NORTHLAND POWER

Crosby Solar Project

Draft Natural Heritage Evaluation of Significance

December 22, 2010

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

DRAFT Natural Heritage Evaluation of Significance

Crosby Solar Project

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Disclaimer

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Project Report

December 22, 2010

Northland Power Inc.
Crosby Solar Project

DRAFT Natural Heritage Evaluation of Significance

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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 40 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*, made under the *Environmental Protection Act* identifies the Renewable Energy Approval (REA) requirements for renewable energy projects in Ontario. Ground-mounted solar facilities with a nameplate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities and require an REA in accordance with Section 4 of O. Reg. 359/09.

Section 24(1) of O. Reg. 359/09 requires proponents of Class 3 solar projects to undertake a natural heritage assessment consisting of a records review report, site investigation report and an evaluation of significance report for each natural feature identified during the records review and site investigation.

Natural features are defined in Section 1(1) of O. Reg. 359/09 to be all or part of

a) an area of natural and scientific interest (ANSI) (earth science)

b) an ANSI (life science)

c) a coastal wetland

d) a northern wetland

e) a southern wetland

f) a valleyland

g) a wildlife habitat, or

h) a woodland.

1.2.1 Records Review Report

Section 25 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage records review to identify "whether the Project is

(a) in a natural feature

(b) within 50 m of an area of natural and scientific interest (earth science)

(c) within 120 m of a natural feature that is not an area of natural or scientific interest (earth science)." (O. Reg. 359/09, s. 25, Table).

Subsection 2 of Section 30 of the REA Regulation requires the proponent to prepare a report "setting out a summary of the records searched and the results of the analysis" (O. Reg. 359/09). The Natural Heritage Records Review Report (Hatch Ltd., 2010a) was prepared to meet these requirements.

1.2.2 Site Investigation Report

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 30(2)
- 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).

The Natural Heritage Site Investigation Report (Hatch Ltd., 2010b) was prepared to meet these requirements.

1.2.3 Evaluation of Significance Report

Section 27 of the REA Regulation requires proponents of Class 3 solar projects to undertake an evaluation of significance for natural heritage features identified during the records review and site investigation and prepare a report that sets out

- a determination of whether the natural feature is
  - provincially significant
  - significant
  - not significant
  - not provincially significant
- a summary of the evaluation criteria or procedures used to make the determinations
- the name and qualifications of any person who applied to evaluation criteria or procedures.

This Evaluation of Significance (EOS) Report for the natural features identified on and within 120 m of the Project has been prepared to meet these requirements.

1.3 Evaluation of Significance Report Format

Section 1 of this EOS has identified the legislative requirements for an EOS under the REA Regulation and identified the reasons why an EOS is required for the Project. Section 2 provides a summary of the results of the records review and site investigation. Section 3 provides the EOS for wildlife habitat, while Section 4 provides the EOS for the woodlands, and Section 5 for the wetlands. Section 6 identifies the conclusions of the EOS, and the references are provided in Section 7.

Upper Rideau Lake

MARKS ST

LITTLE RIDEAU LK RD

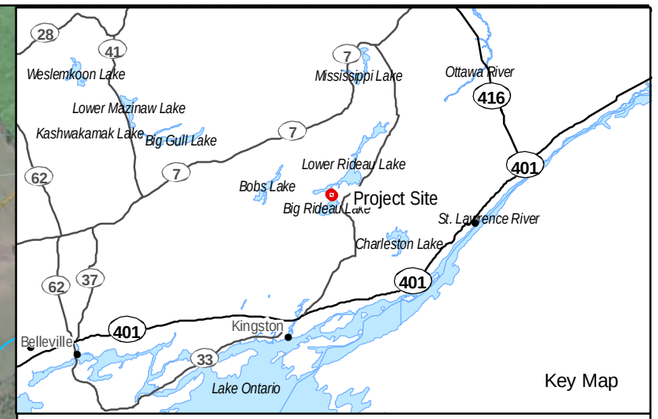
CARLETON ST

30 m

TOWNSHIP OF RIDEAU LAKES

MCCANN RD

COUNTY RD 42



Legend

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

Significant Natural Heritage Features

- Significant Woodland

Significant Wildlife Habitat

- Animal Movement Corridor (Semi-aquatic)
- Bullfrog Concentration Area/American Bullfrog Habitat
- Milksnake Habitat

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 Significant Natural Heritage Features

HATCH

P:\NORTHLAND\333751\DATABASES\334844\GIS\Crosby\Crosby - land Investigation_EOS.mxd

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2. Summary of Results of Records Review and Site Investigation

As stated above, natural features requiring an EOS are identified through the records review (Hatch Ltd., 2010a) and site investigation (Hatch Ltd., 2010b) required under Sections 25 and 26 of the REA Regulation, respectively. These studies have already been completed, and the results are summarized in Table 2.1. This report provides the evaluations for the features identified in Table 2.1.

Table 2.1 Natural Features on and within 120 m of the Project Location

Natural Feature	Project Location	Adjacent Lands (within 120 m)	Notes
ANSI – Earth Science	No	No	
ANSI – Life Science	No	No	
Wetland	No	Yes	Unevaluated wetlands are present on and within 120 m of the Project location.
Wildlife Habitat	Yes	Yes	Candidate significant wildlife habitats were identified on and within 120 m of the Project location
Woodland	Yes	Yes	There are woodlands identified on and within 120 m of the Project location
Valleyland	No	No	

3. Wildlife Habitat

Wildlife habitat is defined in Section 1(1) of the O. Reg. 359/09 as "an area where plants, animals and other organisms live or have the potential to live and find adequate amounts of food, water, shelter and space to sustain their population, including an area where a species concentrates at a vulnerable point in its annual or life cycle and an area that is important to a migratory or non-migratory species."

Based on the definition of wildlife habitat, the majority of the lands on and within 120 m of the Project location can be considered wildlife habitat, consisting of agricultural lands, wetlands and woodlands.

3.1 Description of Natural Feature

Five types of candidate significant wildlife habitats were identified during the site investigation:

- animal movement corridors
- habitat for species of conservation concern (Milksnake, American Bullfrog)
- habitat for area-sensitive species (Northern Harrier)

- highly diverse areas
- bullfrog concentration area.

3.2 Evaluation Criteria and Guidelines for Wildlife Habitat, and Determination of Significance

The criteria and processes outlined in the Ministry of Natural Resources (MNR) Natural Heritage Reference Manual (NHRM) (MNR, 2010a) and Significant Wildlife Habitat Technical Guide (SWHTG) (MNR, 2000) are used to evaluate the significance of wildlife habitat. The specific criteria used in the evaluation from these sources are discussed by habitat type below.

3.2.1 Seasonal Concentration Areas

Criteria for evaluation of seasonal concentration areas wildlife are identified within Table Q-1 of Appendix Q of the SWHTG. The criteria that were considered during the evaluations of the features are discussed in respect of the individual features below.

3.2.1.1 Bullfrog Concentration Area

The criteria for bullfrog concentration areas include the following:

- Relative importance of the habitat to local populations – This value is unknown. Other large areas of wetland habitat are known to occur within the area, though occupancy of these features by bullfrog is unconfirmed.
- Abundance – Several bullfrogs were noted during the site investigation in this area; as a result, abundance within the feature is believed to be high.
- Size of site – The portion of the wetland community that is suitable to bullfrog occupation is relatively small.
- Historical use of the area – The length of bullfrog occupancy is unknown.

Given the demonstrated use of the feature, and the uncertainty associated with historical use and relative importance, this habitat is considered to be a significant bullfrog concentration area.

3.2.2 Specialized Habitat for Wildlife

Criteria for evaluation of specialized habitat for wildlife are identified within Table Q-2 of Appendix Q of the SWHTG. The criteria that were considered during the evaluations of the features are discussed in respect of the individual features below.

3.2.2.1 Habitat for Northern Harrier, an Area-Sensitive Species

The criteria for area-sensitive grassland species include the following:

- Presence of rare, uncommon, or declining species – Northern Harrier populations are believed to be stable or expanding within the province (Ontario Partners in Flight, 2005). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – Based on satellite imagery, there are several large contiguous areas of grassland present within the Township of

Rideau Lakes (i.e., the planning area); the site in question represents, at a conservative estimate based on satellite imagery, 1 to 2% of the grasslands present within the planning area. As a result, this criteria is not met.

- Amount of vertical stratification of site – No vertical stratification was noted during the site investigation within the grassland. Therefore, this criteria is not met.
- Degree of disturbance – Site is a pastureland/hayfield that is harvested annually, and not in an early stage of succession. Therefore, this criteria is not met.
- Amount of adjacent residential development – The amount of adjacent residential development is minimal, and therefore this criteria is met.
- Provision of significant wildlife habitat – The only other significant wildlife habitat characteristic of this area is potential general use habitat for milksnake (see Section 3.1.2). Therefore, this criteria is not met as several significant wildlife habitats were not noted.
- Potential for long-term protection of the site – The site is located on private land, and therefore, long-term protection of the feature cannot be assured.

Therefore, as Northern Harrier are not considered to be declining, as no evidence of nesting was noted from the Project location, and as the Project location represents a negligible amount of the total habitat available within the planning area, the habitat for northern harrier present on the Project location is not considered to be significant.

3.2.3 Habitat for Species of Conservation Concern

Criteria for evaluation habitat of conservation concern are identified within Table Q-3 of Appendix Q of the SWHTG. The criteria that were considered during this evaluation include

- degree of rarity of species found at site (i.e., habitat of rare species is significant)
- documented significant decline in a species and/or its critical habitat
- species whose range is solely or primarily found in Ontario
- condition of existing habitat at site (i.e., sites with minimal disturbance, non-invasive sp., etc)
- size of species population at site
- size and location of habitat
- potential for long-term protection of habitat
- evidence of use of the habitat.

American Bullfrog and Milksnake are discussed separately below.

- American Bullfrog – Areas of bullfrog habitat are found within the previously assessed Bullfrog Concentration Area (see Section 3.2.1). This habitat was identified as significant for bullfrogs, and therefore will also be considered significant habitat for species of conservation concern.
- Milksnake – Given that Milksnake are habitat generalists, the entire Project location was considered to be suitable habitat for Milksnake. As Milksnake are difficult to detect, use of the

area was unconfirmed, and the size of the population is uncertain. The site is located on private land, and therefore, long-term protection cannot be assured, though lands located on the Project location will be protected by Northland during the life of the Project. Milksnake are identified as a species of Special Concern on the ESA, and therefore though use is unconfirmed, the area is treated as significant wildlife habitat.

3.2.4 Animal Movement Corridors

Potential animal movement corridors were identified in the hedgerows on and adjacent to the Project location, and the woodlands on and within 120 m of the Project location.

Evaluation methodology of animal movement corridors is identified within Section 8.7 of the SWHTG. The criteria for significance are outlined in Table Q-4 of Appendix Q in the SWHTG, and include the following:

- Importance of areas to be linked by corridor – Areas linking critical habitats/significant areas.
- Importance of corridor to survival of target species – Corridors linking significant or critical habitat for a target species.
- Dimensions of corridor – Most significant corridors should be at least 200 m wide.
- Continuity of corridor – Corridor should be unbroken.
- Habitat and habitat structure of corridor - Corridor with several layers of vegetation and other structures, such as watercourses.
- Species found in corridor or presumed to be using corridor – Corridors with high species diversity are significant.
- Risk of mortality for species using corridor – Corridors with low risk of roadkills or adjacent to residential areas.
- Opportunity for protection – Corridors within areas that may be protected, such as undeveloped shorelines or borders of conservation areas.
- Provision of other related values (such as erosion protection).

The hedgerows and woodland are discussed separately below.

- Hedgerows – Section 8.7 of the SWHTG states that “fence and hedgerows should not be considered significant unless they provide the only animal movement corridors in the planning areas”. Given that there are wooded areas present within the landscape that would serve as animal movement corridors), that the hedgerows are generally restricted to a depth of a single tree width and do not connect the features to other significant natural areas, these features are not considered to be significant wildlife habitat.
- Woodland on the Project location – The woodland located on the Project location does not connect various natural features or habitats critical for wildlife survival. Further, the woodland is generally both narrow and covers a small distance such that its function as an animal movement corridor providing protection for various species is limited. As a result, it is determined to not meet the requirements of a significant animal movement corridor.

- Woodlands within 120 m northwest and northeast of the Project location – These woodlands are located around the edges of the lake, and likely provide animal movement corridors for larger mammals, such as deer and coyote, around this obstruction in the landscape. However, risk of mortality within this corridor is moderate given that several roadways cross the corridor and there are numerous interruptions and locations where corridor width is reduced to a single tree row. Further, there is no opportunity for protection associated with this corridor given that the areas are all located on private land. As a result, there woodlands are not determined to be significant animal movement corridors.
- Watercourse within 120 m of the Project location (semi-aquatic species) – This corridor links several upland amphibian (i.e., Northern Leopard Frog) and reptile (Northern Map Turtle) breeding wetland communities with the over-wintering habitat that may be found within Upper Rideau Lake. There is a low risk of mortality for species using this corridor, and the corridor provides resistance to soil erosion. The corridor is generally narrow (i.e., < 50 m wide), does not contain diverse structure, and is not believed to contain high species diversity. As the corridor is located on private land, long-term protection is not guaranteed, though portions of the corridor located on the Project location will be protected by Northland during the life of the Project. However, given that several of the criteria are met, this corridor is considered to be significant.

3.2.5 Overall Evaluation

Significant wildlife habitat features were identified in

- all lands on and within 120 m of the Project location which provide potential general use habitat for Milksnake
- wetland communities located northwest of the Project location which provide bullfrog concentration areas and significant wildlife habitat for bullfrogs
- watercourse within 120 m west of the Project location which provides an animal movement corridor for semi-aquatic species.

3.3 Date of Beginning and Completion of Evaluation

The evaluation of wildlife habitat commenced with records reviews in May 2010 and was finalized with the completion of this report in November 2010. Two site visits were completed in association with this evaluation on June 15 and July 1, 2010.

3.4 Name and Qualifications of Evaluator

Evaluations of wildlife habitat were completed by Sean K. Male of Hatch Ltd.

Sean K. Male, M.Sc. is a Terrestrial Ecologist specializing in assessments of terrestrial habitat, flora and fauna. Sean received his Bachelors of Science (Honours) in Biology from Queen's University, where he completed his Honour's thesis under Dr. Raleigh J. Robertson, studying the impacts of nestbox density in Tree Swallows (*Tachycineta bicolor*) on nest-building behaviour. He then completed a Master's of Science degree in the Watershed Ecosystem Graduate Program at Trent University under Dr. Erica Nol. Sean's thesis focussed on examining the impacts of a Canadian diamond mine on a population of breeding passerines. For his thesis, Sean spent two summers in

the Canadian Arctic studying populations of Lapland Longspurs (*Calcarius lapponicus*) around the Ekati Diamond Mine, located 300 km northeast of Yellowknife. While at Trent, Sean participated in the Northern Saw-whet Owl (*Aegoius acadicus*) Migration Banding Project at the Oliver Centre. Following his time at Trent, Sean participated in the Landscape Monitoring Program, participating in a study of the impacts of woodlot size on breeding birds.

Sean joined Hatch Ltd. as a Terrestrial Ecologist in 2006. Since joining Hatch Ltd., Sean has participated in several environmental assessments, REAs and other regulatory approvals for hydro, wind and solar power developments as the terrestrial biologist specializing in field investigations identifying flora and fauna species, including species of significance. He has developed and implemented baseline monitoring and impact assessment programs for both terrestrial wildlife and plant communities, including detailed bird and bat studies for several wind power developments, including the proposed 100-MW Coldwell Wind Power Development near Marathon, Ontario, a proposed 20-MW facility near Port Dover, Ontario, and a proposed 110-MW wind facility in southwestern Ontario. Sean has also conducted terrestrial and wetland vegetation surveys for several proposed hydropower projects totalling over 40 MW in southern and northern Ontario and has participated in fisheries surveys for several of these projects.

4. Woodlands

4.1 Description of Natural Feature

Section 1 of O. Reg. 359/09 defines "woodland" as land,

(a) that is south and east of the Canadian Shield

(b) that has per hectare, at least

  (i) 1000 trees of any size

  (ii) 750 trees measuring over 5 cm in diameter

  (iii) 500 trees measuring over 12 cm in diameter

  (iv) 250 trees measuring over 20 cm in diameter

(c) that does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees.

4.2 Evaluation Criteria and Guidelines for Woodlands

The EOS was completed in consideration of the Evaluation Approach outlined in Section 7 of the NHRM (MNR, 2010a). The evaluation criteria recommended in the NHRM to assess significance of a woodland are as follows:

- Woodland Size – Woodlots greater than 50 ha in size in this region are considered significant. This size recommendation is for this area where woodlots represent approximately 30% to 60% of the land cover.

- Ecological Functions
  - Woodland Interior – Woodlands with 8 ha or more of interior habitat.
  - Proximity to Other Woodlands or Other Habitats – Woodlands within 30 m of a significant natural feature or fish habitat likely receiving ecological benefit from the woodland.
  - Linkages – Woodlands providing a connecting link between two other significant features within 120 m of the woodland.
  - Water Protection – Woodlands located within a sensitive or threatened watershed or within 50 m of various water features (such as watercourses or sensitive recharge areas).
  - Woodland Diversity – Woodlands with (i) a naturally-occurring composition of forest species that have declined, or (ii) with a high native diversity through a combination of composition and terrain.
- Uncommon Characteristics – Woodlands with (i) a unique species composition or site; (ii) a vegetation community with a provincial ranking of S1, S2, or S3; (iii) important habitat or a rare, uncommon, or restricted woodland plant species; or (iv) characteristics of older woodlands or woodlands with larger tree size structure in native species.
- Economic and Social Functional Values – Woodlands with (i) a high productivity in terms of economic value products together with continuous native natural attributes; (ii) a high value in special services, such as air quality improvement or recreation at a sustainable level that is compatible with long-term retention; or (iii) important identified appreciation, education, cultural or historical value.

Many of the criteria for significance have a minimum woodland size associated with them. In this area, where relevant, the minimum size for a woodland to be considered significant is 5 ha.

4.3 Determination of Significance

There are three woodlands for which evaluations of significance are required.

4.3.1 Woodland Present on Project Location

The woodland present on the Project location is estimated to be 7.0 ha, with no forest interior habitat. This woodland was not considered to be significant by the MNR (2010b).

The vegetation community was not considered to be uncommon and is not known to contain economic or social functional values. The woodland community was not considered to be diverse, the woodland is not proximal to other water or natural features, and does not provide linkage habitat.

Therefore, this woodland is not considered to be significant as it meets none of the criteria of significance.

4.3.2 Woodland Located Northwest of the Project Location

The woodland located northwest of the Project location is estimated to be greater than 50 ha in size, with more than 8 ha of forest interior. Portions of this woodland more than 120 m from the Project

location are considered to be significant by the MNR (2010b) for linkages, areas of old growth, and proximity to waterbodies.

Therefore, the entire woodland is considered significant as it meets the requirements for size, interior habitat, linkages, old growth characteristics, and proximity to waterbodies.

4.3.3 Woodland Located Southwest of the Project Location

The woodland southwest of the Project location is estimated to be 3.8 ha, with no forest interior habitat. As a result, this woodland does not meet the minimum size requirements to be considered a significant woodland. This woodland was also not identified as significant by the MNR (2010b).

4.4 Date of Beginning and Completion of Evaluation

The evaluation of woodlands commenced with records reviews in May 2010 and was finalized with the completion of this report in November 2010. Site visits were completed in association with this evaluation on June 15, 2010.

4.5 Name and Qualifications of Evaluator

Evaluations of woodland significance were completed by Sean K. Male of Hatch Ltd. His qualifications are provided within Section 3.4.

5. Wetlands

There are several unevaluated wetlands on and within 120 m of the Project location. A wetland evaluation was completed for these features and is described separately in Appendix A. The conclusion of the wetland evaluation was that all wetlands on and within 120 m of the Project location were non-provincially significant features.

Wetland evaluations were completed by Natural Resource Solutions Inc. (NRSI). The wetland evaluation commenced in June 2010 and was completed in November 2010.

6. Conclusions

Results of the EOS are summarized in Table 6.1. Based on the EOS outlined above, there is a significant woodland and significant wildlife habitat on and within 120 m of the Project location. The locations of these features are shown in Figure 1.1.

An environmental impact study conducted according to the requirements of Section 38(2) of O. Reg. 359/09 will be required in order to construct Project components within 120 m of these features.

Table 6.1 Significant Natural Features on and within 120 m of the Project Location

Natural Feature		Project Location	Adjacent Lands (within 120 m)
SIGNIFICANT	Valleylands	No	No
	Woodlands	No	Yes
	Wildlife Habitat	Yes	Yes
PROVINCIALLY SIGNIFICANT	Wetland	No	No
	Earth Science ANSI	No	No
	Life Science ANSI	No	No

7. References

Eastern Ontario Natural Heritage Working Group (EONHWG). 2003. Woodland Valuation System. Version 2.0. Available on-line at http://woodlandvaluation.eomf.on.ca/index.htm.

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

Hatch Ltd. 2010b. Crosby Solar Project – Natural Heritage Site Investigation Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. July 2010.

Ministry of Natural Resources (MNR). 2010a. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ministry of Natural Resources (MNR). 2010b. Personal communication from H. Zurbrigg (MNR) to S. Male (Hatch) during meeting of September 17, 2010.

MNR. 2000. Significant Wildlife Habitat Technical Guide. 151 p.

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/Ontario Ministry of Natural Resources.

Appendix A

Natural Resource Solutions Inc.
Wetland Evaluations

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):

NONE

Wildlife Notes:

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):

NONE

Wildlife Notes:

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:** ~~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, reed canary, jr pyr weed
ne 30 %	fox sedge, Bebb's sedge, reed canary 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:** ~~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, common-leaved spirea
gc 25 %	purple loosestrife, common bonset, bitter cress
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 convicted by herbicide application & planting

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: S **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: ts S6 Wind Speed & Direction: I-W Cloud %: 100

Wetland Type: S **Site Type:** R **Dominant Form:** ts

% 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 aster
(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)		Size of each wetland unit				
		Isolated	Palustrine	Riverine	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
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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 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
COUNTY RD 42
JOHN ST
DRUMMOND ST
MAIN ST
LOCK RD
NEW ST
BAY 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")

394500 395000 395500 396000 396500 397000 397500 398000

4948000 4947500 4947000 4946500 4946000

N

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

WETLAND #6
WETLAND #3
WETLAND #5
WETLAND #4
WETLAND #7
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