on or within 120 m of the Project location. Therefore this habitat type is not found on or within 120 m of the Project location.

Seeps and Springs – ELC Code: Forest/Swamp Communities (FO/SW)
No seeps or springs were identified on or within 120 m of the Project location during the site investigation.

4.3.1.2.3 Conclusion

Based on the results of the site investigation, no rare vegetation communities or specialized habitats for wildlife were identified on or within 120 m of the Project location.

4.3.1.3 Habitat of Species of Conservation Concern

Habitats types for species of conservation concern that were considered during the site investigation included the following.

Marsh Bird Breeding Habitat – ELC Code: Meadow Marsh (MAM)
Areas of meadow marsh are found on and within 120 m of the Project location, though these habitats are extremely limited. Area searches of marshland habitats were conducted during the latter half of the breeding bird season; none of the species listed in Table 1.3 of MNR (2009) were recorded within these habitats. Further, the characteristics of the marshland communities (small size, shallow water, no mudflats) indicate that it does not provide suitable habitat for the majority of species identified Table 1.3 (the exception being Marsh or Sedge Wrens, which were not detected during the surveys). As a result, given the conditions of potential available habitat; this habitat type is not found on or within 120 m of the Project location.

Area-Sensitive Bird Breeding Habitat –
ELC Code: Coniferous Forest (FOC) and Deciduous Forest (FOD)
These habitat types are found in either large mature forest stands or woodlands greater than 30 ha in size. There are only three woodlands that are greater than 30 ha in size (Woodlands 3, 4 and 7). Woodlands 4 and 7 have minor occurrence within 120 m of the Project location. Further the portions of these woodlands present within 120 m of the Project location do not provide interior forest habitat, nor, based on the shape of the woodland, do they contribute to provision of forest

interior habitats. Therefore, these woodlands do not provide such habitat within 120 m of the Project location.

Woodland 3 has occurrence on the Project location and within 120 m, however similar to the above, the state of the woodland community (with existing forest gaps) restricts presence of interior forest woodland to locations off of the Project location (see Figure 1.1). Therefore, this habitat type is found within 120 m of the Project location, though portions of the woodland on the Project location are required to support this habitat. Therefore, area-sensitive bird breeding habitat is found on and within 120 m of the Project location.

Open-Country Bird Breeding Habitat – ELC Code: Cultural Meadow (CUM)

Though the Napanee Limestone Plain Important Bird Area is identified as such for the provision of habitat for grassland breeding birds, as cultural meadow communities on and within 120 m of the Project location are heavily fragmented by woodland and wetland communities, this habitat type is not found on or within 120 m of the Project location.

Special Concern and S1-S3 Species

The following Special Concern and S1-S3 species were considered during the site investigation:

- Climbing Prairie Rose – No Climbing Prairie Rose were recorded during the site investigation. It is not expected that they are present on the Project location as they would have been detected during the site investigation. However, in order to ensure that this species is not present on the Project location, prior to removal of vegetation from the hedgerow or small woodland communities, these areas will be searched for Climbing Prairie Rose.
- Red-headed Woodpecker – As surveys were conducted during the latter half of the breeding bird period, and since Red-headed Woodpeckers are a conspicuous species that would be expected to be observed were they present, it is expected that if Red-headed Woodpeckers were present on site that they would likely have been detected. Further, trees suitable for use by Red-headed Woodpeckers as nest support were not observed. Therefore, habitat for Red-headed Woodpecker is not present on or within 120 m of the Project location.
- Cerulean Warbler – Suitable habitat (mature deciduous forests) was not found on or within 120 m of the Project location. Therefore, they are not found on or within 120 m of the Project location.
- Common Nighthawk — There is very little bare ground present on the Project location that would serve as suitable breeding habitat for Common Nighthawk. Areas of suitable habitat, such as the roadways to the agricultural fields, were walked during the time period suitable for Common Nighthawk nesting and no nighthawks were observed. Further, no Common Nighthawk were noted during the crepuscular survey of the study area. Therefore, Common Nighthawk habitat is not considered to be present on or within 120 m of the Project location.
- Milksnake – As Milksnake are habitat generalists, suitable habitat is present on and within 120 m of the Project location. All cultural meadow communities on and within 120 m of the Project location would provide foraging habitat. No other specific habitat features for Milksnake have been identified on or within 120 m of the Project location. Further, a Milksnake was recorded on the Project location during the site investigation. Therefore, all cultural meadow communities are considered to be significant Milksnake foraging habitat.

- Northern Ribbonsnake/Snapping Turtle/Northern Map Turtle — Suitable habitat for these species that rely on open water habitats was not identified on or within 120 m of the Project location during the site investigation. Watercourses within 120 m of the Project location are described as intermittent waterbodies that primarily provide stormwater conveyance functions (see Hatch 2010b).
- Western Chorus Frog – Though not observed during the site investigation, suitable habitat for Western Chorus Frog is found within the wetland within 120 m south of the Project location. As a result, this habitat type is found within 120 m of the Project location.

Based on the results of the site investigation, habitat for Milksnake and Western Chorus Frog will be considered during the evaluation of significance.

4.3.1.3.1 Conclusions

Based on the results of the site investigation discussed above, habitat for species of conservation concern were detected in relation to

- area sensitive bird breeding habitat
- habitat for Milksnake
- habitat for Western Chorus Frog.

4.3.1.4 Animal Movement Corridors

There are three types of animal movement corridors identified as wildlife habitat within Ecoregion 6E.

Amphibian Movement Corridors

As amphibian breeding habitat was identified within 120 m south of the Project location, amphibian movement corridors must be considered. Amphibian movement corridors would be present within 120 m of the Project location in association with the watercourses that would provide a movement corridor from breeding habitats within the wetland community to over-wintering areas in deeper waterbodies more than 120 m from the Project location. This habitat type is therefore present within 120 m of the Project location

Deer Movement Corridors

As no deer wintering habitat was identified, this habitat type is not present on or within 120 m of the Project location.

Bat Migration Corridors

As the project location is not located on a shoreline, or an area of high elevation, and since the Project will not require installation of components more than 30 m above the ground, this habitat type is not found.

4.3.1.4.1 Conclusion

As a result, amphibian movement corridors within 120 m of the Project location will be considered during the evaluation of significance.

4.4 Woodlands

Site investigations confirmed the presence of woodlands on and within 120 m of the Project location, however several of the woodland communities were determined to be larger than identified during the Records Review through LIO mapping. The woodland boundaries identified in Figure 4.1 represent a correction from the Records Review report.

The woodland communities are described further below. Wildlife habitat functions of the various woodland communities are addressed in Section 4.3, where applicable. Beyond these functions, additional functions of the woodland communities on and within 120 m of the Project location include:

- contribution to local and regional water quantity and quality as woodlands provide a source for retention of surface water runoff en route to watercourses (all woodlands).
- landscape cover – Woodlands 3 and 4, at 414 ha and 166 ha respectively, provide an abundance of landscape cover.
- riparian cover – Woodland 3 encompasses a watercourse and provides good riparian cover for the feature
- interior forest habitat – Woodlands 3, 4, and 7 are identified as containing interior forest habitat within and provides habitat for species reliant on these communities.

4.4.1 Woodland 1

Woodland 1 is located on and within 120 m of the northeastern corner of the Project location. The boundaries of the woodland were delineated during the site investigation, and determined to provide an overall estimated size of 4.3 ha, with no interior forest habitat.

The woodland community is characterized as a generally immature Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), dominated entirely of Eastern Red Cedar with Common Juniper, Buckthorn sp., Serviceberry sp., and Prickly-Ash associates (see Figure 4.3). The majority of the trees are affected by a fungal disease called Cedar-apple Rust, which uses juniper species as hosts to carry out its life cycle and does not cause significant damage to these trees. Groundcover was generally sparse immediately within the patches of woodlands itself.

Figure 4.3 View of the Sparse Coniferous Woodlands on the Project Location

Vegetation species and the host community recorded are common to the area and are not considered to be at risk. A high native diversity of composition or terrain were not recorded within the woodland.

4.4.2 Woodland 2

Woodland 2 is located on and within 120 m of the northeastern portion of the Project location. The boundaries of the woodland were delineated during the site investigation, and determined to provide an overall estimated size of 10.5 ha, with no interior forest habitat.

The woodland community is characterized as a Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), consistent with that previously described in Section 4.4.1.

4.4.3 Woodland 3

Woodland 3 is located in the southern extent of the Project location and extends well beyond 120 m from the Project location to the southeast. The boundaries of the woodland on and within 120 m of the Project location were delineated during the site investigation, and determined to provide an overall estimated size of 414.0 ha, with more than 2 ha of interior habitat.

This woodland on and within 120 m of the Project location is comprised of two different woodland communities. The majority of the woodland on and within 120 m of the Project location is characterized as a Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), consistent with that previously described in Section 4.4.1.

A portion of the woodland within 120 m of the western boundary of the Project location is comprised entirely of Green Ash, and is characterized as a generally immature Fresh-Moist Ash Lowland Deciduous Forest Type (FOD7-2) (see Figure 4.4). This woodland consists of open areas

with no subcanopy and shrubs dominating the understory layer. The dominant shrubs in this area included Narrow-leaved Meadowsweet, Common Elderberry and Willow species. The dominant groundcover vegetation included grasses, sedges, rushes, horsetails, common milkweed, and St. John's Wort.

Vegetation species and the host community recorded are common to the area and are not considered to be at risk. A high native diversity of composition or terrain were not recorded within the woodland.

Figure 4.4 View of the Deciduous Woodlands

4.4.4 Woodland 4

Woodland 4 is located within 120 m east of the southern portion of the Project location. The boundaries of the woodland were delineated during the site investigation, and determined to provide an overall estimated size of 165.5 ha, with more than 2 ha of interior habitat.

The woodland community is characterized as a Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), consistent with that previously described in Section 4.4.1.

4.4.5 Woodland 5

Woodland 5 is located within 120 m east of the northeastern corner of the Project location. The boundaries of the woodland were delineated during the site investigation, and determined to provide an overall estimated size of 2.5 ha, with no interior habitat.

The woodland community is characterized as a Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), consistent with that previously described in Section 4.4.1.

4.4.6 *Woodland 6*

Woodland 6 is located within 120 m north of the northeastern corner of the Project location. The boundaries of the woodland were delineated during the site investigation, and determined to provide an overall estimated size of 0.7 ha, with no interior habitat.

The woodland community is characterized as a Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), consistent with that previously described in Section 4.4.1.

4.4.7 *Woodland 7*

Woodland 7 is located within 120 m north of the northwestern corner of the Project location. The boundaries of the woodland were delineated during the site investigation, and determined to provide an overall estimated size of 47.5 ha, with more than 2 ha of interior habitat.

The woodland community is characterized as a Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1), consistent with that previously described in Section 4.4.1.

5. Conclusions

Based on the results of the site investigation identified above, the following changes to the records review are required:

- boundaries of woodland and wetland communities on and within 120 m of the Project location have been updated to accurately reflect conditions
- a previously unidentified area of wetland community was found on and within 120 m of the Project location
- several wildlife habitats were identified on and within 120 m of the Project location.

Natural features are present on and within 120 m of the Project location are identified in Table 5.1 and will require an evaluation of significance in order to determine whether an environmental impact study is required.

Table 5.1 Natural Features, Attributes and Function On and Within 120 m of the Project location

Feature	Attributes/Composition	Function
Wetlands		
Wetland Complex 1	reM4 [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]. reM5 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]	- Primary production - Watershed protection - Preservation of biodiversity - Support of natural cycles
Wetland Complex 2	reM1 [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)] neM3 [ELC: Mixed Graminoid Mineral Meadow Marsh Type (MAMM1-16)] neM2 [ELC: Forb Mineral Shallow Marsh	- Wildlife habitat - Primary production - Watershed protection - Preservation of biodiversity - Fish habitat - Support of natural cycles

	Ecosite (MASM2)].	
Wildlife Habitat		
Amphibian breeding habitat and amphibian movement corridor	Located within the wetland community and tributary of Consecon Creek within 120 m of the Project location	Provision of breeding habitat for amphibian communities, as well as a movement corridor for amphibian from breeding areas to over-wintering sites
Area sensitive breeding bird habitat	Located within Woodland 3 off the Project location, though portions of the woodland on the Project location support this function through provision of edge habitat	Area sensitive bird breeding habitat consists of interior forest habitat for species of birds requiring such habitat for successful breeding.
Western Chorus Frog Habitat	Located within the wetland community within 120 m south of the Project location	Provision of Western Chorus Frog breeding habitat
Milksnake Habitat	Agricultural fields on and within 120 m of the Project location	Provision of foraging habitat (agricultural fields) for Milksnake
Woodlands		
Woodland 1	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1)	Contribution to local and regional water quantity and quality
Woodland 2	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1)	Contribution to local and regional water quantity and quality
Woodland 3	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1) Fresh-Moist Ash Lowland Deciduous Forest Type (FOD7-2)	- Contribution to local and regional water quantity and quality - Landscape cover - Interior forest habitat - Wildlife habitat - Riparian cover
Woodland 4	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1)	- Contribution to local and regional water quantity and quality - Landscape cover - Interior forest habitat
Woodland 5	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1)	Contribution to local and regional water quantity and quality
Woodland 6	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1)	Contribution to local and regional water quantity and quality
Woodland 7	Dry-Fresh Red Cedar Coniferous Forest Type (FOC2-1)	- Contribution to local and regional water quantity and quality - Interior forest habitat

6. References

Hatch Ltd. 2010a. Belleville South Solar Project – Natural Heritage Records Review Report. Prepared for Northland Power Inc. November 2010.

Hatch Ltd. 2010b. Belleville South Solar Project – Waterbodies Site Investigation Report. Prepared for Northland Power Inc. July 2010.

Ministry of Natural Resources. 2009. Significant Wildlife Habitat Ecoregion Criteria Schedules – Addendum to Significant Wildlife Habitat Technical Guide. Working Draft – January 2009.

MNR. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section and Science Development and Transfer Branch Southcentral Sciences Section.

Szuba, K. and B. Naylor. 1998. Forest Raptors and Their Nests in Central Ontario – A Guide to Stick Nests and Their Users. Southcentral Sciences Section Field Guide FG-03. Ontario Ministry of Natural Resources.

Appendix A

Site Investigation
Field Notes

No
Date Belleville South Page

Date : June 14, 2010

Time : 1800 - 1900 & 2100 - 2200

Temp : 22°C

Beaufort Wind Scale = 2

% C.C. : 100% light rain

open forest wooded area

- Agricultural field used for pasture

Eastern Redcedar (D)

buckthorn (A)

prickly-ash

yarrow	viper's bugloss
red clover	yellow-sweet clover
bird's-foot trefoil	bladder campion
white clover	common sowthistle
golden rod sp.	
grasses	
ox-eye daisy	
self heal	
aster	
common mullein	
common strawberry	
deptfords pink	
common [illegible]	

No
Date Page

some rock outcrops
sedges
cow vetch spreading dogbane
fragrant bedstraw serviceberry sp.
milkweed
field chickweed
bluejoint
small-fruited bulrush
spikerush sp.
northern bedstraw
awl-fruited sedge

cattail (?) within municipal ditch
along HWY 62

small wetland patch
- small-fruited bulrush
- spikerush sp.
- awl-fruited sedge
water sedge
soft-stem bulrush
green sedge
purple loosestrife
canada thistle
willow sp.

No white-tailed deer
Date wild turkey Page

Ash tree (2)
narrow-leaved meadowsweet
wood frog red-osier dogwood
freeman's maple
Bur oak
Green ash poison hemlock
- blue flag
* milksnake
- willows sp.
blue-eyed
deer tracks
small-fruited bulrush
cattail
common juniper
field horsetail
portion/adjacent to Prop't
Green Ash forest (D)
- [illegible] understory
- [illegible]
sedge
cow vetch
[illegible]
[illegible]
willow spp.
narrow-leaved meadowsweet

Appendix B

Natural Resource Solutions Inc.
Wetland Evaluations

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

1140

September 13, 2010

Mr. Sean Male
Hatch Energy
4342 Queen Street, Suite 500,
Niagara Falls, ON L2E 7J7

Dear Mr. Male:

Re: Northland Power Belleville South Solar Project Wetland Evaluations

On behalf of Natural Resource Solutions Inc., I am pleased to provide the following which documents the work completed relative to wetland evaluation at the above noted solar project being proposed by Northland Power.

The objectives of this assignment were to provide project-specific assessments and possibly evaluations of wetlands found on or within 120m of proposed project components as per Renewable Energy Approval Regulation 359/09. Review of Land Information Ontario (LIO) and aerial photography indicated that potential unevaluated wetlands are on the subject property as well as neighbouring lands within 120m. Portions of the Consecon Creek Marsh and Crofton Marsh wetlands are located to the east and northwest of the project area, respectively.

Study Approach
This work included the following:

- Collection and review of background information on wetland-related natural features in the vicinity of the project site.

- Identification of all wetlands, evaluated and non-evaluated, within approximately 750m of the subject wetlands to assess the extent of wetland mapping that would be required to address whether wetlands in the vicinity of the project site would be complexed with other wetlands (i.e. to identify whether a 'string' of unevaluated wetlands occur between the subject wetlands and the nearest evaluated wetland)

- Conduct field surveys of subject wetlands on the project site as well as on neighbouring lands. This included mapping of wetland vegetation communities based on Ontario Wetland Evaluation System (OWES), as well as Ecological Land Classification (ELC), and recording all species of flora and fauna within the wetlands.

The above tasks feed into a determination of whether the wetlands on or within 120m of the project site are a portion of the existing Provincially Significant Wetland (PSW), are

of insufficient size or ecological/hydrologic character to be considered stand alone wetlands under OWES, and/or are not part of the wetland complex when reviewed under the OWES complexing criteria. If wetlands were considered to not be part of the existing evaluated wetland, the assessment considered whether the wetlands would be part of 'new' wetland complex.

This letter report documents the analysis of the above.

Summary

A number of wetland communities overlap with the project site and/or are within 120m. The wetlands were described under the OWES as well as using ELC based on field surveys completed on August 10, 2010. Copies of field data forms are also appended that summarize field information including weather and time of field surveys. No significant species of flora or fauna were observed during the field survey. A map of the project site with wetlands in the area is appended to this letter.

Based on field observations and review of topographic maps, the northern portion of the project area drains northward, while the southern portion drains to the south. Within the northern section of the project area there is a small marsh that is approximately 500m east of, and is also hydrologically connected to, the Crofton Marsh, a non-provincially significant wetland. As such, these wetlands would likely be complexed. The on-site wetland consists of two communities described as:

reM_5 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]
reM_4 [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]

South and off-site of the project area, two small wetlands were identified, and due to their proximity to the Consecon Creek Swamp, would be complexed with this existing non-provincially significant wetland. The communities are described as:

reM_1 [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]
neM_3 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
neM_2 [ELC: Forb Mineral Shallow Marsh Ecosite (MASM2)]

As the evaluated wetlands are small in size (not larger than 2ha) with no significant natural features or species, it is not anticipated that complexing them with the neighbouring non-provincially significant wetlands would change the status of these wetlands.

I trust that this information is adequate. Please contact me if you have any questions.

Yours sincerely,
Natural Resource Solutions Inc.

David Stephenson, M.Sc.,
Senior Biologist

Wetland Vegetation Communities:

Wetland 1:

reM$_4$ [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]
gc: *Lythrum salicaria, Soldiago sp., Eupatorium perfoliatum*
ne: *Carex vulpinoidea, Carex lupulina, Inula helenium*
re*: *Scirpus atrovirens, Schoenoplectus acutus*

reM$_5$ [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]
re*: *Typha latifolia*

Wetland 2:

reM$_1$ [ELC: Bulrush Graminoid Mineral Meadow Marsh Type (MAMM1-15)]
ne: *Carex vulpinoidea, Carex lupulina*
re*: *Schoenoplectus acutus, Scirpus atrovirens, Typha latifolia*

neM$_2$ [ELC: Forb Mineral Shallow Marsh Ecosite (MASM2)]
ne*: *Cicuta virosa, Lycopus americanus, Equisetum arvense*
be: *Alisma plantago-aquatica*
re: *Typha latifolia*

neM$_3$ [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
h: *Fraxinus pennsylvanica, Ulmus sp*.
ne*: *Carex sp., Lycopus americanus, Cicuta virosa*

* dominant form

Project Team:

Member	Qualifications	Role
David Stephenson, MSc	Certified Wetland Evaluator Certified ELC Certified Arborist	Project Management Field Survey Data Analysis, Evaluation, Reporting
Kevin Dance, M.Sc.	Certified ELC	Field Survey Data Analysis, Evaluation
Matt Ross, B.Sc., FWT	Field Biologist	Field Survey Data Analysis, Evaluation
Shawn MacDonald, B.A.	GIS Mapping	Mapping
Gerry Schaus, B.A.	GIS Mapping	Mapping

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug 10/10 **Time (24h):** 8:48

Field #: 1 **Weather:** Precipitation: 0 Temp (°C): 24+

Map Code: Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: not wetland **Site Type:** L **Dominant Form:** gc

% Open Water: none **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	red cedar
dc,dh,ds	red cedar
ts	
ls	common juniper, narrowleaved meadowsweet, red-osier dogwood
gc	, Queen Annes lace, early goldenrod
ne	sedge sp grass sp
be	
re	hard stemmed bulrush
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

AMCR
FISP
BCCH
AMGO
E. towhee

Wildlife Notes:

Monarch
Summer Azure
E. skipper
Clouded sulphur
white-faced meadowhawk
cherry-faced meadowhawk
Halloween pennant

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug. 10/10 **Time (24h):** 848

Field #: 2 **Weather:** Precipitation: 0 Temp (°C): 24+

Map Code: Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: not wetland **Site Type:** L **Dominant Form:** C

% Open Water: None **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	red cedar
dc,dh,ds	red cedar
ts	
ls	Prickley Ash > Common juniper > buckthorn
gc	, Asters, red flower, daisy fleabane
ne	fox sedge, grass sp.
be	
re	hard stemmed bulrush
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

MODO
AMCR
SOSP
AMGO
NOFL

Wildlife Notes:

Summer Azure
Cabbage white
red squirrel
cherry faced meadowhawk
white-faced Meadowhawk

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug. 10/10 **Time (24h):** 848

Field #: 3 **Weather:** Precipitation: O Temp (°C): 24+

Map Code: 3 (reM) Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: M **Site Type:** P **Dominant Form:** re

% Open Water: None **ELC Code:** MAMM1-15

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	green ash
c	red cedar
dc,dh,ds	
ts	
ls	red osier dogwood
gc	purple loosestrife, swamp milkweed
ne	Sedge sp (tox sedge, hop sedge), grass sp.
be	
re	hard stemmed bulrush, black bulrush, broad leaved cattail
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

SAR observations must also include a specific UTM location.

Forms: h=deciduous trees; c=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: S=swamp; M=marsh; B=bog; F=fen

Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug. 10/10 **Time (24h):** 848

Field #: 4 **Weather:** Precipitation: O Temp (°C): 24+

Map Code: 4 Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: M (reM2) **Site Type:** P **Dominant Form:** ne

% Open Water: 100 **ELC Code:** MASM-2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	green ash
c	red cedar
dc,dh,ds	
ts	
ls	European buckthorn
gc	goldenrod sp.
ne	Water hemlock, water horehound, field horsetail
be	water plantain, broad-leaved arrowhead
re	broad-leaved cattail
ff	
f	Yellow pond lily
su	
m	

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

PUMA

Fragile forktail

Eastern forktail

green frogs - 10+

SAR observations must also include a specific UTM location.

Forms: h=deciduous trees; c=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: S=swamp; M=marsh; B=bog; F=fen

Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated

Pond

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug. 10/10 **Time (24h):** 848

Field #: 5 **Weather:** Precipitation: 0 Temp (°C): 24+

Map Code: 5 (neM3) Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: M **Site Type:** R **Dominant Form:** ne

% Open Water: No water **ELC Code:** MAMM1-16

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
(h)	Green Ash, elm sp
c	
dc,dh,ds	
ts	
ls	red osier dogwood, narrow leaved meadowsweet
gc	, spotted jewelweed, elecampane, hairy willowherb
(ne)	sedge sp., water horehound, water hemlock, grass sp.
be	
re	black bulrush
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

Creek was dry, no surface water present

Wildlife Notes:

Summer Azure WBNU
Monarch
Cabbage white
Clouded Sulphur
Cinnamon Nymph

SAR observations must also include a specific UTM location.

Forms: h=deciduous trees; c=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: S=swamp; M=marsh; B=bog; F=fen

Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated

green ash early regen

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug. 10/10 **Time (24h):** 848

Field #: 6a **Weather:** Precipitation: 0 Temp (°C): 24+

Map Code: 6a (MAM4) Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: M **Site Type:** P **Dominant Form:** ne

% Open Water: no water **ELC Code:** MAMM1-15

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	red cedar
dc,dh,ds	
ts	
ls	prickly Ash
gc	purple loosestrife, goldenrod, boneset
(ne)	sedges (fox sedge, hopsedge), grass sp., elecampane
be	
(re)	black bulrush, hard stemmed bulrush
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):

CEDW
THOC
BARS
EAKI
AMCR
SOSP

Wildlife Notes:

BCCH
SSHA - pair
Summer Azure
clouded sulphur
Monarch

SAR observations must also include a specific UTM location.

Forms: h=deciduous trees; c=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: S=swamp; M=marsh; B=bog; F=fen

Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: Belleville South **Project #:** 1140

Observer(s): KSD, MR

Date: Aug. 10/10 **Time (24h):** 848

Field #: 66 **Weather:** Precipitation: O Temp (°C): 24+

Map Code: 6b (reMa) Wind Speed & Direction: 1 Cloud %: 100

Wetland Type: M **Site Type:** ~~R~~ P **Dominant Form:** re

% Open Water: no surface water **ELC Code:** NAMM1-2

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	
ls	
gc	
ne	
be	
re	broad leaved cattail
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: **Project #:**

Observer(s):

Date: **Time (24h):**

Field #: **Weather:** Precipitation: Temp (°C):

Map Code: Wind Speed & Direction: Cloud %:

Wetland Type: **Site Type:** **Dominant Form:**

% Open Water: **ELC Code:**

Photos:

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h	
c	
dc,dh,ds	
ts	
ls	
gc	
ne	
be	
re	
ff	
f	
su	
m	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:

SAR observations must also include a specific UTM location.

Forms: **h**=deciduous trees; **c**=coniferous trees; **dh, dc, ds**=dead trees/shrubs; **ts**=tall shrubs; **ls**=low shrubs; **gc**=ground cover; **ne**=narrow emergents; **be**=broad emergents; **f**=floating plants; **ff**=free-floating plants; **su**=submerged plants; **m**=mosses

Wetland Type: **S**=swamp; **M**=marsh; **B**=bog; **F**=fen

Site Type: **L**=lacustrine; **P**=palustrine; **R**=riverine; **IS**=isolated

Belleville South

Catchment Area

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

September 10, 2010
Project No: NRSI-1140
UTM Zone 18, NAD 83
Scale: 1:15,000 (at 11x17")

311500 312000 312500 313000 313500 314000 314500 315000 315500 316000 316500 317000 317500

4883500 4883000 4882500 4882000 4881500 4881000 4880500 4880000

Big Island Marsh
Sawguin Creek Marsh
Selby Creek Headwater Swamp
Crofton Marsh
Consecon Creek Swamp

PUMPHOUSE LANE
BISHOP LANE
COUNTY RD 14
CROFTON RD
BURR RD
JERICHO RD
HWY 62
CHRISTIAN RD

N

Legend

- Project Site
- Catchment Boundary
- Highway
- Primary Road
- Secondary Road
- Watercourse Permanent
- Watercourse Intermittent
- Provincially Significant Wetland
- Other
- ANSI, Life Science
- Waterbody
- Wetland
- Wooded Area

0 250 500 750 Meters

NRSI_1140_CatchmentArea_15K_2010_09_10_GCS

Belleville South Solar Project

Wetland Vegetation

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

September 16, 2010
Project No: NRSI-1140
UTM Zone 18, NAD 83
Scale: 1:10,000 (at 11x17")

313000 313500 314000 314500 315000 315500 316000 316500

4882500 4882000 4881500 4881000 4880500

N

Sawguin Creek Marsh
CROFTON RD
COUNTY RD 14
reM$_5$ MAMM1-2
WETLAND #1
Selby Creek Headwater Swamp
reM$_4$ MAMM1-15
Crofton Marsh
BURR RD
reM$_1$ MAMM1-15
WETLAND #2
WETLAND #3
neM$_3$ MAMM1-16
neM$_2$ MASM2
Consecon Creek Swamp
HWY 62
JERICHO RD

Legend

- Project Site
- Ecological Land Classification
- (MAMM1-15) Bulrush Graminoid Mineral Meadow Marsh Type
- (MAMM1-16) Mixed Graminoid Graminoid Mineral Meadow Marsh Type
- (MAMM1-2) Cattail Graminoid Mineral Meadow Marsh Type
- (MASM2) Forb Mineral Shallow Marsh Ecosite
- Highway
- Primary Road
- Secondary Road
- Watercourse Permanent
- Watercourse Intermittent
- Waterbody
- Wetland
- Provincially Significant Wetland
- Other
- Wooded Area

0 250 500 750 Meters

NRSI_1140_ELC_10K_2010_09_16_SWM