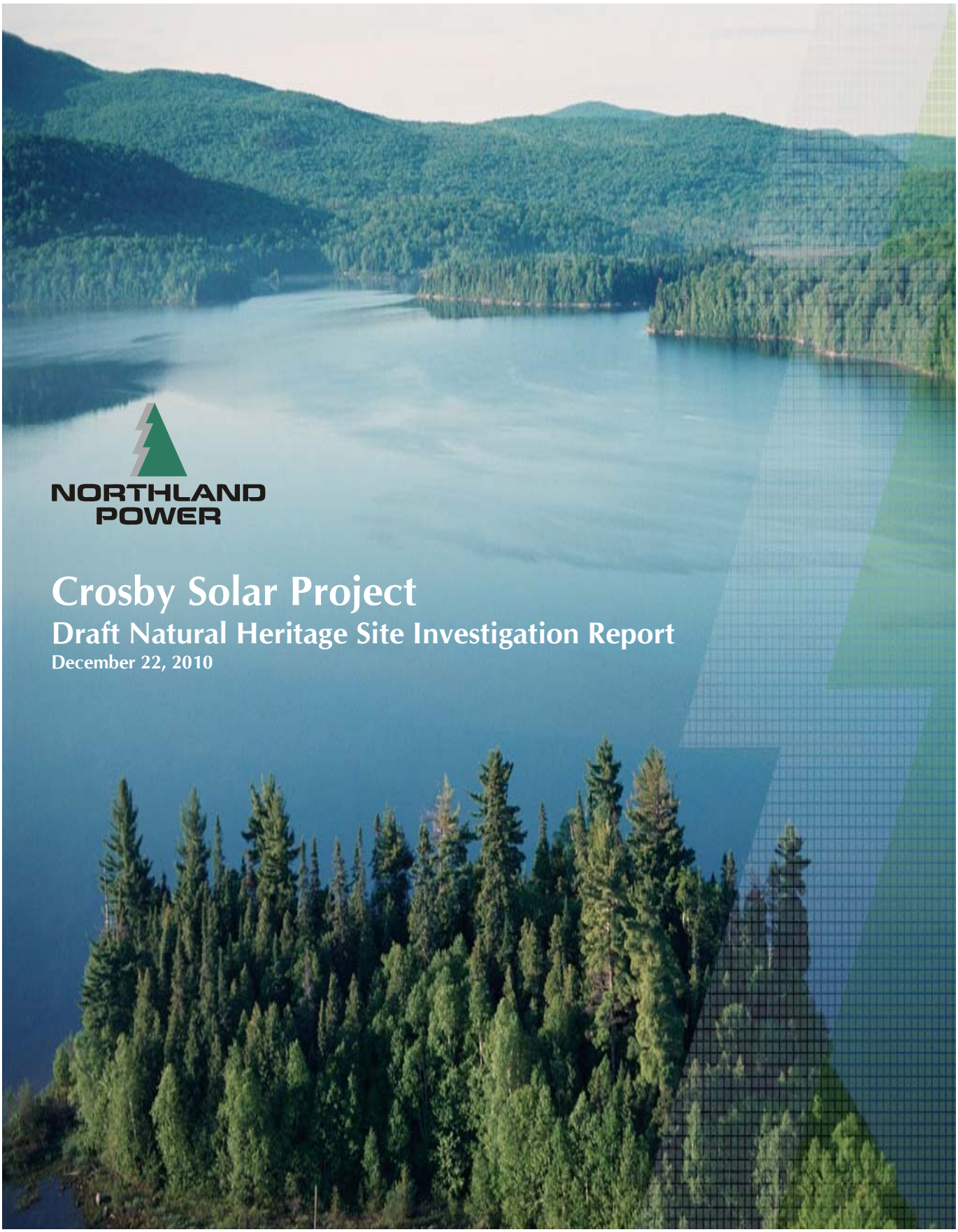

NORTHLAND POWER

Crosby Solar Project

Draft Natural Heritage Site Investigation Report

December 22, 2010

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

DRAFT Natural Heritage Site Investigation Report

Crosby Solar Project

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December 22, 2010

Project Report

November 30, 2010

Northland Power Inc.
Crosby Solar Project

DRAFT Natural Heritage Site Investigation Report

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1. Introduction

1.1 Project Description

Northland Power Solar Crosby L.P. (hereinafter referred to as "Northland") is proposing to develop a 10-megawatt (MW) solar photovoltaic project titled the Crosby Solar Project (hereinafter referred to as the "Project"). The Project will be located on approximately 52 hectares (ha) of land, located at 249 Little Rideau Lake Road in the Township of Rideau Lakes, within the United Counties of Leeds and Grenville (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)
- 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
- 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 (Natural Heritage Records Review) 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
   - the boundaries mentioned in clause (1) (c)
   - the location and type of each natural feature identified in relation to the project location
   - 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., 2010).

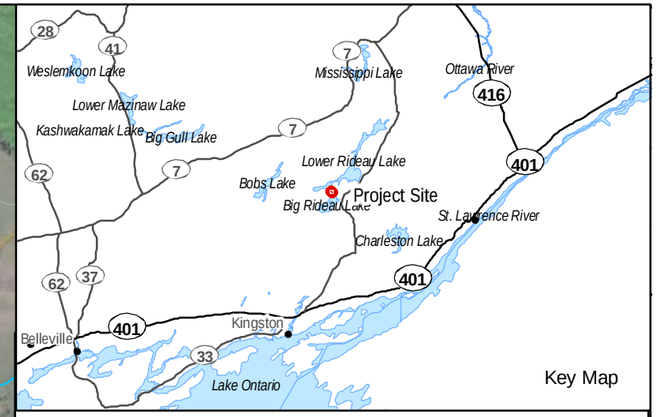
Table 2.1 Summary of Records Review Determinations

Determination to be Made	Yes/No	Description
Is the Project in a natural feature?	Yes	There is a woodland 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 unevaluated wetlands, woodlands and candidate wildlife habitats located within 120 m of the Project location.

Therefore, Project components will be located on or within 120 m of natural features.

In addition, the potential occurrence of several species of conservation/species at risk were noted; these include

- Bald Eagle (*Haliaeetus leucocephalus*)
- Loggerhead Shrike (*Lanius ludovicianus migrans*)



Legend

- Roads
- Transmission Line
- Topographic Contour (5m interval)
- Watercourse
- Parcels

Candidate Significant Natural Heritage Features

- Animal Movement Corridor (Semi-aquatic)
- Hedgerow/Animal Management Corridor (Terrestrial)
- Bullfrog Concentration Area/American Bullfrog Habitat
- Northern Harrier Habitat
- Milksnake Habitat
- Woodland/Animal Movement Corridor (Terrestrial)
- Wetland

Project Components

- Connection Point With Distribution Line
- Annual Vegetation Management Zone (Operations)
- Project Location
- 120m from Project Location
- 60m Buffer from Animal Movement Corridor (Semi-Aquatic)/Bullfrog Habitat (Construction)

0 75 150 300 Metres

NORTH

1:8,000

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

Figure 1.1
Northland Power Inc.
Crosby Solar Energy Project
Project Components and Natural Heritage Features

HATCH™

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Back of Figure

- Least Bittern (*Ixobrychus exilis*)
- Cerulean Warbler (*Dendroica cerulean*)
- Canada Warbler (*Wilsonia canadensis*)
- Golden-winged Warbler (*Vermivora chrysoptera*)
- Chimney Swift (*Chaetura pelagica*)
- Common Nighthawk (*Chordeiles minor*)
- Bobolink (*Dolichonyx oryzivorus*)
- Whip-poor-will (*Caprimulgus vociferus*)
- Black Tern (*Chlidonias niger*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*).
- Blanding's Turtle (*Emydoidea blandingi*)
- Northern Map Turtle (*Graptemys geographica*)
- Common Musk Turtle (*Sternotherus odoratus*)
- Western Chorus Frog (*Pseudacris triseriata*)
- Gray Ratsnake (*Elaphe obsoleta*)
- Eastern Milksnake (*Lampropeltis triangulum*)
- Eastern Ribbonsnake (*Thamnophis sauritus septentrionalis*)
- Butternut (*Juglans cinerea*).

3. Site Investigation Methodology

3.1 Hatch Site Visits

3.1.1 Site Visit 1

3.1.1.1 Date, Time and Duration of Site Investigation

- Date: June 15, 2010
- Start Time: 08:00 hours
- Duration: approximately 10 hours

3.1.1.2 Weather Conditions During Site Investigation

- Temperature: 18°C
- Beaufort Wind: 3
- Cloud Cover: 100%

3.1.1.3 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.

3.1.1.4 Survey Methods

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.

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

3.1.2 Site Visit 2

3.1.2.1 Date, Time and Duration of Site Investigation

- Date: October 29, 2010
- Start Time: 10:30 hours
- Duration: approximately 4.5 hours

3.1.2.2 Weather Conditions During Site Investigation

- Temperature: 14°C
- Beaufort Wind: 3 to 4 in the morning, 0 in the afternoon
- Cloud Cover: 10%

3.1.2.3 Name and Qualifications of Person Conducting Site Investigation

The site investigation was completed by Caleb Coughlin.

Caleb is an environmental technologist with experience in fisheries and fish habitat assessments. Recent projects have included spawning surveys (Muskoka and Trout Lake rivers), Riverine Index Netting (White Lake and Mattagami River), Fall Walleye Index Netting (Mattagami River), forage fish collection, Brook Trout mark and recapture studies and Ontario Broad-scale Monitoring (OBM). A recent study required a complete fish community inventory involving electrofishing, trap netting and seine netting (Shickluna Hydro Development). He has participated in a number of other resource management studies focusing on aquatic and terrestrial ecosystems including assessments of natural heritage features, aquatic invasive species, avian populations, large mammals, furbearers and sustainable forestry practices.

3.1.2.4 Survey Methods

The woodlands on and within 120 m of the Project location were transacted on foot by the observer to look for candidate reptile hibernacula (rock piles) and snakes. Where rock piles were found, photographs of the feature were taken. Wherever possible, pictures from within the crevice were taken through the use of a camera adapter with a 2.5 ft. reach.

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

3.2 Natural Resource Solutions Inc. Site Visit

Natural Resource Solutions Inc. (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 Site Visit 1

3.2.1.1 Date, Time and Duration of Site Investigation

- Date: August 9, 2010
- Start Time: 17:20 hours
- Duration: 2 hours

3.2.1.2 Weather Conditions During Site Investigation

- Temperature: 29
- Beaufort Wind: 1 (1 to 5.6 km/h)
- Cloud Cover: 100%

3.2.2 Site Visit 2

3.2.2.1 Date, Time and Duration of Site Investigation

- Date: August 10, 2010
- Start Time: 08:30 hours
- Duration: 3 hours

3.2.2.2 Weather Conditions During Site Investigation

- Temperature: 30
- Beaufort Wind: 2 (5.6 to 11 km/h)
- Cloud Cover: 100%

4. Results of Site Investigation

The Project location is primarily characterized as a mix of agricultural fields for production of forage crops used for hay and pasture and a livestock (i.e., cattle) operation.

The areas that are not in agricultural production are comprised of natural features, such as woodlands. These natural features, including vegetation communities and wildlife species observed on the Project location, are described in detail below.

4.1 Vegetation Observations

The natural features identified on the Project location are described following the Ecological Land Classification (ELC) System and include natural and cultural vegetation communities such as woodlands, meadow marsh, and hedgerows. As discussed earlier, the majority of the agricultural fields are comprised of a mix of grasses and legumes and used for the production of hay and as cattle pasture (Figure 4.1). These areas are not considered within the ELC system and as such are not discussed further. A complete list of vegetation species observed during the site investigation, including common and scientific names, is found in Table 4.1.

Table 4.1 Vegetation Species Observed on the Project Location

Type	Common Names	Scientific Name	Global Rank	Provincial Rank
Tree	Manitoba Maple	*Acer negundo*	G5	S5
Tree	Sugar Maple	*Acer saccharum ssp. saccharum*	G5T5	S5
Tree	White Birch	*Betula papyrifera*	G5	S5
Tree	Bitternut Hickory	*Carya cordiformis*	G5	S5
Tree	Shagbark Hickory	*Carya ovata*	G5	S5

Type	Common Names	Scientific Name	Global Rank	Provincial Rank
Tree	American Beech	*Fagus grandifolia*	G5	S4
Tree	White Ash	*Fraxinus americana*	G5	S5
Tree	Black Ash	*Fraxinus nigra*	G5	S5
Tree	Green Ash / Red Ash	*Fraxinus pennsylvanica*	G5	S5
Tree	Black Walnut	*Juglans nigra*	G5	S4
Tree	Eastern Red Cedar	*Juniperus virginiana*	G5	S5
Tree	Ironwood	*Ostrya virginiana*	G5	S5
Tree	Red Pine	*Pinus resinosa*	G5	S5
Tree	Largetooth Aspen	*Populus grandidentata*	G5	S5
Tree	Trembling Aspen	*Populus tremuloides*	G5	S5
Tree	Black Cherry	*Prunus serotina*	G5	S5
Tree	Bur Oak	*Quercus macrocarpa*	G5	S5
Tree	Red Oak	*Quercus rubra*	G5	S5
Tree	Basswood	*Tilia americana*	G5	S5
Tree	White Elm	*Ulmus americana*	G5?	S5
Tree	Rock Elm	*Ulmus thomasii*	G5	S4?
Shrub	Amur Maple	*Acer ginnala*	GNR	SNA
Shrub	Common Juniper	*Juniperus communis*	G5	S5
Shrub	Common Apple	*Malus pumila*	G5	SNA
Shrub	Pin Cherry	*Prunus pensylvanica*	G5	S5
Shrub	Prickly Gooseberry	*Ribes cynosbati*	G5	S5
Shrub	Eglantine	*Rosa rubiginosa*	GNR	SNA
Shrub	Nannyberry	*Viburnum lentago*	G5	S5
Shrub	Prickly-ash	*Zanthoxylum americanum*	G5	S5
Shrub	Raspberry Sp.	*Rubus sp*	-	-
Shrub	Willow Species	*Salix sp*	-	-
Shrub	Honeysuckle Sp.	*Lonicera sp*	-	-
Shrub	Buckthorn Sp.	*Rhamnus sp*	-	-
Shrub	Hawthorn Sp.	*Crataegus sp*	-	-
Herb	Common Yarrow	*Achillea millefolium ssp. millefolium*	G5T5?	SNA
Herb	Canada Anemone	*Anemone canadensis*	G5	S5
Herb	Spreading Dogbane	*Apocynum androsaemifolium*	G5	S5
Herb	Common Burdock	*Arctium minus ssp. minus*	GNRTNR	SNA
Herb	Common Milkweed	*Asclepias syriaca*	G5	S5
Herb	Ox-eye Daisy	*Chrysanthemum leucanthemum*	GNR	SNA
Herb	Wild Basil	*Clinopodium vulgare*	G5	S5
Herb	Deptford Pink	*Dianthus armeria*	GNR	SNA
Herb	Woodland Strawberry	*Fragaria vesca ssp. americana*	G5	S5
Herb	Common Strawberry	*Fragaria virginiana ssp. virginiana*	G5	S5
Herb	Rough Bedstraw	*Galium asprellum*	G5	S5

Type	Common Names	Scientific Name	Global Rank	Provincial Rank
Herb	Fragrant Bedstraw	*Galium triflorum*	G5	S5
Herb	Orange Hawkweed	*Hieracium aurantiacum*	GNR	SNA
Herb	Canadian St. John's-wort	*Hypericum canadense*	G5	S4?
Herb	Nipplewort	*Lapsana communis*	GNR	SNA
Herb	Motherwort	*Leonurus cardiaca ssp. cardiaca*	GNR	SNA
Herb	Canada Mayflower	*Maianthemum canadense*	G5	S5
Herb	Creeping Wood-sorrel	*Oxalis corniculata*	GNR	SNA
Herb	Rough-fruited Cinquefoil	*Potentilla recta*	GNR	SNA
Herb	Tall Buttercup	*Ranunculus acris*	G5	SNA
Herb	Curly Dock	*Rumex crispus*	GNR	SNA
Herb	Bladder Campion	*Silene latifolia*	GNR	SNA
Herb	Canada Goldenrod	*Solidago canadensis var. canadensis*	G5	S5
Herb	Common Chickweed	*Stellaria media*	GNRTNR	SNA
Herb	Alsike Clover	*Trifolium hybridum ssp. elegans*	GNR	SNA
Herb	Red Clover	*Trifolium pratense*	GNR	SNA
Herb	White Clover	*Trifolium repens*	GNR	SNA
Herb	Common Mullein	*Verbascum thapsus*	GNR	SNA
Herb	Bird's-foot Trefoil	*Lotus corniculatus*	GNR	SNA
Herb	Violet Sp.	*Viola sp*	-	-
Herb	Goldenrod Sp.	*Solidago sp*	-	-
Herb	Aster Sp.	*Aster sp*	-	-
Herb	Baneberry Sp.	*Actaea sp*	-	-
Vine	Cow Vetch	*Vicia cracca*	G?	SNA
Woody Vine	Virginia Creeper	*Parthenocissus quinquefolia*	G5	S4?
Woody Vine	Riverbank Grape	*Vitis riparia*	G5	S5
Graminoid	Canada Blue-joint	*Calamagrostis canadensis*	G5	S5
Graminoid	Grass species	*Poaceae spp*	-	-
Sedge	Sedge Species	*Carex sp*	-	-
Sedge	Green Sedge	*Carex viridula*	G5	S5
Sedge	Wool Grass	*Scirpus cyperinus*	G5	S5
Sedge	Small-fruited Bulrush	*Scirpus microcarpus*	G5	S5
Sedge	Sedge spp.	*Cyperaceae spp*	-	-
Rush	Rush spp.	*Juncaceae spp*	-	-
Fern	Sensitive Fern	*Onoclea sensibilis*	G5	S5
Fern	Marsh Fern	*Thelypteris palustris var. pubescens*	G5	S5
Fern	Fern spp.	*Pteridophytes*	-	-

Type	Common Names	Scientific Name	Global Rank	Provincial Rank
Moss	Peat Moss sp.	*Sphagnum spp.*	-	-
Moss	Bryophytes		-	-

Acronyms/Definitions
Global
G5 – **Very common** (demonstrably secure under present conditions)
GNR - Denotes that the species does not have a Global Ranking
T – Denotes that the rank applies to a subspecies or variety.
Q – Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
Provincial
S5 – **Secure** (Common, widespread, and abundant in the nation or state/province)
S4 – **Apparently Secure** (Uncommon but not rare; some cause for long-term concern due to declines or other factors)
SNA – **Not Applicable** (A conservation status rank is not applicable because the species is not a suitable target for conservation activities)
NAR – Not at Risk

Figure 4.1 Agricultural Fields of the Project Location

Cultural Vegetation Communities
Cultural vegetation communities are described in the ELC system as areas formed as a result of anthropogenic and cultural disturbances. These communities are typically dominated by non-native species. The following cultural communities, although not formally classified in the ELC system, are considered culturally influenced and therefore are included in this category.

Cultural Hedgerows (CUH)

Cultural hedgerow communities are described as linear corridors dominated by shrub and tree species and are common in rural landscapes. These communities are often found along property lines, roadsides and within agricultural fields to separate one piece of land from another. Hedgerow communities not only serve a purpose for farmers (e.g., shelterbelts), but provide wildlife habitat for a variety of species.

The hedgerow communities identified on the Project location are found along the property line and are used to separate one field from another. These hedgerows are dominated by mature trees such as Rock Elm, Ash sp., Bitternut Hickory and Sugar Maple. Other trees found within these hedgerows included Bur Oak, White Birch, Black Walnut, Eastern Red Cedar and Red Pine. The dominant shrub species included Buckthorn sp., Pin Cherry and occasionally Hawthorn sp., Common Apple, Nannyberry, Prickly Gooseberry and Common Juniper. Other shrub species observed includes Manitoba Maple, Black Cherry and Prickly-Ash.

Deciduous Forest Communities (FOD)

Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5)

The woodland in the northwest corner of the Project location is described as a middle-aged to mature, tolerant, hardwood forest with a closed canopy (approximately 90%). Cattle are permitted to graze within this woodland. The microtopography is complex and includes upland and low-lying areas. The soils within this woodland are shallow and stony with limestone bedrock exposed at the surface in some locations. Gently-sloping to strongly-sloping areas are found within the upland areas and consist of well-drained sandy loam to loam soils. The low-lying areas include shallow depressions with poorly drained clay soils.

The dominant tree species found within the upland area include Sugar Maple, Shagbark Hickory, Bitternut Hickory, American Beech and Elm species (Figure 4.2). The subcanopy was dominated by Ironwood and Shagbark Hickory. Other tree species observed included Basswood, Bur Oak, Red Oak, White Birch, Ash sp., and Black Cherry. The dominant shrubs within the woodland included Common Apple and Common Juniper. Other shrubs observed were predominately found along the periphery of the woodland and included Buckthorn sp., Pin Cherry and Prickly-Ash. There is a high accumulation of leaf litter and groundcover vegetation is sparse and included species such as Canada Mayflower, Virginia Creeper, Woodland Strawberry, and Violet sp.

The low-lying areas within the woodlot are dominated by Sugar Maple, Green Ash, Black Ash, Trembling Aspen and Largetooth Aspen (Figure 4.3). Other tree species observed included Ironwood, Bur Oak and White Birch. Groundcover vegetation is sparse and dominated by grasses, sedges, rushes and mosses.

Figure 4.2 View of the Upland Portion of the Woodland in the Northwestern Corner of the Project Location

Figure 4.3 View of the Low-lying Portion of the Woodland

Wetland Communities

Several wetland communities were identified on and within 120 m of the Project location. These wetland communities were described separately by Natural Resources Solutions Inc., and are described further within Appendix B. The report concluded that there were 5 wetland communities present on and within 120 m of the Project location (see Figure 1.1). Photographs from the meadow marsh community located within 120 m east of the Project location are provided in Figures 4.4 and 4.5.

Figure 4.4 View of Flooded Area within Meadow Marsh Ecosite

Figure 4.5 View of Exposed Bedrock within the Meadow Marsh Area

4.2 Wildlife Observations

Wildlife species recorded during the site investigation are documented in Table 4.2.

Table 4.2 Wildlife Species Observed on the Project Location

Common Name	Scientific Name	Conservation Status[1]		Declining Species[2]
		Global (GRank)	Provincial (SRank)	
Mammals				
White-tailed deer	*Odocoileus virginianus*	G5	S5	No
Coyote	*Canis latrans*	G5	S5	No
Groundhog	*Marmota monax*	G5	S5	No
Birds				
Osprey	*Pandion haliaetus*	G5	S5B	No
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5	No
Northern Harrier	*Circus cyaneus*	G5	S4B	No
Great Blue Heron	*Ardea herodias*	G5	S4	No
Turkey Vulture	*Cathartes aura*	G5	S5B	No
Wild Turkey	*Meleagris galloplavo*	G5	S5	No
Common Raven	*Corvus corax*	G5	S5	No
American Crow	*Corvus brachyrhynchos*	G5	S5B	No

Common Name	Scientific Name	Conservation Status[1]		Declining Species[2]
		Global (GRank)	Provincial (SRank)	
Song Sparrow	*Melospiza melodia*	G5	S5B	No
American Robin	*Turdus migratorius*	G5	S5B	No
Canada Goose	*Branta Canadensis*	G5	S5	No
Reptiles				
Gartersnake	*Thamnophis sirtalis*	G5	S5	No
Amphibians				
American Bullfrog	*Rana catesbeiana*	G5	S4	Yes
Green Frog	*Rana clamitans*	G5	S5	No
Leopard Frog	*Rana pipiens*	G5	S5	No

[1] **MNR, 2010**
Global
G5 – **Very common** (demonstrably secure under present conditions)
T – Denotes that the rank applies to a subspecies or variety.
Provincial
S5 – **Secure** (Common, widespread, and abundant in the nation or state/province)
S4 – **Apparently Secure** (Uncommon but not rare; some cause for long-term concern due to declines or other factors)
B - Denotes that the ranking applies to Breeding
SNA –**Not Applicable** (A conservation status rank is not applicable because the species is not a suitable target for conservation activities)

[2] Mammals (MNR, 2010), Birds (Ontario Partners In Flight, 2005), Amphibians and Reptiles (MNR, 2000 and McKenney et al., 2007)

Other evidence of wildlife presence on site included a squirrel drey and evidence of woodpecker activity. The American Bullfrog and Green Frog were observed within a watercourse located adjacent to and within 120 m of the Project location.

4.2.1 Wildlife Habitat

The Project location and the surrounding areas would be classified as wildlife habitat, which is defined as places "where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations."

Wildlife habitat in the area consists of agricultural fields, the woodlands, the scrub area and wet meadow.

The Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) identifies four main types of wildlife habitat that can be classified as significant:

- 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 is considered further below and how they were considered during the site investigation.

4.2.1.1 Habitats of Seasonal Concentrations of Animals

There are many different kinds of seasonal concentration areas, with the likelihood of occurrence of one of these areas depending on the characteristics of the study location. Those that were considered during the site investigations, and the discussion of their potential occurrence on the Project location, are discussed below:

- Winter deer yards/moose late winter habitat – Winter deer yards/moose late winter habitat are sheltered areas where these species congregate during the winter months. As these species are not adept at moving through deep snow, a key component of these habitats is a core area predominantly composed of coniferous trees with a 60% canopy cover. Habitat of this type was considered during the site investigation in relation to the wooded areas present on and within 120 m of the Project location. A core coniferous area was not identified within these areas, and as a result, are not considered to meet the definitions of a winter deer yard or moose late winter habitat.
- Colonial bird nesting sites – Colonial bird nesting sites are locations where colonial species, such as herons, gulls, terns, and swallows traditionally nest in colonies of varying size. Though Great Blue Heron were recorded flying through the Project location during the site investigation, no heronries are known from the area or were detected during the site investigation. Marshlands present within 120 m of the Project location are not of suitable size and do not have characteristics for supporting colonial nesting species. Rocky areas suitable of supporting tern or gull populations, or potential swallow colonial breeding locations were not identified during the site investigation on or within 120 m of the Project location.
- Waterfowl stopover and staging areas – Waterfowl traditionally congregate in larger wetlands, complexes of small wetlands in close proximity, and relatively undisturbed shorelines with vegetation during spring and fall migration. Further, during the fall migration, waterfowl may commonly congregate in feeding or roosting ponds. Suitable habitat for waterfowl stopover or staging was not identified on or within 120 m of the Project location, and ponds suitable for use as waterfowl feeding/roosting ponds were not identified.
- Waterfowl nesting – Waterfowl nesting sites can consist of relatively large, undisturbed upland areas with abundant ponds and wetlands, while other species nest within tree cavities in swamps or on the shorelines of water bodies. Canada Goose were recorded during the site investigation, though no evidence of nesting was noted, and significant concentrations of geese were not observed. Therefore, this habitat type is not found on or within 120 m of the Project location.
- Shorebird/Landbird migratory stopover areas – Shorebird migratory stopover areas are found along the shorelines of the Great Lakes and James Bay, while landbird stopover areas are found along the shorelines of the Great Lakes and contain a variety of habitat types from open fields to large woodlands. As the Project location is located more than 120 m away from these areas, this habitat type cannot occur on the Project location.

- Raptor winter feeding and roosting areas – This combined habitat type features suitable raptor roosting sites in proximity to winter feeding areas. For most raptor species, roosting sites are traditionally mature mixed or coniferous woodlands, a habitat type which is absent both on and within 120 m of the Project location. Some species roost within grassy fields; however, the harvest of hay from the Project location and agricultural lands within 120 m in the fall and subsequent small growth of grasses, as well as the small grass growth expected on cow pastures in this area indicates the Project location and lands within 120 m would not provide suitable roosting habitat for these species. It is expected that raptor winter feeding would occur across the Project location and within 120 m, consistent with that which would occur along other fields in the area; however, the absence of suitable roosting habitats in close proximity determines that this is an area that does not meet the requirements for further evaluation of significance.
- Wild Turkey winter range – Similar to winter deer yards, Wild Turkey rely on coniferous forest stands for winter protection. As was previously discussed, such habitat was not identified during the site investigation on or within 120 m of the Project location, and therefore, Wild Turkey winter range is not found.
- Turkey Vulture summer roosting areas – Turkey Vulture summer roosting areas traditionally consist of cliff ledges and large snags. No cliff ledges were noted during the site investigation; however, large dead or partially dead trees are present within 120 m of the Project location and Turkey Vultures were recorded during the site investigation. However, no roosting activity was noted, and Turkey Vulture activity was restricted to observations of birds flying overhead consistent with foraging activities as would be expected across the region. As a result, Turkey Vulture summer roosting areas are not identified.
- Reptile hibernacula – Reptile hibernacula are commonly found in animal burrows and rock crevices. Animal burrows were not recorded during the site investigation, however several rock piles and rock crevices were observed within the woodlands on and within 120 m of the Project location (see Figure 4.6). Generally, rock piles corresponded with discard piles from the nearby fields, in many cases resulting in aggregations not suitable for use as reptile hibernacula. Only one snake was observed, a gartersnake which was found moving through the leaf litter within the woodland on the Project location. No snakes were observed on or within the rock piles identified on or within 120 m of the Project location As the survey was completed during a timeframe suitable for detection of reptile hibernacula, this feature is not found on or within 120 m of the Project location.

a)

b)

c)

d)

Figure 4.6 Rock Piles (a to c) on the Project Location and Rock Crevice (d) within 120 m of the Project Location

- Bat hibernacula – Bat hibernacula are found in caves, abandoned mines, or areas with karst topography. These features were not identified during the site investigation.
- Bullfrog concentration areas – Bullfrog concentration areas are predominantly found in areas of marsh habitat. Several bullfrogs were noted within the wetland habitats within 120 m of the northwestern corner of the Project location. As a result, this area is treated as candidate significant wildlife habitat.
- Migratory butterfly stopover areas – These habitats are found within 5 km of the Great Lakes; as the Project area is located outside of this zone, such habitat features are not found.

Therefore, of the seasonal concentration areas considered during the site investigation, only bullfrog concentration areas will be carried forward to the evaluation of significance.

4.2.1.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

Rare vegetation communities include alvars, tall-grass prairies, savannahs, rare forest types, talus slopes, rock barrens, sand barrens and Great Lakes dunes. None of these vegetation communities were identified during the site investigation. Vegetation communities that were observed during the site investigation have been previously described in Section 4.1; none of these communities are considered to be rare or uncommon within the local or provincial area.

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.

There are many habitat types that may meet these definitions; those that were considered during the site investigations as they had the potential to be present in the area, and the discussion of their potential occurrence on the Project location, are addressed below:

- Habitat for area-sensitive species – Appendix C of the SWHTG lists area-sensitive species. Of these species, only Northern Harrier was detected during the site investigation. The Northern Harrier was observed foraging over the agricultural fields, and was not noted in relation to the wetland habitats present on or within 120 m of the Project location. As the Project location represents suitable habitat for Northern Harrier, this will be considered in terms of significant wildlife habitat.
- Forests providing a high diversity of habitats – Forest communities on and within 120 m of the Project location were not found to contain a variety of dominant tree cover or vegetation communities. Forest communities were generally described as occurring within a single age class, middle-aged to mature. Only two forest communities were identified within the woodlands, upland and lowland. Abundant leaf litter was noted within the woodlands on the Project location, however no snakes were noted within these areas during the site investigation when they would be expected to have been observed. No supercanopy trees were observed. Therefore this potential habitat is not found on or within 120 m of the Project location.
- Old-growth or mature forest stands – As previously discussed, forest communities were described as middle-aged to mature; therefore this habitat type is not found.
- Foraging areas with abundant mast – Though beech and oak trees were recorded within the woodland on the Project location, as the Project location is located on the southern extent of the range of Black Bears within the province, use of these areas is not expected. No evidence of Black Bears was recorded from the Project location. In addition, no large patches of berry-producing shrubs, or Mountain Ash, Apple or Black Cherry trees were recorded. As a result, this specialized habitat is not found.
- Woodlands supporting amphibian-breeding ponds – Amphibian-breeding ponds were not found within the woodlands located on or within 120 m of the Project location during the site investigation.

- Turtle-nesting habitat – Turtle-nesting sites are areas where soft substrates, such as sand or fine gravel, are found that permit turtles to excavate their nests, and are located in open, sunny areas. Such substrate was not recorded on or within 120 m of the Project location during the site investigation. It is considered likely turtle-nesting attempts may be made along the roadside in this area. However, these areas do not meet the requirements for candidate significant wildlife habitat given the heavy disturbance associated with the areas.
- Specialized raptor-nesting habitat – Though Red-tailed Hawk, Osprey, and Northern Harrier were recorded during the site investigation, no evidence of raptor nesting was observed. Use of the area by these species was consistent with foraging/transit behaviour, and not with alarm/nest defence.
- Mink, Otter, Marten, and Fisher denning sites – Denning sites for these members of the weasel family were not recorded on or within 120 m of the Project location during the site investigation.
- Highly diverse areas – The habitats present on and within 120 m of the Project location were considered in respect of diversity. The Project location is situated on the edge of the Frontenac axis, an area that is identified as having high diversity. The vast majority of habitats present on and within 120 m of the Project location consist entirely of agricultural lands. Given the abundance of these communities within the region, these habitats do not meet the requirements of highly diverse areas. The woodland and wetland communities on and within 120 m of the Project location are the other habitat types present within 120 m of the Project location. Three wetland community types were noted during the site investigation. A diversity of species was not recorded within the wetland communities, and given the small size of these features, are not considered to significantly contribute to the diversity of the area. Similarly, a diversity of vegetation or wildlife species within the woodland community was not noted, with the ground cover generally species poor within the woodland. As a result, highly diverse areas are not found on or within 120 of the Project location.
- Cliffs and caves – These features were not identified on or within 120 m of the Project location during the site investigation.
- Seeps and springs – A small groundwater seepage areas was identified in the vicinity of the watercourse which crosses the Project location (see Hatch 2010b). As the seepage area is small and isolated, it is not considered to provide sufficient resources of any consequence for wildlife.

As a result, habitat for Northern Harrier is the lone candidate significant wildlife habitat carried forward to the evaluation of significance.

4.2.1.3 Habitat of Species of Conservation Concern

Species of conservation concern that were considered during the site investigation include the following:

- Black Tern – Suitable habitat for Black Tern was not identified on or within 120 m of the Project location; therefore, they are not expected to occur.
- Bald Eagle – Suitable nest support trees for Bald Eagle were not noted during the site investigation, and no Bald Eagles were observed. As a result, they are not expected to occur.

- Forest-breeding warbler species (Golden-winged Warbler, Canada Warbler) – Suitable habitat for these species was not detected on or within 120 m of the Project location.
- Red-headed Woodpecker – Suitable habitat for Red-headed Woodpecker was found on the Project location; however, the species was not recorded during the site investigations. As surveys were conducted during the breeding season, if they were present on-site it would be expected that they would have been observed. As a result, they are not expected to occur.
- Common Nighthawk — There is very little bare ground present on and within 120 m of the Project location that would serve as suitable breeding habitat for Common Nighthawk. Areas of suitable habitat were walked during the time period suitable for Common Nighthawk nesting and no nighthawks were observed. As a result, it is determined that Common Nighthawk do not breed on the Project location.
- Prairie Warbler – Prairie Warbler breed within early successional habitats; suitable habitats were not recorded on site during the site investigation, and Prairie Warbler were not recorded on site.
- Milksnake – As Milksnake are habitat generalists, suitable habitat is present on and within 120 m of the Project location. It is assumed that they are present.
- Northern Ribbonsnake — The watercourse which is located west of the Project location was not considered to be capable of supporting Northern Ribbonsnake.
- The water body which occurs within 120 m west of the Project location was not conducive to occupancy by turtles. Nesting habitat of Northern Map Turtle which may be found in the lake north of the Project location occurs in soft sand or soil (COSEWIC, 2002b); such habitat is not present on or within 120 m of the Project location.
- American Bullfrog – American bullfrogs were recorded within the wetland community within 120 m northwest of the Project location. This habitat was previously determined to meet the requirements of a bullfrog concentration area (see Section 4.2.1.1). As a result, this habitat type is considered further.
- Western Chorus Frog – Suitable habitat for Western Chorus Frog was not recorded on or within 120 m of the Project location, and none were recorded during either site investigation. As a result, suitable habitat for this species is not found.

Based on the results of the site investigation, potential habitat for Milksnake and confirmed habitat for American Bullfrog will be considered during the evaluation of significance.

4.2.1.4 Animal Movement Corridors

The SWHTG (MNR, 2000) defines animal movement corridors as “elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another”. Animal movement corridors were considered during the site investigation. Such features were found to be present within the hedgerows, woodlands, and watercourses on and within 120 m of the Project location.

Hedgerow features may provide suitable movement corridors for various terrestrial reptile (such as Gartersnake), mammal (such as raccoons and skunks), and bird (such as Blue Jays, Song Sparrows, and other passerines) species.

Woodlands may provide suitable movement corridors for those species previously identified in relation to hedgerows, as well as larger terrestrial species of mammals, such as deer and coyotes.

The watercourse within 120 m of the Project location may provide suitable movement corridors for semi-aquatic species of wildlife, such as amphibians (American bullfrog, Northern Leopard Frog) and reptiles (Eastern Ribbonsnake, Snapping Turtle).

These features will be further assessed in the evaluation of significance report.

4.3 Species at Risk

While no species at risk were observed during the site investigation, those species that were identified as having potential for occurrence on the Project location are discussed further below.

- Least Bittern – Suitable habitat for Least Bittern was not identified on or within 120 m of the Project location; therefore, they are not expected to occur.
- Chimney Swift – Chimney Swift were not recorded during the site investigation, and suitable habitat for the species was not observed. Therefore, Chimney Swift are not expected to occur.
- Whip-poor-will – Preferred habitat for Whip-poor-will was not identified during the site investigation. As a result, they are not expected to occur.
- Loggerhead Shrike – Loggerhead Shrike were not recorded on the Project location during the site investigations. As surveys were conducted during the breeding season, if they were present on site it would be expected that they would have been observed. Further, preferred habitat for Loggerhead Shrike was not identified during the survey. As a result, they are not expected on the Project location.
- Cerulean Warbler – Suitable habitat for Cerulean Warblers was not detected on the Project location and therefore they are not expected to occur.
- Bobolink – Bobolink were not recorded during the site investigation. Given that the survey was conducted during suitable timing to observe Bobolink, and given the conspicuous nature of male behavior during the breeding season, it is expected that if they were present on site they would have been observed. Therefore, though suitable habitat is present, Bobolink are determined to not be present on the Project location.
- Blanding's Turtle/Common Musk Turtle– Suitable habitat for turtle species was not recorded on the Project location, and these species are not expected to occur.
- Gray Ratsnake – Suitable habitat for Eastern Ratsnake may be found on the Project location. Consultation with MNR Kemptville is ongoing in order to determine whether a permit under the *Endangered Species Act* is required.
- Butternut – No Butternut were recorded during the site investigation, and therefore, they are determined to not be present on the Project location.
- American Ginseng – Though potential habitat is found on the Project location, woodlands were searched for American Ginseng, and none was identified. Consultation with MNR Kemptville is ongoing in order to determine whether a permit under the *Endangered Species Act* is required.

5. Conclusions

Based on the results of the site investigation identified above, there is a small correction to the Records Review Report (Hatch Ltd., 2010) whereby several areas of wetland habitats were identified on and within 120 m of the Project location.

There are several features present on and within the vicinity of the Project location that will require an Evaluation of Significance in order to determine whether Environmental Impact Studies are required:

- bullfrog concentration area
- woodlands on and within 120 m of the Project location
- habitat for Northern Harrier, American bullfrog and Milksnake
- animal movement corridors
- wetlands located within on and 120 m of the Project location.

6. References

Hatch Ltd. 2010. Crosby Solar Project – Natural Heritage Records Review Report. Prepared for Northland Power Inc. on Behalf of Northland Power Solar Crosby L.P. August 2010.

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Ministry of Natural Resources (MNR). 2010. Ontario Biodiversity Explorer. Available online at https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/mainSubmit.do.

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

Ontario Partners in Flight. 2005. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), *Priorities, Objectives and Recommended Actions*. Environment Canada/Ministry of Natural Resources.

Appendix A

Site Investigation Field Notes

Location: Little Rideau Lakes Rd. (North Crossing 5.1k)
Date: June 15, 2010
Time: 0800 – 1800
%C.C: 100% (Covercast) - Rain
Temp: 18°C
Wind: ~15km/h Beaufort Wind Scale: 3

American Robin
Canada Goose
- spoke to landowner low-lying, poor drainage south of little Rideau Lake Rd within cattle pasture area
song sparrow
Leopard frog.
groundhog
deer scat
White-tailed deer
great-blue heron
Northern Harrier
Red-tailed Hawk
Turkey Vulture
Raven

Hedgerow (SW)

- rock pile along edge

- White Ash
- buckthorn (A)
- red ash (A)?
- Sugar maple (R)
- rock elm? (A) (D)
- hawthorn sp.
- other shrub sp.
- raspberry
- prickly gooseberry
- bur oak (R)
- common apple
- eastern red cedar saplings (O)
- bitternut hickory (O)
- Manitoba maple (R)
- [illegible] (R)
- alsike clover
- rough bedstraw
- [illegible]
- wild basil

- cow vetch
- fragrant bedstraw
- riverbank grape
- grasses
- (tall) common buttercup
- virginia creeper
- common mullein
- goldenrod sp.
- raspberry sp.
- chickweed
- rough fruited cinquefoil
- red clover
- motherwort
- milkweed
- oxe-eye daisy
- common burdock
- canadian st johns wort
- bladder campion

Woodlands

white ash (A) — aralia

rock elm — wood strawberry

pin cherry (P) — yarrow

butternut hickory (A) — sow thistle

common apple (O) — red clover

raspberry sp. — raspberry sp.

black thorn (O) — trefoil

sugar maple — common nettle

eastern red cedar — sorrel

black ash (O)

common juniper

white ash (D) understory

sugar maple (O)

red ash (O)

red oak

Moist / low lying forest

* sugar maple (D) sub (A)
eastern redcedar (R)
largetooth Aspen (O)
rock elm (O)
White Ash or green?
Bur oak (R)
Basswood (R)
white birch (R)
* Ironwood (A) understory understory (O)
black cherry
* trembling aspen (O)
Bur Oak (R)
sedges
Canada Mayflower canopy / under
* Shagbark hickory (O) ; (A)
Black Cherry (R)
American beech (O) (upland areas)
rock piles
bedrock outcrops
vernal pool areas
white birch (R)

% C.C = 90%
leaf litter (A)
some lowlying areas
groundcover sparse
honeysuckle ?
firecap moss
peatmoss
squirrel nest
evidence of woodpecker

Large rock piles

Mature shagbark

more common apple on west side

of Woodlot

prickly ash (R)

red oak

[illegible] used

North of Woodland - Hedgerows

X [illegible]

[illegible] maple

Elm

X Buckthorn

[illegible] (?)

[illegible]

[illegible]

X [illegible]wood [illegible]

[illegible]

[illegible] (Bitternut)

Riverbank [illegible]

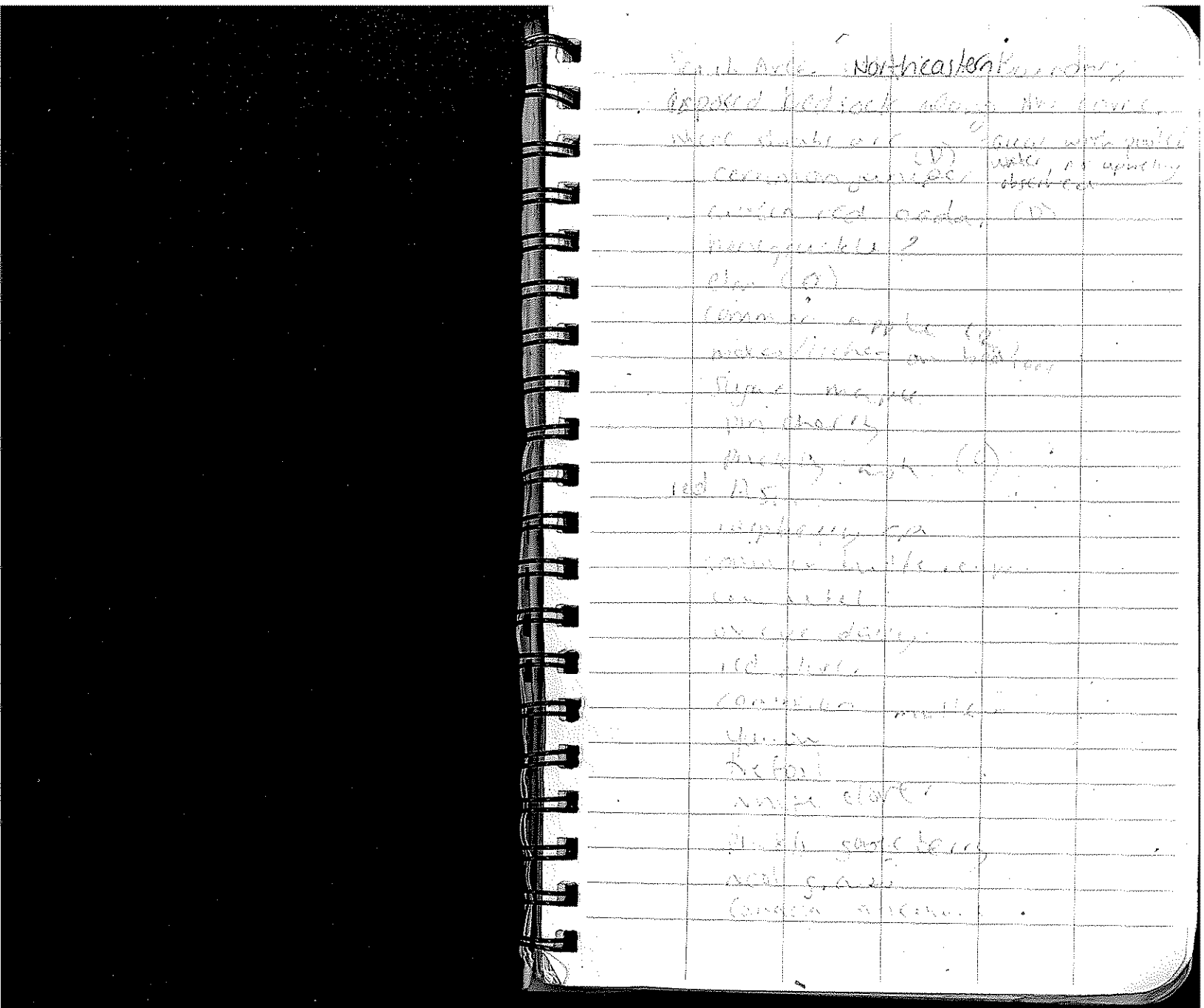
[illegible]

[illegible]

[illegible] (?)

[illegible] (c)

[illegible]



riverbank grape

[illegible] 0394356 (catchbasin)
4947437

wetland boundary [illegible] [illegible]
it was difficult to delineate
as [illegible] was filled through

- water flows southeast

Black walnut along road.

* NO butternut found

HATCH™

Site Investigation Field Notes

1. Project Identification

Project Name: Northland Crosby

Site Information

Lot Number: _____ Concession Number: _____

Municipality: _____ County: _____

Location: _____

UTM: _____
or
Latitude: _____ ° _____ ' _____"N Longitude : _____ ° _____ ' _____"W

2. Investigator Information

Name: Caleb Coughlin

Title: Environmental Technologist

Company Name: Hatch

Address: Hatch LTD, Niagara Falls

Phone: _____

3. General Information

Date (Day of the week, m/d/y): Oct 27 2010

Investigation Start Time: 10:30am

Duration: 2 1/2 hours

4. Weather Conditions

Temperature: 14 °C

Beaufort Wind: 3-4 in the moning 0 in afternoon

Cloud Cover: 10 % Rain: Y ☐ N ☒

Other: _____

Crosby Snake Site Investigation

Woodlot clear electric Fence and heavy cattle usuage.

Began Search at 10:33am off of Carleton St.

A zig zag Pattern walked from East and Western forest edge spacing approximately 15-20m.

Old fieldstone Dumping areas present. Stone piles are consistant with rock pile piles only consisting of sizes, none too large to handled.

Several piles had holes which looked to be used by something. those piles were investigated by removing rocks and exploring inside - Only insects/spiders were seen -

Seach Pattern changed to a North south pattern cover off Field. fewer Rock piles within large portion of woodlot.

Evidence of Wild Turkey and WTD usage. Some Clumps of mature beech No sign of Bear usage.

No snakes observed through entire search.

Correction 1 Garter snake. eps e. snake seen while walking back to car.

Snake very active. a spiral shaped search pattern extending out from the snake resulted in 8 observations

Bedrock ridge SW corner.

area was walked one area of interest was observed - a small outcrop appox 1m in height. 20m in length.

Outcrop contain opening camera was inserted and photo taken of inside to the outcrop

No wildlife Observed.

Appendix B

Natural Resource Solutions Inc.
Wetland Evaluation

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

1143

November, 16, 2010

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

Dear Mr. Male:

Re: Crosby 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. This letter incorporates revisions that result from the review comments provided by the Ontario Ministry of Natural Resources staff during the conference call on November 8, 2010.

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. The Bog Marsh Provincially Significant Wetland (PSW) and portions of the Newboro Lake Marsh Area of Natural and Scientific Interest (ANSI) are also found to the south and southeast of the project site 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 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 wetlands were found on the project site and within 120m. The wetlands were described under the OWES as well as using ELC criteria during field surveys completed on August 9 and 10, 2010. The wetland evaluation also includes results of field surveys undertaken by staff of Hatch on June 15, 2010. As part of the Records Review completed by Hatch, a number of Species at Risk were recorded from the vicinity. These species included western chorus frog (*Pseudacris triseriata*), ribbonsnake (*Thamnophis sauritus*), least bittern (*Ixobrychus exilis*), black tern (*Chlidonias niger*), blanding's turtle (*Emydoidea blandingii*), eastern musk turtle (*Sternotherus odoratus*), and northern map turtle (*Graptemys geographica)*. 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.

In the northeast section of the study area 6 communities were identified, which are greater than 750m from the Bog Marsh PSW. These communities are shown as:

neM_4 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
reM_5 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]
reM_6 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]
reM_7 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
reM_8 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
tsS_6 [ELC: Slender Willow Mineral Deciduous Thicket Swamp Type (SWTM3-3)]

Based on our review of local drainage and distance from the PSW (>750m), it was concluded that it would be appropriate to evaluate these wetlands as a stand alone wetland complex. A completed wetland evaluation and associated mapping is also appended to this letter.

The results of the wetland evaluation indicate that this is a non-provincially significant wetland. Based on their review of the evaluation, staff of the OMNR have agreed with this conclusion (S. Thompson, pers comm.. Nov. 8, 2010)

Two additional communities were identified in the Southeast end of the project area which are not connected to the Bog Marsh PSW or any other wetlands within 750m. They are shown as:

hS_5 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
neM_3 [ELC: Reed-canary Grass Graminoid Mineral Meadow Marsh Type (MAMM1-3

These communities are relatively small (0.39ha and 0.59Ha respectively) and drain south into the Newboro Lake Marsh ANSI, they do not appear to provide significant ecological or hydrological functions that warrant inclusion into a complex, and being less than 2ha in total area it was concluded that a wetland evaluation would not be required.

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:
hS_5 [ELC: Green Ash Mineral Deciduous Swamp Type (SWDM2-2)]
h*: *Fraxinus pennsylvanica, Ulmus Americana*
ts: *Fraxinus pennsylvanica, Ulmus Americana*
gc: *Lythrum salicaria, Eupatorium maculatum ssp. Maculatum, Solidago canadensis*
ne: *Phalaris arundinacea*

Wetland 2:
neM_3 [ELC: Reed-canary Grass Graminoid Mineral Meadow Marsh Type (MAMM1-3)]
ne*: *Phalaris arundinacea*

Wetland 3:
neM_4 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
ne: *Eleocharis smallii, Dactylis glomerata, Carex vulpinoidea*
re*: *Scirpus atrovirens, Schoenoplectus tabernaemontani, Phalaris arundinacea*

reM_5 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]
ne: *Phalaris arundinacea*
re*: *Typha angustifolia, Scirpus atrovirens*

Wetland 4:
reM_6 [ELC: Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)]
re*: *Typha angustifolia, Scirpus atrovirens, Schoenoplectus tabernaemontani*

Wetland 5:
reM_7 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
gc: *Lythrum salicaria, Trifolium pratense, Eupatorium maculatum ssp. Maculatum*
ne: *Carex vulpinoidea, Carex bebbii, Dactylis glomerata*
re*: *Scirpus atrovirens, Scirpus cyperinus*

Wetland 6:
reM_8 [ELC: Mixed Graminoid Graminoid Mineral Meadow Marsh Type (MAMM1-16)]
gc: *Lythrum salicaria, Eupatorium perfoliatum, Vicia cracca*
ne: *Carex vulpinoidea, Juncus tenuis, Phalaris arundinacea*
re*: *Scirpus atrovirens*

Wetland 7:
tsS_6 [ELC: Slender Willow Mineral Deciduous Thicket Swamp Type (SWTM3-3)]
ts*: *Salix petiolaris, Fraxinus pennsylvanica, Rhamnus cathartica*
ls: *Spiraea alba, Salix petiolaris, Juniperus virginiana*
gc: *Lythrum salicaria, Solidago canadensis, Symphyotrichum novae-angliae*
ne: *Phalaris arundinacea*

***** 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
Barry Moss B.E.S.	Certified ELC	Field Survey, Data Analysis, Evaluation
Megan Anevich B.E.S.	Field Biologist	Field Survey
Cheryl-Anne Payette B.Sc FWT	Field Biologist	Data Analysis, Evaluation
Shawn MacDonald, B.A.	GIS Mapping	Mapping

NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

Wetland Vegetation Communities

Project Name: CROSBY **Project #:** 1143

Observer(s): BAM, MA **UTM:**

Date: AUG 10/2010 **Time (24h):** 8:30

Field #: 9 **Weather:** Precipitation: NONE Temp (°C): 30

Map Code: NCN4 Wind Speed & Direction: 2-W Cloud %: 100

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

% Open Water: 0 **ELC Code:** NAMM1-16

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 0	
c 0	
dc,dh,ds 0	
ts 0	
ls 0	
gc 5%.	red clover, lady's thumb, wild mint
ne 25%.	spike rush, orchard grass, fox sedge
be 0	
re 70%.	dark green bulrush, soft stemmed bulrush, reed canary grass
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
NONE	CABBAGE WHITE SOSD, NOHA (flying) PHOTOS: 0105, 0106

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: CROSBY **Project #:** 1143

Observer(s): BAM, MA **UTM:**

Date: AUG 10/2010 **Time (24h):** 9 00

Field #: 10 **Weather:** Precipitation: none Temp (°C): 30

Map Code: NCN6 Wind Speed & Direction: 2-W Cloud %: 100

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

% Open Water: 0 **ELC Code:** NAMM1-2

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 0	
c 0	
dc,dh,ds 0	
ts 0	
ls 0	
gc 2%.	purple loosestrife, lady's thumb, bare-stemmed goldenrod
ne 10%.	reed canary grass, fox sedge, beak sedge
be 0	
re 90%.	cattail, dark green bulrush, soft-stemmed bulrush
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):	Wildlife Notes:
NONE	SOSP PHOTOS: 0107, 0108

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: CROSBY **Project #:** 1143

Observer(s): BAM, MA ~~**UTM:**~~

Date: AUG 10/2010 **Time (24h):** 9 20

Field #: 11 **Weather:** Precipitation: NONE Temp (°C): 30

Map Code: rcM7 Wind Speed & Direction: 2-W Cloud %: 100

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

% Open Water: **ELC Code:** MAMM1-16

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 1%	
c 0	
dc,dh,ds 0	
ts 5%	slender willow, white elm, red cedar
ls 2%	slender willow
(gc) 20%	purple loosestrife, red clover, joe pye weed
(ne) 30%	fox sedge, Bebb's sedge, orchard grass
be 0	
(re) 40%	dark green bulrush, scirpus cyperinus
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

MONARCH
SOSP, NLFR

PHOTOS: 0109, 0110

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: CROSBY **Project #:** 1145

Observer(s): BAM, MA ~~**UTM:**~~

Date: AUG 10/2010 **Time (24h):** 9:50

Field #: 12 **Weather:** Precipitation: NONE Temp (°C): 30

Map Code: rcM8 Wind Speed & Direction: 2-W Cloud %: 100

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

% Open Water: 0 **ELC Code:** MAMM1-16

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 5%	white elm
c 0	
dc,dh,ds 0	
ts 10%	white elm, slender willow, red cedar
ls 2%	slender willow, juniper, narrow-leaved spiraea
(gc) 25%	purple loosestrife, common boneset, tufted vetch
(ne) 30%	fox sedge, path rush, reed canary grass
be 0	
(re) 45%	dark green bulrush
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):

* edges of marsh constricted by herbicide application & plowing

Wildlife Notes:

BUTTERFLY (PHOTO) = 0113
NLFR

PHOTOS: 0111, 0112

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: CROSBY **Project #:** 1143

Observer(s): BAM, NA **UTM:**

Date: AUG 10/2010 **Time (24h):** 10:20

Field #: 13 **Weather:** Precipitation: None Temp (°C): 30

Map Code: neM3 Wind Speed & Direction: 1-W Cloud %: 100

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

% Open Water: 0 **ELC Code:** MAMM1-3

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 0	
c 0	
dc,dh,ds 0	
ts 0	
ls 0	
gc 20% canada goldenrod, wild carrot, purple loosestrife	
ne 80% Reed canary grass	
be 0	
re 0	
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):

None

Wildlife Notes:

None

photo .0114

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: CROSBY **Project #:** 1143

Observer(s): BAM, NA **UTM:**

Date: AUG 9/2010 **Time (24h):** 17:20

Field #: 6 **Weather:** Precipitation: rain Temp (°C): 29

Map Code: hS5 Wind Speed & Direction: 1-W Cloud %: 100

Wetland Type: 3 **Site Type:** P **Dominant Form:** h

% Open Water: 0 **ELC Code:** SWDH2-2

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
(h) 30%	green ash, white elm
c 5%	white cedar
dc,dh,ds 0	
(ts) 30%	green ash, white elm
ls 10%	green ash, tartarian honeysuckle
(gc) 50%	purple loosestrife, [illegible], canada goldenrod
(ne) 40%	reed canary grass
be 0	
re 10%	narrow-leaved cattail
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

AMGO, CEDW

PHOTOS: 0099, 0100

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: CROSBY **Project #:** 1143

Observer(s): BAM, MA **UTM:**

Date: AUG 9/2010 **Time (24h):** 18 00

Field #: 7 **Weather:** Precipitation: rain Temp (°C): 29

Map Code: rc M5 Wind Speed & Direction: I-W Cloud %: 100

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

% Open Water: 0 **ELC Code:** MANNI-2

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 0	
c 0	
dc,dh,ds 2%	white elm
ts 2%	white cedar
ls 0	
gc 0	
(ne) 40%	reed canary grass, carex lacustris
be 0	
(re) 60%	cattail, dark green bulrush
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

BLJA

PHOTOS: 0101, 0102

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: CROSBY **Project #:** 1143

Observer(s): BAM, MA **UTM:**

Date: AUG 9/2010 **Time (24h):** 18:30

Field #: 8 **Weather:** Precipitation: rain Temp (°C): 29

Map Code: ~~+s~~ S6 Wind Speed & Direction: I-W Cloud %: 100

Wetland Type: S **Site Type:** R **Dominant Form:** +s

% Open Water: 10 **ELC Code:** SW TM3-3

Forms % (Circle those ≥25%)	Species (dominant species, secondary species, present species)
h 5%	white elm
c 0	
dc,dh,ds 0	
(ts) 50%	slender willow, green ash, common buckthorn
(ls) 30%	narrow-leaved spirea, slender willow, juniper
(gc) 30%	purple loosestrife, canada goldenrod, acer negundo aver
(ne) 50%	reed canary grass
be 2%	common arrowhead, water plantain
re 5%	cattail
ff 0	
~~ff~~	
su 0	
m 0	

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

ANRO, YEWA, AMGO, ALFL

PHOTOS: 0103, 0104

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

Crosby

Wetland Evaluation Edition	1993

September 16, 2010

Comments

Attached Documents include:
1) Map of CrosbyWetland Complex
2)NRSI Field notes
3) List of vegetation communities
4) Summary of Wetland types, site types and dominant form areas
5) Map of Interspersion
6)Map of Crosby wetland complex catchement basin

Additional Information

Official Name:	Crosby				
Evaluation Edition:	1993	Class:		Wetland ID.:	
Wetland Significance	Year/Month Last Evaluated			September 15, 2010	
Provincially Significant	Year/Month Last Updated				

Special Planning Considerations:	**Scores**	
	Biological:	92
	Social:	42
	Hydrological:	170
	Special Features:	62
	Overall:	365

Submitted by:	Natural Resources Solution Inc.
Date:	September 15 2010

Southern Ontario Wetland Evaluation, Data and Scoring Record **(March 1993)**

WETLAND DATA AND SCORING RECORD

i) WETLAND NAME: **Crosby**

ii) MNR ADMINISTRATIVE REGION: **Southern** **DISTRICT:** **Kemptville**

AREA OFFICE (if different from District):

iii) CONSERVATION AUTHORITY JURISDICTION: **Rideau**

(If not within a designated CA, check here: ____

iv) COUNTY OR REGIONAL MUNICIPALITY: **County of Leds and Grenville**

v) TOWNSHIP: **Rideau Lakes**

vi) LOTS & CONCESSIONS: **LOT2CON2, LOT2CON3, LOT1CON3, LOT2CON4,**
(attach separate sheet if necessary) **LOT1CON4, LOT27CON4**

vii) MAP AND AIR PHOTO REFERENCES

a) Latitude: **44.662N** Longitude: **76.316W**

b) UTM grid reference: Zone: **18t** Block: **UE**
Grid:E 39 61 65 N 49 46 738

c) National Topographic Series:

map name(s) **Westport**

map number(s) **031c09** edition **6**

scale **1:50 000**

d) Aerial photographs: Date photo taken: **2010** Scale: **3.513888889**

Flight & plate numbers: **n/a**

(attach separate sheet if necessary)

e) Ontario Base Map numbers & scale **10 18 3950 49450**

1: 10 000

(attach separate sheets if necessary)

viii) WETLAND SIZE AND BOUNDARIES

a) Single contiguous wetland area: ________ hectares

b) Wetland complex comprised of 7 individual wetlands:

Wetland Unit Number (for reference)		Isolated	Palustrine	Riverine	Size of each wetland unit Lacustrine	
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.	1		1.25			ha
Wetland Unit No.	2		0.13			ha
Wetland Unit No.	3		0.60			ha
Wetland Unit No.	4		0.76			ha
Wetland Unit No.	5			1.72		ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
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Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit No.						ha
Wetland Unit Totals:		0.00	2.74	1.72	0.00	

(Attach additional sheets if necessary)

TOTAL WETLAND SIZE 4.46 ha

c) Brief documentation of reasons for including any areas less than 0.5 ha in size:

(Attach separate sheets if necessary .)

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 GROWING DEGREE-DAYS/SOILS

GROWING DEGREE DAYS (check one)		
1)	1	<2800
2)		2800 -3200
3)		3200 -3600
4)		3600 -4000
5)		>4000

SOILS Estimated Fractional Area	
1.000	clay/loam
	silt/marl
	limestone
	sand
	humic/mesic
	fibric
	granite

SCORING:

Growing Degree-Days	Clay-Loam	Silt-Marl	Lime-stone	Sand	Humic-Mesic	Fibric	Granite
<2800	15	13	11	9	8	7	5
2800-3200	18	15	13	11	9	8	7
3200-3600	22	18	15	13	11	9	7
3600-4000	26	21	18	15	13	10	8
>4000	30	25	20	18	15	12	8

(maximum score 30; if wetland contains more than one soil type, evaluate based on the fractional area)

Steps required for evaluation: (maximum score 30 points)

1. Select GDD line in evaluation table applicable to your wetland;
2. Determine fractional area of the wetland for each soil type;
3. Multiply fractional area of each soil type by score;
4. Sum individual soil type scores (round to nearest whole number).

In wetland complexes the evaluator should aim at determining the percentage of area occupied by the categories for the complex as a whole.

Score		
15	clay/loam	15.00
	silt/marl	0.00
	limestone	0.00
	sand	0.00
	humic/mesic	0.00
	fibric	0.00
	granite	0.00

Final Score Growing Degree-Days/Soils (maximum 30 points) 15

1.1.2 WETLAND TYPE (Fractional Area = area of wetland type/total wetland area)

	Fractional Area		Score
Bog		x 3	0.00
Fen		x 6	0.00
Swamp	0.39	x 8	3.12
Marsh	0.61	x 15	9.15

Wetland type score (maximum 15 points) 12

1.1.3 SITE TYPE (Fractional Area = area of site type/total wetland area)

	Fractional Area		Score
Isolated	0.000	x 1 =	0.000
Palustrine (permanent or intermittent flow)	0.610	x 2 =	1.220
Riverine	0.390	x 4 =	1.560
Riverine (at rivermouth)	0.000	x 5 =	0.000
Lacustrine (at rivermouth	0.000	x 5 =	0.000
Lacustrine (on enclosed bay, with barrier beach)	0.000	x 3 =	0.000
Lacustrine (exposed to lake)	0.000	x 2 =	0.000
		Sub Total:	2.780

Site Type Score (maximum 5 points) 3

1.2 BIODIVERSITY

1.2.1 NUMBER OF WETLAND TYPES

(Check only one)		Score
1)	one	9 points
2) 13	two	13
3)	three	20
4)	four	30

Number of Wetland Types Score (maximum 30 points) 13

1.2.2 VEGETATION COMMUNITIES

Attach a separate sheet listing community (map) codes,vegetation forms and dominant species.
Use the form on the following page to record percent area by dominant vegetation form. This information will be used in other parts of the evaluation.

Communities should be grouped by number of forms. For example, 2 form communities might appear as follows:

2 forms

Code	Forms	Dominant Species
M6	re, ff	re, *Typha latifolia;* ff, *Lemna minor, Wolffia*
S1	ts, gc	ts, *Salix discolor;* gc, *lmpatiens capensis, Thelypteris palustris*

Note that the dominant species for each form are separated by a semicolon. The dominant species (maximum of 2) within a form are separated by commas.

Scoring:

Total # of communities with 1-3 forms = 40	Total # of communities with 4 -5 forms = 23	Total # of communities with 6 or more forms = 1
1 = 1.5 points	1 = 2 points	1 = 3 points
2 = 2.5	2 = 3.5	2 = 5
3 = 3.5	3 = 5	3 = 7
4 = 4.5	4 = 6.5	4 = 9
5 = 5	5 = 7.5	5 = 10.5
6 = 5.5	6 = 8.5	6 = 12
7 = 6	7 = 9.5	7 = 13.5
8 = 6.5	8 = 10.5	8 = 15
9 = 7	9 = 11.5	9 = 16.5
10 = 7.5	10 = 12.5	10 = 18
11 = 8	11 = 13	11 = 19
+.5 each additional community = 5.0	+.5 each additional community = 2.0	+ 1 each additional community =

e.g., a wetland with 3 one form communities 4 two form communities 12 four form communities and 8 six form communities would score:

22.5 + 19.0 + 3.0 = 44.5 = 45 points

Vegetation Communities Score (maximum 45 points) 7

Wetland Name: Crosby

Wetland Size (ha): 4.46

Vegetation Form	% area in which form is dominant
h	
c	
dh	
dc	
ts	39.00
ls	
ds	
gc	
m	
ne	9.00
be	
re	52.00
ff	
f	
su	
u (unvegetated)	
Total = 100%	100.00

1.2.3 DIVERSITY OF SURROUNDING HABITAT

(Check all appropriate items(1))

1	row crop
	pasture
1	abandoned agricultural land
1	deciduous forest
	coniferous forest
1	mixed forest (at least 25% conifer and 75% deciduous or vice versa)
	abandoned pits and quarries
1	open lake or deep river
1	fence rows with cover, or shelterbelts
	terrain appreciably undulating,hilly,or with ravines
1	creek flood plain

Diversity of Surrounding Habitat Score (1 for each, maximum 7 points) 7

1.2.4 PROXIMITY TO OTHER WETLANDS

(Check first appropriate category only) Scoring

1)	8	Hydrologically connected by surface water to other wetlands (different dominant wetlaI1d type) or to open lake or deep river within 1.5 km — 8 points
2)		Hydrologically connected by surface water to other wetlands (same dominant wetland type) within 0.5 km — 8
3)		Hydrologically connected by surface water to other wetlands (different dominant wetland type),or to open lake or deep river from 1.5 to 4 km away (Second Marsh Wetland) — 5
4)		Hydrologically connected by surface water to other wetlands (same dominant wetland type) from 0.5 to 1.5 km away — 5
5)		Within 0.75 km of other wetlands (different dominant wetland type) or open water body, but not hydrologically connected by surface water — 5
6)		Within 1 km of other wetlands,but not hydrologically connected by surface water — 2
7)		No wetland within 1 km — 0

Proximity to other Wetlands Score (Choose one only, maximum 8 points) 8

1.2.5 INTERSPERSION

Number of Intersections (Check one)			Score
1)	26 or less		3
2)	27 to 40	6	6
3)	41 to 60		9
4)	61 to 80		12
5)	81 to l00		15
6)	101 to 125		18
7)	126 to 150		21
8)	151 to 175		24
9)	176 to 200		27
10)	>200		30

Interspersion Score (Choose one only maximum 30 points) 6

1.2.6 OPEN WATER TYPES

Permanently flooded: (Check one)			Score
1)	8	type 1	8
2)		type 2	8
3)		type 3	14
4)		type 4	20
5)		type 5	30
6)		type 6	8
7)		type 7	14
8)		type 8	3
9)		no open water	0

Open Water Type Score (Choose one only maximum 30 points) 8

1.3 SIZE

4.46 hectares 55 Subtotal for Biodiversity

Size Score (Biological Component) (maximum 5O points) 7

Evaluation Table Size Score (Biological component)

Wetland size (ha)	Total Score for Biodiversity Subcomponent									
	<37	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-132	>132
<21 ha	1	5	7	8	9	17	25	34	43	50
21-40	5	7	8	9	10	19	28	37	46	50
41-60	6	8	9	10	11	21	31	40	49	50
61-80	7	9	10	11	13	23	34	43	50	50
81-100	8	10	11	13	15	25	37	46	50	50
101-120	9	11	13	15	18	28	40	49	50	50
121-140	10	13	15	17	21	31	43	50	50	50
141-160	11	15	17	19	23	34	46	50	50	50
161-180	13	17	19	21	25	37	49	50	50	50
181-200	15	19	21	23	28	40	50	50	50	50
201-400	17	21	23	25	31	43	50	50	50	50
401-600	19	23	25	28	34	46	50	50	50	50
601-800	21	25	28	31	37	49	50	50	50	50
801-1000	23	28	31	34	40	50	50	50	50	50
1001-1200	25	31	34	37	43	50	50	50	50	50
1201-1400	28	34	37	40	46	50	50	50	50	50
1401-1600	31	37	40	43	49	50	50	50	50	50
1601-1800	34	40	43	46	50	50	50	50	50	50
1801-2000	37	43	47	49	50	50	50	50	50	50
>2000	40	46	50	50	50	50	50	50	50	50

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 WOOD PRODUCTS

Area of wetland forested (ha), i.e. dominant form is h or c. Note that this is not wetland size. (Check one only)

			Score
1)	0	<5 ha	0
2)		5 -25 ha	3
3)		26 -50 ha	6
4)		51- l00 ha	9
5)		101 -200 ha	12
6)		>200 ha	18

Source of information: field observations

Wood Products Score (Score one only, maximum 18 points) 3

2.1.2 WILD RICE

(Check one)			Score (Choose one)
Present (minimum size 0.5 ha)	1)		6 points
Absent	2)	0	0

Source of information: field observations

Wild Rice Score (maximum 6 points) 0

2.1.3 COMMERCIAL FISH (BAIT FISH AND/OR COARSE FISH

(Check one)			Score (Choose one)
Present	1)	12	12 points
Habitat not suitable for fish	2)		0

Source of infolmation: field observations

Commercial Fish Score (maximum 12 points) 12

2.1.4 BULLFROGS

(Check one)			Score (Choose one)
Present	1)	1	1 points
Absent	2)	0	0

Source of information: Field observations

Bullfrog Score (maximum 1 point) 1

2.1.5 SNAPPING TURTLES

(Check one)			Score (Choose one)
Present	1)		1 point
Absent	2)	0	0

Source of information: field observations

Snapping Turtle Score (maximum 1 point) 0

2.1.6 FURBEARERS

(Consult Appendix 9)

	Name of furbearer		Source of information
1)	Muskrat	3	field Observation
2)			
3)			
4)			
5)			

Scoring: 3 points for each species. maximum 12

Furbearer Score (maximum 12 points) 3

2.2 RECREATIONAL ACTIVITIES

Type of Wetland-Associated Use						
Intensity of Use	Hunting		Nature Enjoyment/ Ecosystem Study		Fishing	
High	40 points		40 points		40 points	
Moderate	20		20		20	
Low	8		8		8	
Not possible/NotKnown	0	0	0	0	0	0
Totals		0		0		0

(score one level for each of the three wetland uses; scores are cumulative; maximum score 80 points)

Sources of information:

Hunting: _____

Nature: _____

Fishing: _____

Recreational Activities Score (maximum 80 points) 0

2.3 LANDSCAPE AESTHETICS

2.3.1 DISTINCTNESS

(Check one)			Score (Choose one)
Clearly distinct	1)	3	3 points
Indistinct	2)		0

Landscape Distinctness Score (maximum 3 points) 3

2.3.2 ABSENCE OF HUMAN DISTURBANCE

(Check one)			Score (Choose one)
Human disturbances absent or nearly so	1)		7 points
One or several localized disturbances	2)	4	4
Moderate disturbance; localized water pollution	3)		2
Wetland intact but impairment of ecosystem quality intense in some areas	4)		1
Extreme ecological degradation, or water pollution severe and widespread	5)		0

Source of information: field observations

Absence of Human Disturbance Score (maximum 7 points) 4

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1 EDUCATIONAL USES

(Check one)			Score (Choose one)
Frequent	1)		20 points
Infrequent	2)		12
No visits	3)	0	0

Source of information: Field observations

Educational Uses Score (maximum 20 points) 0

2.4.2 FACILITIES AND PROGRAMS

(check one)			Score (Choose one)
Staffed interpretation centre	1)		8 points
No interpretation centre or staff but a system of self-guiding trails or brochures available	2)		4
Facilities such as maintained paths (e.g., woodchips) boardwalks, boat launches or observation towers but no brochures or other interpretation	3)		2
No facilities or programs	4)	0	0

Source of information: field observations

Facilities and Programs Score (maximum 8 points) 0

2.4.3 RESEARCH AND STUDIES

(check appropriate spaces)		Score
Long term research has been done		12 points
Research papers published in refereed scientific journal or as a thesis		10
One or more (non-research) reports have been written on some aspect of the wetland ' s flora fauna hydrology etc.		5
No research or reports	0	0

Attach list of known reports by above categories

Research and Studies Score (Score is cumulative, maximum 12 points) 0

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Circle the highest applicable score

Distance of wetland from settlement	1) population> 10,000		2) population 2,500 -10,000		3) population <2,500 or cottage community	
1) Within or adjoining settlement	40 points		26		16	
2) 0.5 to 10 km from settlement	26		16		10	10
3) 10 to 60 km from settlement	12		8		4	
4) >60 km from settlement	5		2		0	
		0		0		10

Name of settlement: Village of Newboro

Proximity to Human Settlement Score (maximum 40 points) 10

2.6 OWNERSHIP (FA= fraction Area)

					Score
FA of wetland in public or private ownership held under contract or in trust for wetland protection		x	10	=	0.00
FA of wetland area in public ownership,not as above		x	8	=	0.00
FA of wetland area in private ownership,not as above	1.00	x	4	=	4.00

Source of information: landowner contact

Ownership Score (maximum 10 points) 4

2.7 SIZE

4.46 hectares 29 Subtotal for Social

Evaluation Table for Size Score (Social Component)

Wetland Size (ha)	Total for Size Dependent Score									
	<31	31-45	46-60	61-75	76-90	91-105	106-109	121-135	136-150	>150
<2 ha	1	2	4	8	10	12	14	14	14	15
2 - 4ha	1	2	4	8	12	13	14	14	15	16
5 - 8ha	2	2	5	9	13	14	15	15	16	16
9 - 12ha	3	3	6	10	14	15	15	16	17	17
13-17	3	4	7	10	14	15	16	16	17	17
18-28	4	5	8	11	15	16	16	17	17	18
29-37	5	7	10	13	16	17	18	18	19	19
38-49	5	7	10	13	16	17	18	18	19	20
50-62	5	8	11	14	17	17	18	19	20	20
63-81	5	8	11	15	17	18	19	20	20	20
82-105	6	9	11	15	18	18	19	20	20	20
106-137	6	9	12	16	18	19	20	20	20	20
138-178	6	9	13	16	18	19	20	20	20	20
179-233	6	9	13	16	18	20	20	20	20	20
234-302	7	9	13	16	18	20	20	20	20	20
303-393	7	9	14	17	18	20	20	20	20	20
394-511	7	10	14	17	18	20	20	20	20	20
512-665	7	10	14	17	18	20	20	20	20	20
666-863	7	10	14	17	19	20	20	20	20	20
864-1123	8	12	15	17	19	20	20	20	20	20
1124-1460	8	12	15	17	19	20	20	20	20	20
1461-1898	8	13	15	18	19	20	20	20	20	20
1899-2467	8	14	16	18	20	20	20	20	20	20
>2467	8	14	16	18	20	20	20	20	20	20

Total Size Score (Social Component) 2

2.8 ABORIGINAL AND CULTURAL HERITAGE VALUES

Either or both Aboriginal or Cultural Values may be scored. However, the maximum score permitted for 2.8 is 30 points. Attach documentation.

2.8.1 ABORIGINAL VALUES

Full documentation of sources must be attached to the data record.

1)	Significant		=	30 points
2)	Not Significant		=	0
3)	Unknown	0.0	=	0
	Total:	0		

2.8.2 CULTURAL HERITAGE

1)	Significant		=	30 points
2)	Not Significant		=	0
3)	Unknown	0.0	=	0
	Total:	0		

Aboriginal Values/Cultural Heritage Score (maximum 30 points) 0

3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

If the wetland is a complex including isolated wetlands, apportion the l00 points according to area. For example if 10 ha of a l00 ha complex is isolated, the isolated portion receives the maximum proportional score of 10. The remainder of the wetland is then evaluated out of 90.

Step 1: Detennination of Maximum Score

_____	Wetland is located on one of the defined 5 large lakes or 5 major rivers (Go to Step 4)
_____	Wetland is entirely isolated (i.e. not part of a complex) (Go to Step 4)
x	All other wetland types (Go through Steps 2,3 and 4B)

Step 2: Determination of Upstream Detention Factor (DF)

(a)	Wetland area (ha)		4.46
(b)	Total area (ha) of upstream detention areas (include the wetland itself)		32.23
(c)	Ratio of (a):(b)		0.14
(d)	Upstream detention factor: (c) x 2 = (maximum allowable factor = 1)	0.28	0.28

Step 3: Determination of Wetland Attenuation Factor (AF)

(a)	Wetland area (ha)		4.46
(b)	Size of catchment basin (ha) upstream of wetland (include wetland itself in catchment area)		32.23
(c)	Ratio of (a):(b)		0.14
(d)	Wetland attenuation factor: (c) x 10 = (maximum allowable factor = 1)	1.0	1.00

Step 4: Calculation of final score

(a)	Wetlands on large lakes or major rivers		0
(b)	Wetland entirely isolated		l00
(b)	All other wetlands --calculate as follows:		
(c	* Complex Formula - Isolated portion	100.0	1
	Initial Score		100 *
	Upstream detention factor (DF) (Step 2)		0.28
	Wetland attenuation factor (AF) (Step 3)		1.00
	Final score: [(DF + AF)/2] x Initial score =		64.00
(c	* Final score:=	64.0	99.7 + 0.4 = 100

*Unless wetland is a complex with isolated portions (see above).

Flood Attenuation Score (maximum l00 points) 64

3.2 WATER QUALITY IMPROVEMENT

3.2.1 SHORT TERM WATER QUALITY IMPROVEMENT

Step 1: **Determination of maximum initial score**

	Wetland on one of the 5 defined large lakes or 5 major rivers (Go to Step 5a)
x	All other wetlands (Go through Steps 2, 3, 4, and 5b)

Step 2: **Determination of watershed improvement factor (WIF)**

Calculation of WIF is based on the fractional area (FA) of each site type that makes up the total area of the wetland.

(FA= area of site type/total area of wetland)	Fractional Area				
FA of isolated wetland	0.000	x	0.5	=	0.000
FA of riverine wetland	0.390	x	1	=	0.390
FA of palustrine wetland with no inflow		x	0.7	=	0.000
FA of palustrine wetland with inflows	0.610	x	1	=	0.610
FA of lacustrine on lake shoreline		x	0.2	=	0.000
FA of lacustrine at lake inflow or outflow		x	1	=	0.000
			Sub Total:		1.000
			Sum (WIF cannot exceed 1.0)		1.00

Step 3: Determination of catchment land use factor (LUF)
(Choose the first category that fits upstream landuse in the catchment.)

1)		Over 50% agricultural and/or urban	1.0
2)	0.8	Between 30 and 50% agricultural and/or urban	0.8
3)		Over 50% forested or other natural vegetation	0.6

LUF (maximum 1.0) 0.80

Step 4: Determination of pollutant uptake factor (PUT)

Calculation of PUT is based on the fractional area (FA) of each vegetation type that makes up the total area of the wetland. Base assessment on the dominant vegetation form for each community except where dead trees or shrubs dominate. In that case base assessment on the domininant live vegetation. (FA = area of vegetation type/total area of wetland)

	Fractional Area				
FA of wetland with live trees, shrubs, herbs or mosses (c,h,ts,ls,gc,m)	0.39	x	0.75	=	0.29
FA of wetland with emergent, submergent or floating vegetation (re,be,ne,su,f,ff)	0.61	x	1	=	0.61
FA of wetland with little or no vegetation (u)		x	0.5	=	0.00
			Sum (PUT cannot exceed 1.0)		0.90

Step 5: **Calculation of final score**

(a)	Wetland on large lakes or major rivers	0
(b)	All other wetlands -calculate as follows	
	Initial score	60
	Water quality improvement factor (WQF)	1.00
	Land use factor (LUF)	0.80
	Pollutant uptake factor (PUT)	0.90
	Final score: 60 x WQF x LUF x PUT =	43.32

Short Term Water Quality Improvement Score (maximum 60 points) 43

3.2.2 LONG TERM NUTRIENT TRAP

Step 1:

	Wetland on large lakes or 5 major rivers	0 points
x	All other wetlands (proceed to Step 2)	

Step 2: Choose only one of the following settings that best describes the wetland being evaluated

1)		Wetland located in a river mouth	10 points
2)		Wetland is a bog, fen or swamp with more than 50% of the wetland being covered with organic soil	10
3)		Wetland is a bog, fen or swamp with less than 50% of the wetland being covered with organic soil	3
4)		Wetland is a marsh with more than 50% of the wetland covered with organic soil	3
5)	0	None of the above	0

Long Term Nutrient Trap Score (maximum 10 points) 0

3.2.3 GROUNDWATER DISCHARGE

(Circle the characteristics that best describe the wetland being evaluated and then sum the scores. If the sum exceeds 30 points assign the maximum score of 30.)

Wetland Characteristics	Potential for Discharge					
	None to Little		Some		High	
Wetland type	1) Bog = 0	0	2) Swamp/Marsh = 2	2	3) Fen = 5	
Topography	1) Flat/rolling = 0	0	2) Hilly = 2	0	3) Steep = 5	
Wetland Area: Upslope Catchment Area	Large (>50%) = 0	0 0 0	Moderate (5-50%) = 2	0 0	Small "5%) = 5	
Lagg Development	1) None found = 0	0	2) Minor = 2	0	3) Extensive = 5	
Seeps	1) None = 0	0	2) = or < 3 seeps = 2	0	3) > 3 seeps = 5	
Surface marl deposits	1) None = 0	0	2) = or < 3 sites = 2		3) > 3 sites = 5	
Iron precipitates	1) None = 0	0	2) = or < 3 sites = 2	0	3) > 3 sites = 5	
Located within 1 km of a major aquifer	N/A = 0	0	N/A = 0	0 0	Yes = 10	
Totals		0		2		0

(Scores are cumulative maximum score 30 points)

Groundwater Discharge Score (maximum 30 points) 2

3.3 CARBON SINK

Choose only one of the following

1)	Bog, fen or swamp with more than 50% coverage by organic soil		5 points
2)	Bog, fen or swamp with between 10 to 49% coverage by organic soil		2
3)	Marsh with more than 50% coverage by organic soil		3
4)	Wetlands not in one of the above categories	0	0

Carbon Sink Score (maximum 5 points) 0

3.4 SHORELINE EROSION CONTROL

Step 1:

		Score
	Wetland entirely isolated or palustrine	0
x	Any part of the Wetland riverine or lacustrine (proceed to Step 2)	

Step 2:

Choose the one characteristic that best describes the shoreline vegetation (see text for a definition of shoreline)

			Score
1)	15	Trees and shrubs	15
2)		Emergent vegetation	8
3)		Submergent vegetation	6
4)		Other shoreline vegetation	3
5)		No vegetation	0

Shoreline Erosion Control Score (maximum 15 points) 15

3.5 GROUND WATER RECHARGE

3.5.1 WETLAND SITE TYPE

		Score	
(a)	Wetland > 50% lacustrine (by area) or located on one of the five major rivers	0	
(b)	Wetland not as above. Calculate final score as follows: (FA= area of site type/total area of wetland)		

	Fractional Area				
FA of isolated or palustrine wetland	0.610	x	50	=	30.50
FA of riverine wetland	0.390	x	20	=	7.80
FA of lacustrine wetland (wetland <50% lacustrine)	0.000	x	0	=	0.00

Ground Water Recharge Wetland Site Type Component Score (maximum 50 points) 38

3.5.2 WETLAND SOIL RECHARGE POTENTIAL

(Circle only one choice that best describes the hydrologic soil class of the area surrounding the wetland being evaluated.)

Dominant Wetland Type	1) Sand, loam, gravel, till		2) Clay or bedrock	
1) Lacustrine or on a major river	0		0	
2) Isolated	10		5	
3) Palustrine	7	7	4	
4) Riverine (not a major river)	5		2	
Totals		7		0

Ground Water Recharge Wetland Soil Recharge Potential Score (maximum 10 points) 7

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 WETLANDS

Site District 6-10

Presence of wetland type (check one or more)

	Bog
	Fen
x	Swamp
x	Marsh

Score for rarity within the landscape and rarity of the wetland type. Score for rarity of wetland type is cumulative (maximum 80 points) based on presence or absence.

Slte District	Score for Rarity within the Landscape	Score for Rarity of Wetland Type			
		Marsh	Swamp	Fen	Bog
6-1	60	40	0	80	80
6-2	60	40	0	80	80
6-3	40	10	0	40	80
6-4	60	40	0	80	80
6-5	20	40	0	80	80
6-6	40	20	0	80	80
6-7	60	10	0	80	80
6-8	20	20	0	80	80
6-9	0	20	0	80	80
6-10	20	0	20	80	80
6-11	0	30	0	80	80
6-12	0	30	0	60	80
6-13	60	10	0	80	80
6-14	40	20	0	40	80
6-15	40	0	0	80	80
7-1	60	0	60	80	80
7-2	60	0	0	80	80
7-3	60	0	0	80	80
7-4	80	0	0	80	80
7-5	80	30	0	80	80

Rarity within the Landscape Score (maximum 80 points)	20
Rarity of Wetland Type Score (maximum 80 points)	20

4.1.2 SPECIES

4.1.2.1 BREEDING HABITAT FOR AN ENDANGERED OR THREATENED SPECIES

	Name of species		Source of information
1)			field observations
2)			
3)			
4)			
5)			
	Total:	0	

Attach documentation.

Scoring:

For each species 250 points

(score is cumulative, no maximum score)

Breeding Habitat for Endangered or Threatened Species Score (no maximum) 0

4.1.2.2 TRADITIONAL MIGRATION OR FEEDING HABITAT FOR AN ENDANGERED OR THREATENED SPECIES

	Name of species		Source of information
1)			field observations
2)			
3)			
4)			
5)			
	Total:	0	

Attach documentation.
Scoring:

For one species 150 points
For each additional species 75

(score is cumulative, no maximum score)

Traditional Habitat for Endangered Species Score (no maximum) 0

4.1.2.3 PROVINCIALLY SIGNIFICANT ANIMAL SPECIES

	Name of species	Source of information
1)		Field Observations
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		

Attach separate list if necessary; Attach documentation

Scoring:

Number of provincially significant animal species in the wetland:

1 species	=	50 points	14 species	=	154
2 species	=	80	15 species	=	156
3 species	=	95	16 species	=	158
4 species	=	105	17 species	=	160
5 species	=	115	18 species	=	162
6 species	=	125	19 species	=	164
7 species	=	130	20 species	=	166
8 species	=	135	21 species	=	168
9 species	=	140	22 species	=	170
10 species	=	143	23 species	=	172
11 species	=	146	24 species	=	174
12 species	=	149	25 species	=	176
13 species	=	152			

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

(no maximum score)

Provincially Significant Animal Species Score (no maximum) 0

4.1.2.4 PROVINCIALLY SIGNIFICANT PLANT SPECIES

(Scientific names must be recorded)

	Common Name	Scientific Name	Source of information
1)			Field Observations
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			

Attach separate list if necessary; Attach documentation

Scoring:

Number of provincially significant plant species in the wetland:

1 species	=	50 points	14 species	=	154
2 species	=	80	15 species	=	156
3 species	=	95	16 species	=	158
4 species	=	105	17 species	=	160
5 species	=	115	18 species	=	162
6 species	=	125	19 species	=	164
7 species	=	130	20 species	=	166
8 species	=	135	21 species	=	168
9 species	=	140	22 species	=	170
10 species	=	143	23 species	=	172
11 species	=	146	24 species	=	174
12 species	=	149	25 species	=	176
13 species	=	152			

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Plant Species Score (no maximum) 0

4.1.2.5 REGIONALLY SIGNIFICANT SPECIES (SITE REGION)

Scientific names must be recorded for plant species. **Lists of significant species must be approved by MNR.**

SIGNIFICANT IN SITE REGION:

.

	Common Name	Scientific Name	Source of information
1)			Field Observations
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			

Attach separate list if necessary .Attach documentation.

Scoring:

No. of species significant in Site Region

1 species	=	20	6 species	=	55
2 species	=	30	7 species	=	58
3 species	=	40	8 species	=	61
4 species	=	45	9 species	=	64
5 species	=	50	10 species	=	67

Add one point for every species past 10. (no maximum score)

Regionally Significant Species Score (Site Region)(no maximum) 0

4.2.1.6 LOCALLY SIGNIFICANT SPECIES (SITE DISTRICT)

Scientific names must be recorded for plant species. **Lists of significant species must be approved by MNR.**

	Common Name	Scientific Name	Source of information
1			Field Observations
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

Attach separate list if necessary .Attach documentation.

Scoring:

No. of species significant in Site District

1 species	=	10	6 species	=	41
2 species	=	17	7 species	=	43
3 species	=	24	8 species	=	45
4 species	=	31	9 species	=	47
5 species	=	38	10 species	=	49

For each significant species over 10 in the wetland, add 1 point.

Locally Significant Species Score (Site District) (no maximum) 0

4.2 SIGNIFICANT FEATURES AND/OR FISH & WILDLIFE HABITAT

4.2.1 NESTING OF COLONIAL WATERBIRDS

Status	Name of species	Source of Information	Score
1) Currently nesting			
2) Known to have nested within past 5 years			
3) Active feeding area (Do not include feeding by great blue herons)			
4) None known		Field observations	0

Attach documentation (nest locations etc., if known)

Score highest applicable category only; maximum score 50 points.

Score for Nesting Colonial Waterbirds (maximum 50 points) 0

4.2.2. WINTER COVER FOR WILDLIFE

(Check only highest level of significance) (one only)			Score
1)		Provincially significant	l00
2)		Significant in Site Region	50
3)		Significant in Site District	25
3)		Locally significant	10
4)	0	Little or poor winter cover present	0

Source of information: Brian Henshaw, field observations of numerous White-tailed Deer tracks - 281.83 ha of coniferous and mixed swamp

Winter Cover for Wildlife Score (maximum l00 points) 0

4.2.3 WATERFOWL STAGING AND/OR MOULTING

(Check only highest level of significance for both staging and moulting; score is cumulative across columns, maximum score 15(

		Staging	Score (one only)	Moulting	Score (one only)
1)	Nationally significant		150		150
2)	Provincially significant		100		l00
3)	Regionally significant		50		50
4)	Known to occur		10		10
5)	Not possible		0		0
6)	Unknown	0	0	0	0
	Total:			0	

Source of information: Field Observations

Waterfowl Moulting and Staging Score (maximum 150 points) 0

4.2.4 WATERFOWL BREEDING

	(Check only highest level of significance)		Score
1)		Provincially significant	l00
2)		Regionally significant	50
3)	10	Habitat suitable	10
4)		Habitat not suitable	0

Source of information: Field Observations

Waterfowl Breeding Score (maximum lOO points) 10

4.2.5 MIGRATOR PASSERINE, SHOREBIRD OR RAPTOR STOPOVER AREA

(check highest applicable category)

1)		Provincially significant	l00
2)		Significant in Site Region	50
3)		Significant in Site District	10
4)	0	Not significant	0

Source of information: Field Observations

Passerine, Shorebird or Raptor Stopover Score (maximum 100 points) 0

4.2.6 FISH HABITAT

4.2.6. Spawning and Nursery Habitat

Table 5. Area Factors for Low Marsh, High Marsh, and Swamp Communities.

No. of ha of Fish Habitat	Area Factor
< 0.5 ha	0.1
0.5- 4.9	0.2
5.0- 9.9	0.4
10.0- 14.9	0.6
15.0 -19.9	0.8
20.0+ ha	1.0

Step 1:

_____ Fish habitat is not present within the wetland (Score = 0)

x Fish habitat is present within the wetland (Go to Step 2)

Step 2: Choose only one option

1) _____ Significance of the spawning and nursery habitat within the wetland is known (Go to Step 3)

2) x Significance of the spawning and nursery habitat within the wetland is not known (Go through Steps 4, 5, 6 and 7)

Step 3: Select the highest appropriate category below attach documentation:

1)	_____	Significant in Site Region	l00 points
2)	_____	Significant in Site District	50
3)	_____	Locally Significant Habitat (5.0+ ha)	25
4)	_____	Locally Significant Habitat "5.0 ha)	15

Score for Spawning and Nursery Habitat (maximum score 100 points) 0

Step 4: **Proceed to Steps 4 to 7 only if Step 3 was not answered.**

(**Low Marsh**: marsh area from the existing water line out to the outer boundary of the wetland)

_____ Low marsh not present (Continue to Step 5)
x Low marsh present (Score as follows)

Scoring for Presence of Key Vegetation Groups

Scoring is based on the one most clearly dominant plant species of the dominant form in each Low Marsh vegetation community. Check the appropriate Vegetation Group (see Appendix 16 Table 16-2) for each Low Marsh community. Sum the areas of the communities assigned to each Vegetation Group and multiply by the appropriate size factor from Table 5.

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (see Table 5)	Score	Final Score (area factor x score)
1	Tallgrass	x	0.42	0.2	6 pts	1.2
2	Shortgrass-Sedge				11	0.0
3	Cattail-Bulrush-Burreed	x	2.32	0.2	5	1.0
4	Arrowhead-Pickerelweed				5	0.0
5	Duckweed				2	0.0
6	Smartweed-Waterwillow				6	0.0
7	Waterlily-Lotus				11	0.0
8	Waterweed-Watercress				9	0.0
9	Ribbongrass				10	0.0
10	Coontail-Naiad-Watermilfoil				13	0.0
11	Narrowleaf Pondweed				5	0.0
12	Broadleaf Pondweed				8	0.0
Sub Total Score (maximum 75 points)						2.2
Total Score (maximum 75 points)						2.2

Step 5: (**High Marsh**: area from the water line to the inland boundary of marsh wetland type. This is essentially what is commonly referred to as a wet meadow, in that there is insufficient standing water to provide fisheries habitat except during flood or high water conditions.)

_____ High marsh not present (Continue to Step 6)
x High marsh present (Score as follows)

Scoring for Presence of Key Vegetation Groups

Scoring is based on the one most clearly dominant plant species of the dominant form in each High 1Marsh vegetation community. Check the appropriate Vegetation Group (see Appendix 16 Table 16-2) for each High Marsh community. Sum the areas of the communities assigned to each Vegetation Group and multiply by the appropriate size factor from Table 5.

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (see Table 5)	Score	Final Score (area factor x score)
1	Tallgrass		0.42	0.2	6 pts	1.2
2	Shortgrass-Sedge				11	0.0
3	Cattail-Bulrush-Burreed				5	0.0
4	Arrowhead-Pickerelweed				5	0.0
Sub Total Score (maximum 25 points)						1.2
Total Score (maximum 25 points)						1.2

Step 6: (**Swamp**: Swamp communities containing fish habitat,either seasonally or permanently. Determine the total area of seasonally flooded swamps and permanently flooded swamps containing fish habitat.)

_____ Swamp containing fish habitat not present (Continue to Step 7)
x Swamp containing fish habitat present (Score as follows)

Swamp containing fish Habitat	Present (check)	Total area (ha)	Area Factor (see Table 5)	Score	TOTAL SCORE (factor x score)
Seasonally flooded	x	1.72	0.2	10	2.0
Permanently flooded				10	0.0
Sub SCORE (maximum 20 points)					2.0
SCORE (maximum 20 points)					2.0

Step 7: Calculation of final score

Score for Spawning and Nursery Habitat (Low Marsh) (maximum 75) = 2.2

Score for Spawning and Nursery Habitat (High Marsh) (maximum 25) = 1.2

Score for Swamp Containing Fish Habitat (maximum 20) = 2.0

Sum (maximum score 100 points) = 5

4.2.6.2 Migration and Staging Habitat

Step 1:

1) 0 Staging or Migration Habitat is not present in the wetland (Score = 0)

2) _____ Staging or Migration Habitat is present in the wetland significance of the habitat is known (Go to Step 2)

3) _____ Staging or Migration Habitat is present in the wetland significance of the habitat is not known (Go to Step 3)

NOTE: Only one of Step 2 or Step 3 is to be scored.

Step 2: Select the highest appropriate category below, attach documentation:

		Score
1)	Significant in Site Region	25 points
2)	Significant in Site District	15
3)	Locally Significant	10
4)	Fish staging and/or migration habitat present,but not as above	5

Score for Fish Migration and Staging Habitat (maximum score 25 points) 0

Step 3: Select the highest appropriate category below based on presence of the designated site type (does not have to be dominant). See Section 1.1.3. Note name of river for 2) and 3).

		Score
1)	Wetland is riverine at rivermouth or lacustrine at rivermouth	25 points
2)	Wetland is riverine,within 0.75 km of rivermouth	15
3)	Wetland is lacustrine,within 0.75 km of rivermouth	10
4)	Fish staging and/or migration habitat present, but not as above	5

Score for Staging and Migration Habitat (maximum score 25 points) 0

4.3 ECOSYSTEM AGE

(Fractional Area = area of wetland/total wetland area)

	Fractional Area				Scoring
Bog		x	25	=	0.0
Fen, treed to open on deep soils floating mats or marl		x	20	=	0.0
Fen, on limestone rock		x	5	=	0.0
Swamp	0.39	x	3	=	1.2
Marsh	0.61	x	0	=	0.0
		Sub Total:			1.2

Ecosystem Age Score (maximum 25 points) 1

4.4 GREAT LAKES COASTAL WETLANDS

Score for <u>coastal</u> (see text for definition) wetlands only

Choose one only

	wetland < 10 ha	= 0 points
	wetland 10- 50 ha	= 25
	wetland 51 -lOO ha	= 50
	wetland > 100 ha	= 75

Great Lakes Coastal Wetlands Score (maximum 75 points) 0

5.0 EXTRA INFORMATION

5.1 PURPLE LOOSESTRIFE

x Absent/Not seen

____ Present

(a) One location in wetland ____
Two to many locations x

Abundance code
(b) (1 < 20 stems ____
(2 20-99 stems ____
(3 100-999 stems ____
(4 >1000 stems x

5.2 SEASONALLY FLOODED AREAS

Check one or more

Ephemeral	(less than 2 weeks)	____
Temporal	(2 weeks to 1 month)	____
Seasonal	(1 to 3 months)	x
Semi-permanent	(>3 months)	____
No seasonal flooding		____

5.3 SPECIES OF SPECIAL SIGNIFICANCE

5.3.1 Osprey

Present and nesting	____
Known to have nested in last 5 yr	____
Feeding area for osprey	x
Not as above	____

5.3.2 Common Loon

Nesting in wetland	____
Feeding at edge of wetland	____
Observed or heard on lake or river adjoining the wetland	____
Not as above	x

Southern Ontario Wetland Evaluation, Data and Scoring Record (March 1993)

INVESTIGATORS	AFFILIATION
Barry Moss	Natural Resources Solution Inc.
Megan Anevich	Natural Resources Solution Inc.
Martine Esraelian	Hatch

DATES WETLAND VISITED

June 15 2010, August 9-10, 2010

DATE THIS EVALUATION COMPLETED: 16-Sep-10

ESTIMATED TIME DEVOTED TO COMPLETING THE FIELD SURVEY IN "PERSON HOURS"

24 hrs

WEATHER CONDITIONS

i) at time of field work periods of rain, humid, 29°c

(Continue in the space below if necessary)

ii) summer conditions in general warm, moderate precipitation

OTHER POTENTIALLY USEFUL INFORMATION:

CHECKLIST OF PLANT AND ANIMAL SPECIES RECORDED IN THE WETLAND:

Attach a list of all flora and fauna observed in the wetland.

*Indicate if voucher specimens or photos have been obtained, where located, etc.

Southern Ontario Wetland Evaluation (March 1993)

WETLAND EVALUATION SCORING RECORD

WETLAND NAME AND/OR NUMBER: Crosby

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1	Growing Degree-Days/Soils	15	
1.1.2	Wetland Type	12	
1.1.3	Site Type	3	
	Total for Productivity		30

1.2 BIODIVERSITY

1.2.1	Number of Wetland Types	13	
1.2.2	Vegetation Communities (maxixmum 45)	13	
1.2.3	Diversity of Surrounding Habitat (maximum 7)	7	
1.2.4	Proximinty to Other Wetlands	8	
1.2.5	Interspersion	6	
1.2.6	Open Water Type	8	
	Total for Biodiversity		55
	Sub Total for Biodiversity	55	

1.3 SIZE (Biological Component) 7

TOTAL FOR BIOLOGICAL COMPONENT (not to exceed 250) 92

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1	Wood Products	3
2.1.2	Wild Rice	0
2.1.3	Commercial Fish	12
2.1.4	Bullfrogs	1
2.1.5	Snapping Turtles	0
2.1.6	Furbearers	3

Total for Economically Valuable Products: 19

2.2 RECREATIONAl ACTIVITIES (maximum 80): 0

2.3 LANDSCAPE AESTHETICS

2.3.1	Distinctness	3
2.3.2	Absence of Human Disturbance	4

Total for Landscape Aesthetics: 7

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1	Educational Uses	0
2.4.2	Facilities and Programs	0
2.4.3	Research and Studies	0

Total for Education and Public Awareness: 0

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT: 10

2.6 OWNERSH1P: 4

Subtotal for Social Component: 29

2.7 SIZE (Social Component): 2

2.8 ABORIGINAL AND CULTURAL VALUES: 0

TOTAL FOR SOCIAL COMPONENT (not to exceed 250): 42

Southern Ontario Wetland Evaluation, Score Summary (March 1993)

3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION		64
3.2 WATER QUALITY IMPROVEMENT		
3.2.1 Short Term Improvement	43	
3.2.2 Long Term Improvement	0	
3.2.3 Groundwater Discharge (maximum 30)	2	
Total for Water Quality Improvement		45
3.3 CARBON SINK		0
3.4 SHORELINE EROSION CONTROL		15
3.5 GROUNDWATER RECHARGE		
3.5.1 Site Type	38	
3.5.2 Soils	7	
Total for Groundwater Recharge		45
TOTAL FOR HYDROLOGICAL COMPONENT (not to exceed 250)		170

Southern Ontario Wetland Evaluation, Score Summary (March 1993)

4.0 SPECIAL FEATURES

4.1 RARITY

4.1.1 Wetlands

4.1.1.1	Rarity within the Landscape	20
4.1.1.2	Rarirty of Wetland Type (maximum 80)	20
	Total for Wetland Rarity	40

4.1.2 Species

4.1.2.1	Endangered or Threatened Species Breeding	0
4.1.2.2	Traditional Use by Endangered or Threatened Species	0
4.1.2.3	Provincially Significant Animals	0
4.1.2.4	Provincially Significant Plants	0
4.1.2.5	Regionally Significant Species	0
4.1.2.6	Locally Significant Species	0
	Total for Species Rarity	0

4.2 SIGNIFICANT FEATURES OR HABITAT

4.2.1	Colonial Waterbirds	0
4.2.2	Winter Cover for Wildlife	0
4.2.3	Waterfowl Staging and Moulting	0
4.2.4	Waterfowl Breeding	10
4.2.5	Migratory Passerine, Shorebird or Raptor Stopover	0
4.2.6	Fish Habitat	5
	Total for Significant Features and Habitat	15

4.3 ECOSYSTEM AGE 1

4.4 GREAT LAKES COASTAL WETLANDS 0

TOTAL FOR SPECIAL FEATURES (maximum 250) 62

Southern Ontario Wetland Evaluation, Score Summary (March 1993)

SUMMARY OF EVALUATION RESULT

Wetland	Crosby
TOTAL FOR 1.0 BIOLOGICAL COMPONENT	92
TOTAL FOR 2.0 SOCIAL COMPONENT	42
TOTAL FOR 3.0 HYDROLOGICAL COMPONENT	170
TOTAL FOR 4.0 SPECIAL FEATURES COMPONENT	62
WETLAND TOTAL	365

INVESTIGATORS	AFFILIATION
Barry Moss	Natural Resources Solution Inc.
Megan Anevich	Natural Resources Solution Inc.
Martine Esraelian	Hatch
0	0
0	0

DATE September 15, 2010

Vegetation

Code
neM$_4$
reM$_5$
reM6
reM7
reM8
tsS6
Total

**** Soil Types**

*** Site Types:**

I
P
R
Rr
Lr
Lb
Ll

Community Descriptions

Forms & Species
ne*: Eleocharis smallii, Dactylis glomerata, Carex vulpinoidea
re: Scirpus atrovirens, Schoenoplectus tabernaemontani, Phalaris arundinacea
ne: Phalaris arundinacea
re*: Typha angustifolia, Scirpus atrovirens
re*: Typha angustifolia, Scirpus atrovirens, Schoenoplectus tabernaemontani
gc: Lythrum salicaria, Trifolium pratense, Eupatorium maculatum ssp. Maculatum
ne: Carex vulpinoidea, Carex bebbii, Dactylis glomerata
re*: Scirpus atrovirens, Scirpus cyperinus
gc: Lythrum salicaria, Eupatorium perfoliatum, Vicia cracca
ne: Carex vulpinoidea, Juncus tenuis, Phalaris arundinacea
re*: Scirpus atrovirens
ts*: Salix petiolaris, Fraxinus pennsylvanica, Rhamnus cathartica
ls: Spiraea alba, Salix petiolaris, Juniperus virginiana
gc: Lythrum salicaria, Solidago canadensis, Symphyotrichum novae-angliae
ne: Phalaris arundinacea

clay/loam
silt/marl
limestone
sand
humic/mesic (organic)
fibric (organic)
granite

Isolated
Palustrine (permanent or intermittent flow)
Riverine
Riverine (at rivermouth)
Lacustrine (at rivermouth)
Lacustrine (on enclosed bay with barrier beach)
Lacustrine (exposed to lake)

Dominant Form	Wetland Type	No. Of Forms	Soils*	Area (ha)	Site Type**	% Open Water	Area of Open Water (ha)
	B: Bog, F: Fen, S: Swamp, M: Marsh						
ne	M	2	clay/loam	0.42	P	0	0
re	M	2	clay/loam	0.83	P	0	0
re	M	1	clay/loam	0.13	P	0	0
re	M	3	clay/loam	0.6	P	0	0
re	M	3	clay/loam	0.76	P	0	0
ts	S	4	clay/loam	1.72	R	10	0.17
				4.46			0.17

Wetland Type, Site Type and Dominant Form Areas

Total Area: 4.46 ha

Wetland Type	%	Area (ha)
Bog	0	
Fen	0	
Swamp	0.38565	1.72
Marsh	0.61435	2.74

Site Type	%	
Isolated	0	
Palustrine (permanent or intermittent flow)	0.61435	2.74
Riverine	0	
Riverine (at rivermouth)	0.38565	1.72
Lacustrine (at rivermouth)	0	
Lacustrine (on enclosed bay with barrier beach)	0	
Lacustrine (exposed to lake)	0	

Dominant Form	%	Area (ha)
h	0	
c	0	
dh	0	
dc	0	
ds	0	
ts	0.38565	1.72
ls	0	
gc	0	
ne	0.09417	0.42
be	0	
re	0.52018	2.32
ff	0	
ff	0	
su	0	
m	0	

Crosby Solar Project

Wetland Vegetation

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

August 30, 2010
Project No: NRSI-1143
UTM Zone 18, NAD 83
Scale: 1:10,000 (at 11x17")

394500 395000 395500 396000 396500 397000 397500 398000

4948000 4947500 4947000 4946500 4946000

N

PENNY LANE
NARROWS LOCK RD
CARLETON ST
LITTLE RIDEAU LAKE RD
MCCANN RD

WETLAND #1
WETLAND #2
WETLAND #3
WETLAND #4
WETLAND #5
WETLAND #6
WETLAND #7

reM8 MAMM1-16
reM5 MAMM1-3
reM7 MAMM1-2
neM4 MAMM1-16
reM6 MAMM1-2
neM3 MAMM1-3
tsS6 SWDM3-3
hS5 SWDM2-2

The Bog Marsh

Legend

- Project Site
- Ecological Land Classification
- (MAMM1-16) Mixed Graminoid Graminoid Mineral Meadow Marsh Type
- (MAMM1-2) Cattail Graminoid Mineral Meadow Marsh Type
- (MAMM1-3) Reed-canary Grass Graminoid Mineral Meadow Marsh Type
- (SWDM2-2) Green Ash Mineral Deciduous Swamp Type
- (SWDM3-3) Swamp Maple Mineral Deciduous Swamp Type
- Secondary Road
- Resource / Recreation
- Watercourse Permanent
- Provincially Significant Wetland
- ANSI - Life Science
- Waterbody
- Wetland Area
- Wooded Area

0 200 400 600 800 Meters

NRSI_1143_ELC_10K_2010_08_30_SWM

Crosby

Catchment Area

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

August 16, 2010
Project No: NRSI-1143
UTM Zone 18, NAD 83
Scale: 1:20,000 (at 11x17")

393000 394000 395000 396000 397000 398000 399000 400000

4948000 4947000 4946000 4945000 4944000

PENNY LANE
LITTLE RIDEAU LAKE RD
CARLETON ST
MCCANN RD
NARROWS LOCK RD
COUNTY RD 42
CIRCLE DR
HWY 15
CROSBY RD
SUNNY SIDE RD
UPPER RIDEAU DR
MCBRIDE POINT DR
SUNNYSIDE RD S
JOHN ST
DRUMMOND ST
MAIN ST
LOCK RD
BAY ST
NEW ST
BY ST
WATER ST

NEWBORO LAKE MARSH
The Bog Marsh
Benson-Mosquito-Loon Lakes Complex

N

Legend

- Project Site
- Catchment Boundary
- Primary Road
- Secondary Road
- Resource / Recreation
- Watercourse Permanent
- Watercourse Intermittent
- Provincially Significant Wetland
- ANSI - Life Science
- Waterbody
- Wetland Area
- Wooded Area

0 200 400 600 800 Meters

NRSI_1143_Crosby_CatchmentArea_20K_2010_08_16_GCS

Crosby Solar Project

Interspersion Map

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

September 14, 2010
Project No: NRSI-1143
UTM Zone 18, NAD 83
Scale: 1:10,000 (at 11x17")

N

394500 395000 395500 396000 396500 397000 397500 398000

4948000 4947500 4947000 4946500 4946000

PENNY LANE
NARROWS LOCK RD
MCCANN RD
CARLETON ST
LITTLE RIDEAU LAKE RD

WETLAND #6
WETLAND #3
WETLAND #7
WETLAND #5
WETLAND #4
WETLAND #2
WETLAND #1

reM8 MAMM1-16
reM5 MAMM1-3
reM7 MAMM1-2
neM4 MAMM1-16
tsS6 SWDM3-3
reM6 MAMM1-2
neM3 MAMM1-3
hS5 SWDM2-2

The Bog Marsh

Legend

- Project Site
- Ecological Land Classification
- (MAMM1-16) Mixed Graminoid Graminoid Mineral Meadow Marsh Type
- (MAMM1-2) Cattail Graminoid Mineral Meadow Marsh Type
- (MAMM1-3) Reed-canary Grass Graminoid Mineral Meadow Marsh Type
- (SWDM2-2) Green Ash Mineral Deciduous Swamp Type
- (SWDM3-3) Swamp Maple Mineral Deciduous Swamp Type
- Grid (87.58m x 87.58m)
- Secondary Road
- Resource / Recreation
- Watercourse Permanent
- Provincially Significant Wetland
- ANSI - Life Science
- Waterbody
- Wetland Area
- Wooded Area

0 200 400 600 800 Meters

NRSI_1143_Interspersion_10K_2010_09_14_SWM