Natural Heritage Assessment

Evaluation of Significance

Newboro 1

Solar Energy Project

FIT Contract Number: FIT-FGJ9196

prepared for

Genivar and SunEdison

FINAL

ECOLOGICAL SERVICES

Report Author Signature Date

March 20. 2012

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1.0 INTRODUCTION

1.1 Project Description

SunEdison, LLC (SunEdison) is proposing to develop a 10 megawatt solar photovoltaic project titled Newboro 1 Solar Power Project. The proposed project has received a 20 year Feed-in-Tariff contract from the Ontario Power Authority (FIT Contract Number: FIT-FGJ9196). The Project Location is a 142 hectare (ha) parcel situated 5 km east of the Village of Newboro, and approximately 40 km north of the Town of Gananoque. It is bounded by Narrows Lock Road (County Road 14) to the west, McCann Road to the north, and is landlocked to the south and east by agricultural lands and woodlands. The Project Location is currently undeveloped and is designated as 'Rural' in the Township of Rideau Lakes Official Plan. It is also Part of Lots 25, 26 and 27, Concession 1, South Crosby Ward, Township of Rideau Lakes, Leeds and Grenville County, Ontario. The longitude and latitude are 44° 40' 24.31" and 76° 16' 22.28".

1.2 Renewable Energy Approval Legislative Requirements

Ontario Regulation (O. Reg.) 359/09 – Renewable Energy Approvals Under Part V.0.1 of the Act, made under the Environmental Protection Act identifies the Renewable Energy Approval (REA) requirements for renewable energy projects in Ontario. Ground-mounted solar facilities with a nameplate capacity greater than 12 kilowatts (kW) are classified as Class 3 solar facilities and require a REA in accordance with Section 4 of O. Reg. 359/09. Subsection 24 (1) of O. Reg. 359/09 requires proponents of Class 3 solar projects to undertake a natural heritage assessment consisting of a records review report, site investigation report and an evaluation of significance report for each natural feature identified during the natural heritage records review and site investigation.

Natural features are defined in subsection 1 (1) of O. Reg. 359/09 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	h) a woodland.

The Natural Heritage Assessment Records Review Report (NHARR) (Genivar 2011) and Natural Heritage Assessment Site Investigation Report (SI) (Ecological Services 2011) identified candidate significant wildlife habitat and woodland on and within 120 m of the Project Location.

1.3 Natural Heritage Assessment Evaluation of Significance Report (EOS)

Section 27 of the REA Regulation requires proponents of Class 3 solar projects to prepare a Natural Heritage Assessment Evaluation of Significance Report (EOS) for candidate significant natural features identified in the NHARR (Genivar 2011) and SI (Ecological Services 2012). The EOS is to summarize the evaluation criteria and make a determination of significance. The EOS also needs to provide the name and qualifications of any person who applied to evaluation criteria or procedures.

This report has been prepared to meet these requirements. As mentioned in Section 1.2, there is candidate significant woodlands and wildlife habitat on and within 120 m of the Project Location. Therefore, an evaluation to determine the level of significance of these features is required.

2.0 EVALUATION OF CANDIDATE SIGNIFICANT NATURAL FEATURES

The Project Location and surrounding 120 m buffer lands is presented in Figure 2.1

2.1 Candidate Significant Woodlands

The NHARR (Genivar 2011) identified woodlands on and within 120 m of the Project Location.

Woodlands are defined in subsection 1(1) of the REA Regulation as land that is south and east of the Canadian Shield and has per hectare, at least:

1. 1000 trees of any size
2. 750 trees measuring over 5 cm in diameter
3. 500 trees measuring over 12 cm in diameter
4. 250 trees measuring over 20 cm in diameter

There are several patches of granite bedrock coming up through the ground throughout the woodland suggesting that the woodlands are on the Canadian Shield and therefore not applicable to REA Regulations for significant woodland. However the adjacent farmland suggests that this area may be within the Canadian Shield/Sedimentary transition zone, and so we are taking the position that the REA Regulations for woodland apply.

A tree inventory was not undertaken, but we accept that the woodlands on and within the Project Location meet the stocking density threshold for woodland designation. The boundaries of the woodland identified in Figure 2.1 (see FOD5) were delineated based on observations made during the site investigations and air photo interpretation. The LIO woodland mapping shown in the NHARR (Genivar 2011) is considered accurate. The woodland is within the 120 m buffer zone and intrudes into the Project Location in two locations, as can be seen in Figure 2.1.

The criteria for establishing woodland significance are identified in The Natural Heritage Assessment Guide for Renewable Energy Projects (OMNR 2011). Woodlands that meet a suggested standard set out in OMNR (2011) are considered significant. The following woodland criteria outlined in Table 2.1 meet the standard for woodland significance for Newboro 1.

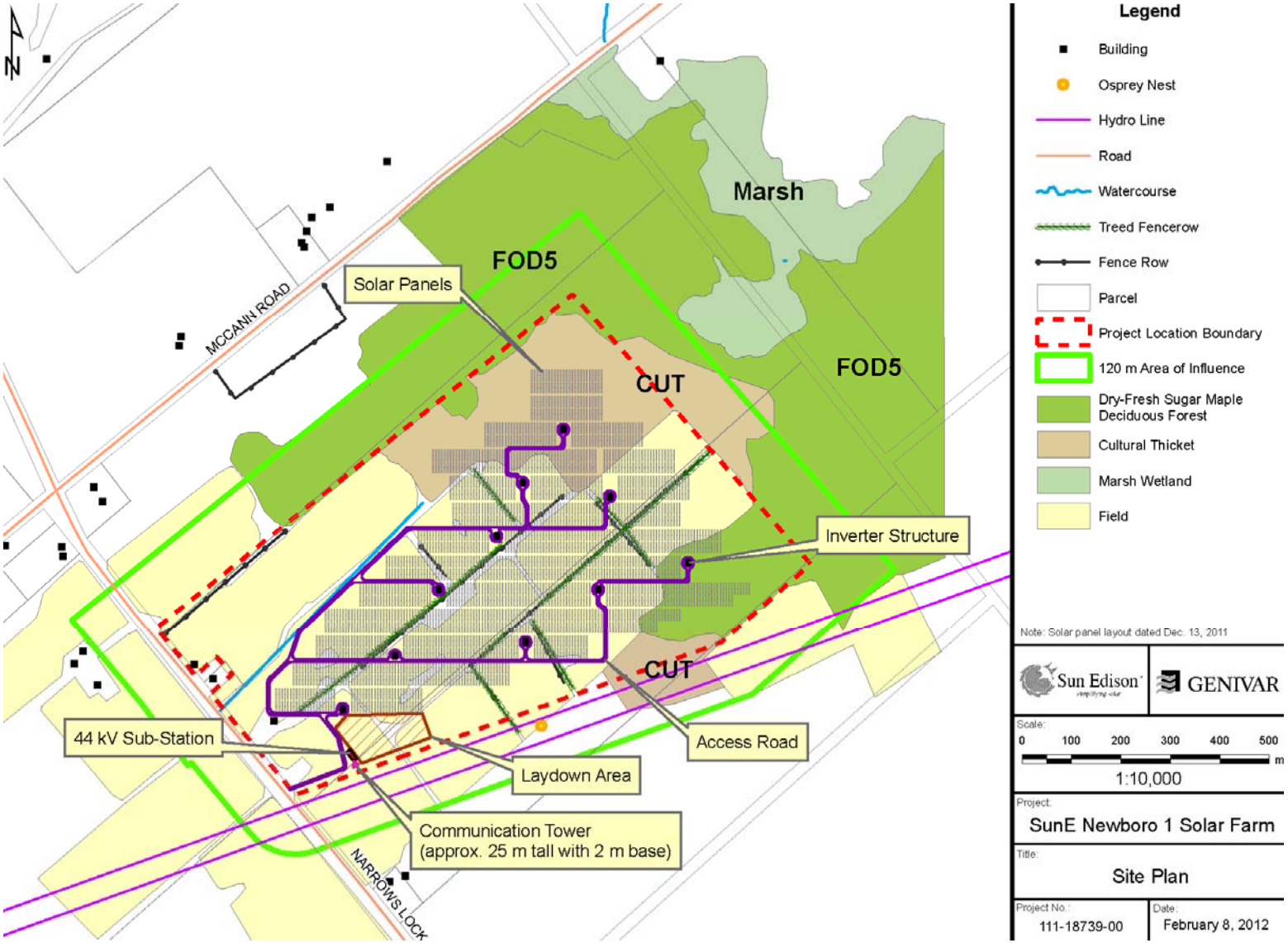

Figure 2.1 Newboro 1 Site Plan

Table 2.1 Ecological woodland characteristics at Newboro 1.

Ecological Characteristic	Description	Meets Significance Criteria
Type(s)	Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FOD5)	
Woodland Size Criteria	Woodland is about 50 ha., but is part of a larger fragmented system of separate woodlands. The threshold for size in this region with 50% forest cover is 50ha.	Yes
Woodland Interior	No woodland interior.	No
Proximity to other significant features	Within 30 m of a possible significant wetland and it meets the proximity size threshold by being greater than 10 ha.	Yes
Linkages	Woodland is not located between two significant features.	No
Water Protection	Not within 50 m of a watercourse.	No
Woodland Diversity	Dominated by Sugar Maple and meets the size threshold criteria by being greater than 10 ha.	Yes
Uncommon Characteristics	Heavily logged woodland comprised of mostly young trees, and is one of the most common forest types in the region.	No

Evaluation – The Project Location contains significant woodlands and these will be carried forward to the Natural Heritage Assessment Environmental Impact Study Report.

2.2 Candidate Significant Wildlife Habitat

Woodland Amphibian Breeding Habitat: It can be seen in Figure 2.2, that the FOD5 woodlands that are more than 120 m north of the Project Location are adjacent to wetland and OMNR (2009) lists this as a criteria for potential significant amphibian woodland breeding habitat because amphibians may leave the wetland and use the woodlands to complete their life cycle. Consequently, a loss of such woodland could be deleterious to amphibian populations. Recent logging activity in the woodland has greatly reduced tree cover, and this disturbance will have reduced its potential as amphibian breeding habitat by opening up the canopy and disturbing the shallow substrate.

The main bulk of the wetland is about 240 m from the Project Location. A southwest extension of the main wetland has good amphibian potential and is about 125 m from the Project Location boundary. The intervening land at this closer location does is mostly cultural thicket.

Woodlands containing ephemeral ponds can be used for amphibian breeding in the spring. We noted several wetland-like patches in the woodland, but did not encounter any active ponds or remnant ponds during the June 17 visits, or any subsequent site visits.

Confirmation for significance would require the presence of 1 or more of Gray Treefrog, Spring Peeper, Chorus Frog, and Wood Frog, and at least 20 individuals. We did not hear or encounter any amphibians during the field work, but did not undertake early spring woodland amphibian breeding surveys.

The potential for significance is low due to the lack of ponds, the lack of amphibian sightings, and the habitat degradation caused by recent logging. However, it would still be prudent to do amphibian surveys as they were not undertaken in the spring of 2011. Such surveys are also suggested in Appendix D of OMNR (2011), where the habitat can initially be treated as significant and a commitment is subsequently made to study habitat use prior to construction. For woodland amphibians, this would involve marsh monitoring survey protocols, and also include daytime visits to monitor for chorus frogs. It would also involve more detailed mapping during the spring to pinpoint woodland breeding areas.

Four of the potential amphibian breeding areas are within the 120 m buffer area and one is within the Project Location itself (see W in Figure 2.2). Distances to the Project Location boundary are also shown in Figure 2.2.

Evaluation – The woodlands within 120 m of the southern end of the Project Location are considered significant wildlife habitat (for amphibian breeding) until proven otherwise through field investigations and will be carried forward to the Natural Heritage Assessment Environmental Impact Study Report.

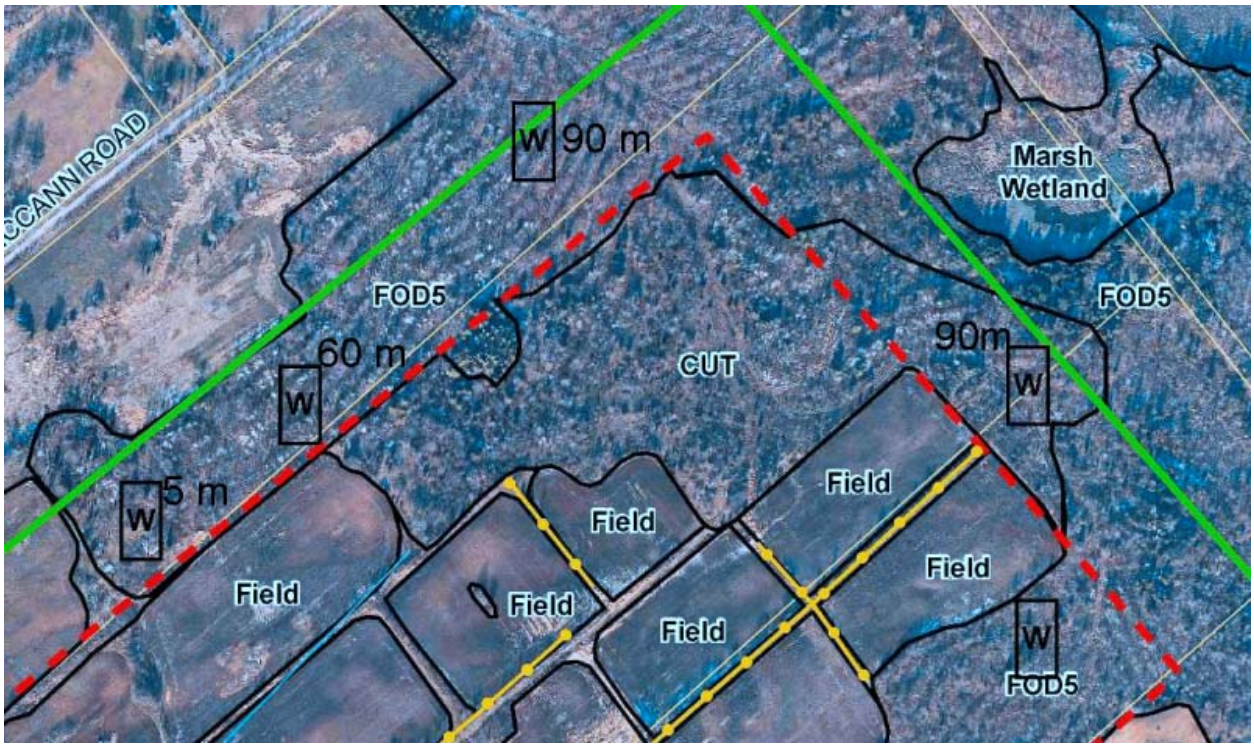

Figure 2.2 Potential woodland amphibian breeding areas (W).

Raptor wintering area: This habitat type includes a combination of fields (CUM, CUT) and woodlands (FOD, FOM, FOC) that provide roosting, foraging and resting habitat for wintering raptors (Fig. 2.3). Field areas need productive small mammal populations such as open fields, agricultural lands (i.e., hayfields, pasture) and meadows. Roosting sites for most raptor species include mature mixed or coniferous woodlands, although some species prefer grassy fields (i.e. Northern Harrier, Short-eared Owl). The Project Location does have some of these attributes, although a review of existing planning documents and available information from the MNR determined that there is no confirmed raptor wintering area habitat on or within 120 m of the Project Location (Genivar 2011).

In order to be significant for winter raptor use a site has to be >20 ha., and have confirmed use of 1 or more Short-eared Owls, and more than 2 of Rough-legged Hawk, Red-tailed Hawk, Northern Harrier, American Kestrel, and Snowy Owl. It must also be used for a minimum of 20 days (OMNR 2009). To confirm determine the level of significance, the habitat type was assessed on four sites visits in the 2011/2012 winter season. Field work covered the entire site, but focused on areas with better habitat attributes for small mammal production. The species threshold for significance was not met as only Red-tailed hawks were observed, primarily in association with the hydro line, which is outside of the Project Location.

Evaluation – The lands on or within 120 m of the Project Location are not considered a significant raptor wintering area and will not be carried forward to the Natural Heritage Assessment Environmental Impact Study Report.

Species of Conservation Concern (milksnake): Milksnakes may be found throughout this region in many kinds of habitats, including all those found at the Project Location as shown in Figure 2.3. In that regards, there is nothing unique or significant about the Project Location in terms of general milksnake habitat.

No milksnakes, or signs of milksnakes (e.g., shed skins, scats, corpses) were observed within the Project Location. Searching focused in and around the barn structure and along the road for road kill. Within the Project Location, we found no cover sites (e.g., boards, large fallen logs) to search under, but did search in and around the bare granite patches on site for basking milksnakes.

Given their generalized habitat preferences, COSEWIC (2002) suggests focusing on those aspects of the milksnake life cycle that are more specialized, specifically hibernacula and egg gestation sites. Gestation sites need to provide the necessary warmth, cover, and moisture needed by the eggs. Examples can include under boards, manure piles, large stumps, animal burrows, and large leaf mounds. The only site within the Project Location where this is likely is in and around the barn structure, although no evidence of snake use was found here. There are some log piles and earthen piles beyond the 120 m buffer north of the Project Location that have some gestation potential, but these were not searched for snake use as they were outside the study area.

Hibernacula need to provide proper temperature, frost avoidance, and sufficient moisture to prevent desiccation. Examples can include animal burrows, building foundations, large rotting stumps, and rock crevices. No such sites were found on the Project Location, which is mostly covered by shallow soil.

The barn structure on site is an open structure with no foundation or basement. Hibernacula can also be found in rock piles associated with farm fields. We found some rock piles on the Project Location, but do not consider them good candidates for hibernacula due to their lack of size and the underlying shallow soil, which together would not provide the needed frost avoidance or proper moisture conditions.

Evaluation – The Project Location contains habitat attributes for milksnake, but due to a lack of good gestation sites and hibernacula we feel that its potential for significance is low. As such, it will not be carried forward to the Natural Heritage Assessment Environmental Impact Study Report.

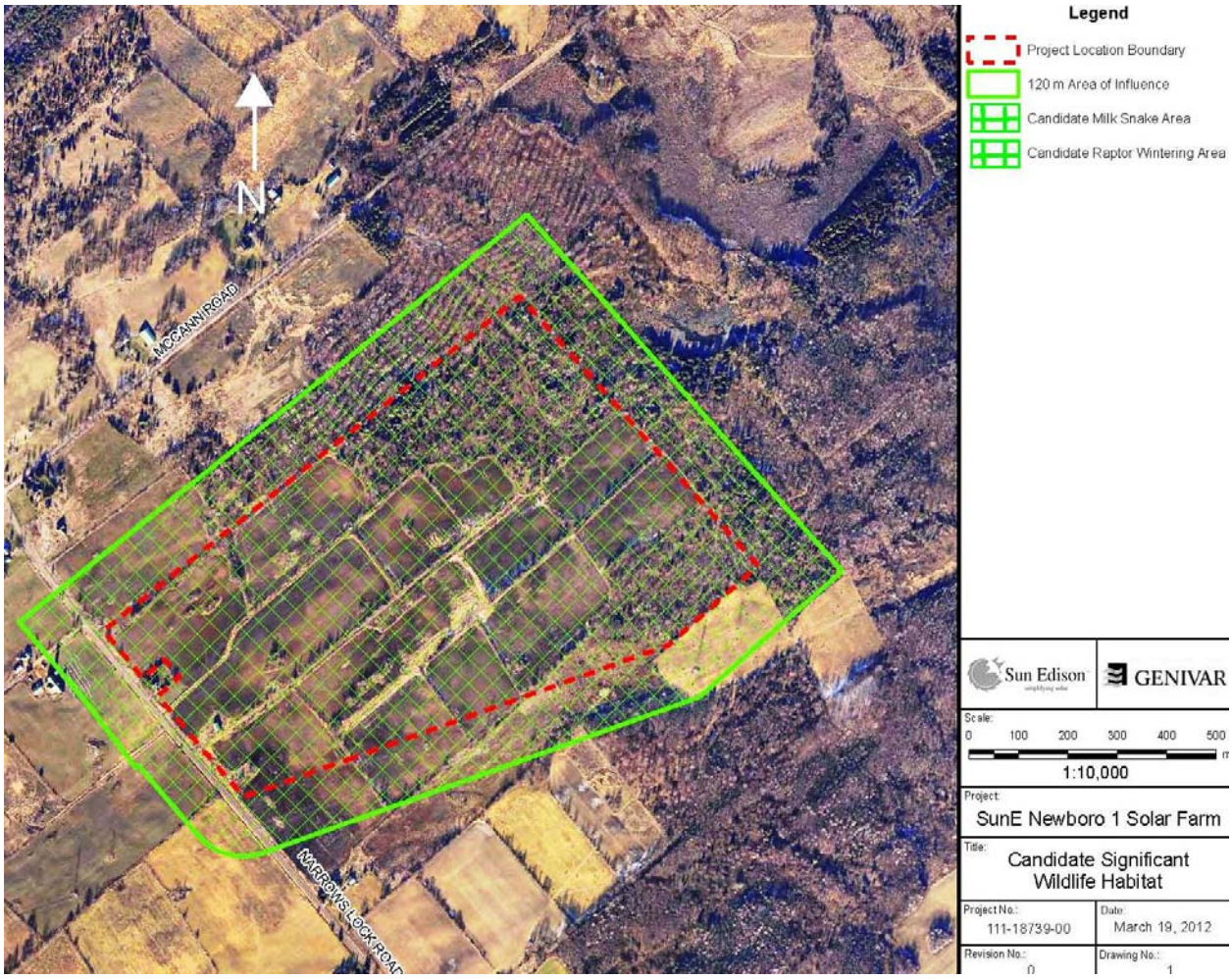

Figure 2.3 Candidate Significant Raptor Wintering Area and Milksnake habitat.

3.0 SUMMARY OF EVALUATION

Based on the findings in this report, the following natural features have been evaluated as significant:

- **Significant Woodlands** –The FOD5 woodlands within the Project Location have been evaluated as significant.
- **Woodland Amphibian Breeding** – The FOD 5 woodlands will be considered as containing significant woodland breeding habitat, unless field work in the spring of 2012 proves otherwise.

The significant natural features identified above will be carried forward to the Natural Heritage Assessment Environmental Impact Study Report to assess the potential negative environmental effects on these features.

4.0 NEXT STEPS

A Natural Heritage Assessment Environmental Impact Study Report conducted according to the requirements of Subsection 38 (2) of O. Reg. 359/09 will be required in order to assess the potential effects, and recommend mitigation and monitoring requirements for the construction, operating and decommissioning of Project components within 120 m of identified significant natural features.

5.0 DATE OF BEGINNING AND COMPLETION OF EVALUATION

Start: June 17, 2011.

Completion: March 20, 2012.

6.0 NAMES AND QUALIFICATIONS OF PERSONS CONDUCTING THE EVALUATION OF SIGNIFICANCE

The EOS assessment and report were completed by:

Rob Snetsinger: Consultant, Ecological Services
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Ecological Services is a locally owned firm, specializing in the provision of services relating to ecological management and research. We have been in operation in eastern Ontario since 1985. Our core personnel combine education and experience to give us a strong focus on land use planning and management as they relate to natural resources. Our experience includes environmental impact assessments, management plans, wetland evaluations, and municipal land use planning. We have research experience in aquatic ecology and chemistry, forest fragmentation, avian ecology, and fisheries ecology.

We have worked with government at the federal, provincial, local and international levels. Other clients have included Crown corporations, planning and engineering firms, developers, and local groups. Our association with Queen's University provides us immediate access to current and broad-based research, and also provides us with a pool of expert associates. A work prospectus is available at our website at http://ecologicalservices.webs.com.

Natural feature surveys of lands within 120 m of the Project location, and the subsequent preparation of the SI was done by Rob Snetsinger. Dale Kristensen assisted in initial natural feature survey, and Chris Grooms conducted breeding bird surveys. CV information for each is provided below:

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Employment

1985 - present: Environmental Consultant.

Specializing in floral and faunal resource inventories, wetland evaluations, woodland/forest assessments, environmental impact assessments, and habitat restoration.

1985 - present: Adjunct Academic. Department of Biology at Queen's University.

Development and instruction of various courses at Queen's University, including:

- Ecological Assessment (ENSC 401)
- Introduction to the Biology of the Cell (BIOL 102)
- Introduction to the Biology of the Organism (BIOL 103)
- Diversity of Life I (BIOL 201)
- Ecology and the Environment (BIOL 111)
    - Human Genetics (BIOL 110)
    - Field Botany (BIOL 320)
    - Field ecology modules at Lake Opinicon (BIOL 307)

Education

M.Sc., Biology, Queen's University. Kingston, Ontario.
B. Sc., Biology, Queen's University. Kingston, Ontario.
Forestry Diploma. Lakehead University. Thunder Bay, Ontario

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Phytotron Manager/Adjunct Academic
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Employment

1988 - present: Environmental Consultant with Ecological Services

Specializing in floral and faunal resource inventories, wetland evaluations, environmental impact assessments, habitat analyses, and habitat restoration.

1996 - present. Phytotron Manager (Plant Research Facility). Dept. of Biology, Queen's University.

Manager of a controlled environment facility for plant and other research

2008 – present: Curator Queen`s University Fowler Herbarium

1987- 2009: Adjunct Academic. Department of Biology at Queen's University.

Development and instruction of various courses at Queen's University, including:

- Wildlife Issues in a Changing World (ENSC 320)
- Restoration Ecology (BIOL 522)
- Biology of Sex (BIOL 210)
- Field Botany (BIOL 320)
- Field ecology module at Lake Opinicon (BIOL 344)
- International graduate-level course on biodiversity

Education

M.Sc., 1996 (Ecology) Queen's University. Kingston, Ontario.

B.Sc., 1981 (Wildlife Biology), University of Guelph. Guelph, Ontario.

Affiliations

Ecological Restoration Society, North American Wildflower Society, Land Conservancy for Kingston, Frontenac, Lennox & Addington, Kingston Field Naturalists, COSEWIC Species Recovery Team – Deerberry (*Vaccinium stamineum*) and Cerulean Warbler (*Dendroica caerulea*) habitat modelling. Certified Butternut Health Assessor

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Employment

2006 - present: Research Assistant. Paleoecological Environmental Assessment and Research Laboratory, Queen's University.

- high arctic fieldwork, maintenance and supply, data management, figure design for publication, website design, computer and analytical machine operation and maintenance.

2003- 2005: Coordinator, Eastern Region. Ontario Nature – Federation of Ontario Naturalists.

- liaison with member groups and other conservation organizations to promote conservation, land stewardship and nature education

1992- 2003. Habitat Stewardship and Ornithological Experience. Contracts with the Canadian Wildlife Service, Ontario Ministry of Natural Resources (MNR), Wildlife Preservation Trust Canada, and Bird Studies Canada.

- endangered loggerhead shrike recovery - population surveys, landowner contact; monitored nests, oversaw colour banding, mapped habitat, selected future reintroduction sites; supervised first experimental reintroduction of captive-bred shrikes to the wild.

Ontario Power Generation: inventory of the fauna of the Lennox Generation Station property.

Nature Conservancy Canada: inventory of breeding birds and amphibians at Burnley Carmel Nature Reserve near Rice Lake, Ontario.

Acres & Associated Environmental Limited: bird usage inventory of proposed wind farm sites on Wolfe Island, Ontario, and a bird inventory for a proposed wind site on Amherst Island, Ontario.

Lower Trent Region Conservation Authority: documented nesting sites of Red-Shouldered Hawks in five townships in eastern Ontario for the MNR over three years.

Education

B.Sc., 1998 (Biology), Queen's University. Kingston, Ontario.

Affiliations

Former President, Kingston Field Naturalists

7.0 LIST OF REFERENCES

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