



**NORTHLAND  
POWER**

# North Burgess Solar Project Natural Heritage Evaluation of Significance Report

November 11, 2011

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

Natural Heritage  
Evaluation of Significance

North Burgess Solar Project

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Project Report

November 11, 2011

**Northland Power Inc.**  
**North Burgess Solar Project**

**Natural Heritage Evaluation of Significance**

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Wetlands Site Investigation**

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## 1. Introduction

### 1.1 Project Description

Northland Power Inc. (hereinafter referred to as “Northland”) is proposing to develop a 10-megawatt (MW) solar photovoltaic project titled North Burgess Solar Project (hereinafter referred to as the “Project”).

The Project location is approximately 78 hectares (ha) in size and is located on Narrows Lock Road near the intersection with Scotch Line, within the Township of Tay Valley, within Lanark County (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 name plate 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 3 of Section 25 of the REA Regulation requires the proponent to prepare a report “setting out a summary of the records searched and the results of the analysis” (O. Reg. 359/09). 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

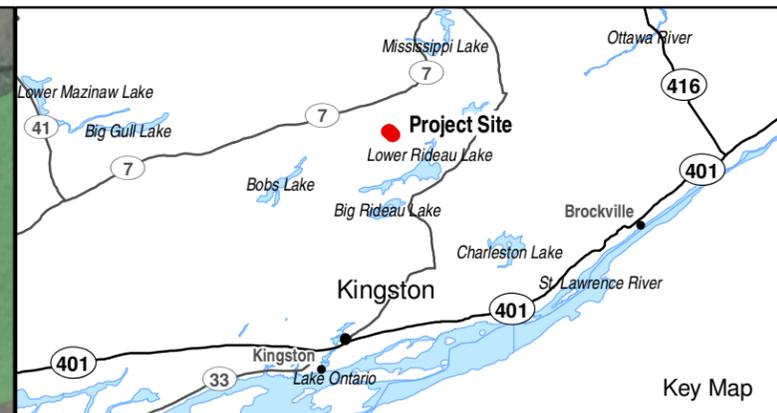
- whether the results of the analysis summarized in the (Natural Heritage Records Review) report prepared under Subsection 25 (3) are correct or require correction, and identifying any required corrections
- whether any additional natural features exist, other than those that were identified in the (Natural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

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.



**Legend**

- Amphibian Point Count Location
- Raptor Playback Location
- Breeding Bird Point Count Location
- Breeding Bird Area Search Transect
- Road
- Grassed Waterway
- Watercourse
- Project Site
- Parcel

**Candidate Significant Natural Features**

- Wetland / Amphibian Breeding Habitat
- Woodland
- Forest Providing a High Diversity of Habitat / Animal Movement Corridor
- Old Growth or Mature Forest
- Old Growth Forest (as identified by MNR)
- Animal Movement Corridor / Western Chorus Frog Habitat / Eastern Ribbonsnake Habitat / Snapping Turtle Habitat / Northern Map Turtle Habitat
- Black and White Warbler / Ovenbird / Magnolia Warbler / American Redstart / Eastern Wood-Pewee Habitat
- Brown Thrasher Habitat
- Northern Flicker / Baltimore Oriole Habitat
- Raptor Winter Feeding and Roosting Area / Milksnake Habitat / Highly Diverse Areas
- Savannah Sparrow / Northern Harrier Habitat
- Veery Habitat
- White Breasted Nuthatch / Pileated Woodpecker / Blackburnian Warbler Habitat

**Project Components**

- Connection Point With Existing Distribution Line
- Project Location
- 120 m from Project Location

**Notes:**

1. OBM and NRVIS data downloaded from LIO, with permission.
2. Old Growth Forest data based on information by Information Management & Planning Kemptville District.
3. Spatial referencing UTM NAD 83.
4. Satellite imagery from Google Earth Pro.

Scale: 0 50 100 200 Meters  
1:6,000

NORTH

Figure 1.1  
Northland Power Inc.  
**North Burgess Solar Project  
Project Location and  
Natural Heritage Features**

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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 evaluation of significance for wildlife habitat, while Section 4 provides the evaluation of significance for the wetlands. Section 5 identifies the conclusions of the evaluation of significance, and the references are provided in Section 6.

## 2. Summary of Results of Records Review and Site Investigation

As stated above, natural features requiring an evaluation of significance 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) |
|----------------------|------------------|-------------------------------|
| ANSI – Earth Science | No               | No                            |
| ANSI – Life Science  | No               | No                            |
| Valleyland           | No               | No                            |
| Wetland              | No               | Yes                           |
| Wildlife Habitat     | Yes              | Yes                           |
| Woodland             | Yes              | Yes                           |

## 3. Wildlife Habitat

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

- raptor winter feeding and roosting
- habitat for area sensitive species (Northern Harrier, American Bittern, White-breasted Nuthatch, Pileated Woodpecker, Black-and-white Warbler, Ovenbird, Magnolia Warbler and Savannah Sparrow)
- old growth or mature forest stands
- highly diverse areas
- forest providing a high diversity of habitat
- woodlands supporting amphibian breeding pond

- habitat for species of conservation concern (Eastern Wood-Pewee, Brown Thrasher, Savannah Sparrow, Eastern Meadowlark, Field Sparrow, Milksnake, Eastern Ribbonsnake, Northern Map Turtle, Snapping Turtle, Monarch)
- animal movement corridors.

### 3.1 Evaluation Criteria and Guidelines for Wildlife Habitat, and Determination of Significance

The criteria processes outlined in the Ministry of Natural Resources (MNR) Natural Heritage Reference Manual (NHRM) (MNR, 2010a), Natural Heritage Assessment Guide (MNR, 2010b) 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.

#### 3.1.1 Seasonal Concentration Areas

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

##### 3.1.1.1 Raptor Winter Feeding and Roosting Areas

The criteria for raptor winter feeding and roosting areas include the following:

- Relative importance of the site – Grassland areas and forest communities are common within Ecodistrict 6E-11, representing the majority of the landscape (i.e., more than a 100,000 ha), and therefore this site (at 78 ha), is not of relative importance.
- Presence of species of conservation concern/species diversity/abundance – Northern Harrier and Red-tailed Hawks have been recorded during the site investigations, and may use the site during the over-wintering period. Neither of these species are a species of conservation concern. Other raptor species that may use the area are currently unknown.
- Size of site – The size of the both the grassland and woodland areas are greater than 20 ha, which exceeds the criteria
- Level of disturbance – There are nearby arterial roadways, residential properties, and agricultural operations within close proximity of the area, therefore disturbance is moderate
- Location of site – There are other open grasslands and forest communities present in the area.
- Quality of habitat – Though abundance of prey is unknown, habitat is believed to be reflective of the quality of habitat available within the region.
- Historical use – Historical use of the feature is unknown

Based on the low relative importance of this site and the abundance of this habitat type within the planning area, this feature is determined to be not significant.

### 3.1.2 *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 evaluation of the features are discussed in respect of the individual features below.

#### 3.1.2.1 *Old Growth/Mature Forest*

The criteria for old-growth/mature forest include the following:

- Current representation within the planning area – This value is unknown; however there is an identified area of old-growth forest present just more than 120 m from the Project location.
- Age/age classes of trees – The area of mature forest was described as containing trees within all size classes, though presence within two of the size classes was rare, including the largest size class.
- Presence of old growth characteristics – Both standing snags and deadfall logs were generally uncommon within the woodland. Occasional supercanopy trees were noted within the woodland.
- Species diversity – A diversity of wildlife species using the woodland was not observed. Results of the breeding bird survey recorded common woodland species within this portion of eastern Ontario. There were few bird species recorded within the woodland indicating a low diversity of wildlife.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats have been identified in associated with the woodland community.
- Potential for long-term protection of site – The woodland is located on private land, and therefore, long-term protection cannot be assured.
- Stand history – Based on site investigation, there is no evidence of substantial logging or forestry activities within the portions of the woodland that are identified as mature.
- Size and location of site – The mature component of the woodland is relatively small (10 ha), though it is connected to other natural areas (such as wetlands and woodlands).
- Degree of disturbance – Degree of disturbance within the interior of the woodland is low, there is an arterial roadway located immediately adjacent to the woodland.

Therefore, given the presence of an area of old growth forest nearby, the lack of abundant characteristics of old growth forest, and the poor species diversity within the woodland, this mature woodland community is determined to not be significant.

#### 3.1.2.2 *Forest Providing a High Diversity of Habitats*

The criteria that were considered during this evaluation include

- Provision of significant wildlife habitat – Several candidate significant wildlife habitats have been identified in associated with the woodland community.

- Size of site – The woodland is estimated to be approximately 64 ha in size, therefore this criteria is met.
- Age, condition of trees on site – The age of trees on and within 120 m of the Project location was determined to be predominantly mature, though areas of young and immature forest are also present on the Project location, while an area of old growth forest has been identified within the woodland more than 120 m from the Project location. There is a large number of saplings and immature trees. Therefore, this criteria is met.
- Vegetation composition and diversity of site – The woodland on and within 120 m was identified as consisting of several community types, though sugar maple communities predominate, with other communities identified consisting of conifer plantations. Suitable cavity support trees were not identified. Therefore, given that the diversity of communities predominantly arises as a result of the present of conifer plantations, this criteria is not met.
- Cavity size, abundance and location – As above, suitable cavity support trees were not identified. Therefore this criteria is not met.
- Location of site – The woodland encompasses a watercourse and a wetland, therefore this criteria is met.
- History of forest management – As there is no history of forest management associated with this woodland, this criteria is met.

Therefore, as several of the criteria have been met, this habitat type is considered to be significant.

### 3.1.2.3 *Highly Diverse Areas*

The criteria for areas of high diversity include the following:

- Current representation of such areas in the planning area – Woodland/wetland complexes are relatively common within Ecodistrict 6E-11, with more than 100,000 ha of such habitat available. Therefore this habitat complex is readily available and this criteria is not met.
- Natural community diversity – The woodlands and wetlands were identified as containing a diversity of communities.
- Species diversity – Though a complete species inventory of the various communities was not completed, given that many of the communities extend several hundred meters beyond 120 m from the Project location, a relatively diverse list of species was noted within the communities on and within 120 m of the Project location. In addition, several wildlife species were also documented during area searches of the Project location and lands within 120 m.
- Presence of rare species – No rare species were noted during the site investigations.
- Size of site – Both the woodland and wetland complex extend for several hundred metres off the Project location, therefore this criteria is met

Based on the above evaluation, several criteria for significance were met and the area is considered to be a highly diverse area.

#### 3.1.2.4 *Woodlands Supporting Amphibian Breeding Ponds*

The criteria for woodlands supporting amphibian breeding ponds include the following:

- Provision of significant wildlife habitats – Several candidate significant wildlife habitats have been identified in associated with the woodland community.
- Degree of permanence – Permanent ponds are found associated with the wetland communities identified within 120 m of the Project location.
- Species diversity of pond – Five species of amphibians were recorded during the site investigations, therefore diversity is considered to be high and this criteria is met.
- Presence of rare species – No rare amphibian species were recorded during the site investigations.
- Size and number of ponds – There are large areas of wetland present within 120 m of the Project location. Based on the amount of suitable habitat available, this criteria is met.
- Diversity of submergent and emergent vegetation – Only a few species of submergent and emergent vegetation were noted from within the wetland communities within 120 m of the Project location.
- Presence of shrubs, logs at edge of pond – Though large numbers of logs were not noted along the edge of the breeding ponds, an abundance of shrub and immature tree species were noted and therefore this criteria is met.
- Adjacent forest habitat – Wetland communities border several forest areas, therefore this criteria is met.
- Water quality – Pollution within the watercourses on the Project location would be restricted to stormwater runoff from agricultural fields and roadways. Therefore, it is assumed that water quality is generally good.
- Level of disturbance – Level of disturbance between the wetland and woodlands is low, therefore this criteria is met.

As a result, woodlands supporting amphibian breeding ponds are considered to be significant wildlife habitat.

#### 3.1.2.5 *Habitat for Northern Harrier, Area-Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Northern Harrier populations are considered to be stable or expanding within the province (Ontario Partners In Flight, 2006). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – There are at least 72,000 ha of pastures and abandoned fields within EcoDistrict 6E-11, which overlaps the Project location. As a result, the Project location represents approximately 0.06% of the available habitat for Northern Harrier present within the planning areas. As a result, this criteria is not met.

- Amount of vertical stratification of site – No vertical stratification was noted during the site investigations within the hayfields. Therefore, this criteria is not met.
- Degree of disturbance – Site is in active hay production. Therefore, this criteria is not met.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – The only other significant wildlife habitat characteristics of this grassland is significant habitat for Milksnake, candidate significant Savannah Sparrow/Field Sparrow/Eastern Meadowlark habitat, and highly diverse areas. Therefore, this criteria is not met.
- 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 none of the criteria are met, habitat for Northern Harrier, their habitat is not considered to be a significant wildlife feature.

#### 3.1.2.6 *Habitat for Savannah Sparrow, Area-Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Savannah Sparrow populations are noted to be in decline (Ontario Partners In Flight, 2006). Therefore, this criteria is met.
- Overall area of the site/current representation of the specialized habitat – There are at least 72,000 hectares of pastures and abandoned fields within EcoDistrict 6E-11, which overlaps the Project location. As a result, the Project location represents approximately 0.06% of the available habitat for Savannah Sparrow present within the planning areas. As a result, this criteria is not met.
- Amount of vertical stratification of site – No vertical stratification was noted during the site investigations within the hayfields. Therefore, this criteria is not met.
- Degree of disturbance – Site is in active hay production. Therefore, this criteria is not met.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – The only other significant wildlife habitat characteristics of this grassland is significant habitat for Milksnake, candidate significant Northern Harrier/Field Sparrow/Eastern Meadowlark habitat, and highly diverse areas. Therefore, this criteria is not met.
- 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.

Though one of the criteria is met for Savannah Sparrow, this criteria solely relates to the presence of the species. As suitable habitat is abundant within the area, these lands do not represent significant wildlife habitat for Savannah Sparrow.

### 3.1.2.7 *Habitat for White-breasted Nuthatch, Area-Sensitive Species*

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

- Presence of rare, uncommon, or declining species – White-breasted Nuthatch populations are believed to be stable within the province. 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 woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with no interior forest in the area where White-breasted Nuthatch were observed do not represent a large portion of these lands within the planning area. As a result, this criteria is not met.
- Area of forest interior contained within the forest stand – The wooded areas where White-breasted Nuthatch were observed contains no forest interior. Therefore, this criteria is not met.
- Age and tree composition of the forest stand – Portions of the woodland where White-breasted Nuthatch were observed, located more than 120 m from the Project location, are described as old growth deciduous forest.
- Amount of vertical stratification of site – Vertical stratification is identified within the woodland and therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – The woodlands within 120 m of the Project location in the northwestern corner, where White-breasted Nuthatch were recorded, have large numbers of open areas and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with a highway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland..
- 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, though some of the above criteria are met, since White-breasted Nuthatch populations are not declining, and the woodland in which they were identified does not contain interior forest, this habitat is not considered to be significant.

### 3.1.2.8 *Habitat for Pileated Woodpecker, Area-Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Pileated Woodpecker populations are believed to be stable within the province. 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 woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with no interior forest in the area where Pileated Woodpecker were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.
- Area of forest interior contained within the forest stand – The wooded areas where Pileated Woodpecker were observed contains no forest interior. Therefore, this criteria is not met.
- Age and tree composition of the forest stand – Portions of the woodland where Pileated Woodpecker were observed, located more than 120 m from the Project location, are described as old growth deciduous forest.
- Amount of vertical stratification of site – Vertical stratification is identified within the woodland and therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – The woodlands within 120 m of the Project location in the northwestern corner, where Pileated Woodpecker were recorded, have large numbers of open areas and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with a highway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland..
- 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, though some of the above criteria are met, since Pileated Woodpecker populations are not declining, and the woodland in which they were identified does not contain interior forest, this habitat is not considered to be significant.

### 3.1.2.9 *Habitat for Blackburnian Warbler, Area-Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Blackburnian Warbler populations are believed to be stable within the province. 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 woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with no interior forest in the area where Blackburnian Warbler were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.
- Area of forest interior contained within the forest stand – The wooded areas where Blackburnian Warbler were observed contains no forest interior. Therefore, this criteria is not met.
- Age and tree composition of the forest stand – Portions of the woodland where Blackburnian Warbler were observed, located more than 120 m from the Project location, are described as old growth deciduous forest.
- Amount of vertical stratification of site – Vertical stratification is identified within the woodland and therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – The woodlands within 120 m of the Project location in the northwestern corner, where Blackburnian Warbler were recorded, have large numbers of open areas and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with a highway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland..
- 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, though some of the above criteria are met, since Blackburnian Warbler populations are not declining, and the woodland in which they were identified does not contain interior forest, this habitat is not considered to be significant.

### 3.1.2.10 *Habitat for American Redstart, an Area Sensitive Species*

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

- Presence of rare, uncommon, or declining species – American Redstart are not considered to be declining within the province (NHIC, 2011). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – Based on satellite imagery, this woodlands is part of a much larger woodland, and one of several large woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with approximately 3 ha of interior forest in the area where American

Redstart were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.

- Area of forest interior contained within the forest stand – Forest interior is 3 ha, which is less than the minimum size requirement of 10 ha for significant area-sensitive bird breeding habitat (MNR, 2009). Therefore, this criteria is not met.
- Age and tree composition of the forest stand – The wooded area is considered to be a mature forest community; therefore, this criteria is met.
- Amount of vertical stratification of site – Some vertical stratification was noted within the community, therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – Canopy coverage within the woodland was relatively continuous and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with an arterial roadway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland.
- 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, though some of the criteria have been met, the woodland does not contain the minimum amount of interior forest for significant area-sensitive breeding bird habitat and therefore this feature is not significant.

#### 3.1.2.11 *Habitat for Veery, an Area Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Veery are not considered to be declining within the province (NHIC, 2011). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – Based on satellite imagery, this woodlands is part of a much larger woodland, and one of several large woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with approximately 3 ha of interior forest in the area where Veery were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.

- Area of forest interior contained within the forest stand – Forest interior is 3 ha, which is less than the minimum size requirement of 10 ha for significant area-sensitive bird breeding habitat (MNR, 2009). Therefore, this criteria is not met.
- Age and tree composition of the forest stand – The wooded area where Veery were observed is considered to be a mid-aged to mature forest community; therefore, this criteria is met.
- Amount of vertical stratification of site – Some vertical stratification was noted within the community, therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – Canopy coverage within the woodland was relatively continuous and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with an arterial roadway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland..
- 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, though some of the criteria have been met, the woodland does not contain the minimum amount of interior forest for significant area-sensitive breeding bird habitat and therefore this feature is not significant.

#### 3.1.2.12 *Habitat for Ovenbird, an Area Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Ovenbird are not considered to be declining within the province (NHIC, 2011). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – Based on satellite imagery, this woodlands is part of a much larger woodland, and one of several large woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with approximately 3 ha of interior forest in the area where Ovenbird were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.
- Area of forest interior contained within the forest stand – Forest interior is 3 ha, which is less than the minimum size requirement of 10 ha for significant area-sensitive bird breeding habitat (MNR, 2009). Therefore, this criteria is not met.

- Age and tree composition of the forest stand – The wooded area is considered to be a mature forest community; therefore, this criteria is met.
- Amount of vertical stratification of site – Some vertical stratification was noted within the community, therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – Canopy coverage within the woodland was relatively continuous and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with an arterial roadway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland.
- 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, though some of the criteria have been met, the woodland does not contain the minimum amount of interior forest for significant area-sensitive breeding bird habitat and therefore this feature is not significant.

### 3.1.2.13 *Habitat for Black-and-white Warbler, an Area Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Black-and-white Warbler are not considered to be declining within the province (NHIC, 2011). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – Based on satellite imagery, this woodlands is part of a much larger woodland, and one of several large woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with 3 ha of interior forest in the area where Black-and-white Warbler were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.
- Area of forest interior contained within the forest stand – Forest interior is 3 ha, which is less than the minimum size requirement of 10 ha for significant area-sensitive bird breeding habitat (MNR, 2009). Therefore, this criteria is not met.
- Age and tree composition of the forest stand – The wooded area is considered to be a mature forest community; therefore, this criteria is met.
- Amount of vertical stratification of site – Some vertical stratification was noted within the community, therefore this criteria is met.

- Amount of contiguous closed-canopy/open areas in forest stand – Canopy coverage within the woodland was relatively continuous and therefore this criteria is not met.
- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with an arterial roadway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland.
- 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, though some of the criteria have been met, the woodland does not contain the minimum amount of interior forest for significant area-sensitive breeding bird habitat and therefore this feature is not significant.

#### 3.1.2.14 *Habitat for Magnolia Warbler, an Area Sensitive Species*

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

- Presence of rare, uncommon, or declining species – Magnolia Warbler are not considered to be declining within the province (NHIC, 2011). Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – Based on satellite imagery, this woodlands is part of a much larger woodland, and one of several large woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with 3 ha of interior forest in the area where Magnolia Warbler were observed does not represent a large portion of these lands within the planning area. As a result, this criteria is not met.
- Area of forest interior contained within the forest stand – Forest interior is 3 ha, which is less than the minimum size requirement of 10 ha for significant area-sensitive bird breeding habitat (MNR, 2009). Therefore, this criteria is not met.
- Age and tree composition of the forest stand – The wooded area is considered to be a mature forest community; therefore, this criteria is met.
- Amount of vertical stratification of site – Some vertical stratification was noted within the community, therefore this criteria is met.
- Amount of contiguous closed-canopy/open areas in forest stand – Canopy coverage within the woodland was relatively continuous and therefore this criteria is not met.

- Degree of disturbance – There is minimal disturbance within the woodland communities, though disturbance is moderate in the surrounding area associated with an arterial roadway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Several candidate significant wildlife habitats are identified in association with this woodland.
- 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, though some of the criteria have been met, the woodland does not contain the minimum amount of interior forest for significant area-sensitive breeding bird habitat and therefore this feature is not significant.

#### 3.1.2.15 *Habitat for American Bittern, an Area-Sensitive Species*

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

- Presence of rare, uncommon, or declining species – American Bittern populations are not rare, uncommon, or declining. Therefore, this criteria is not met.
- Overall area of the site/current representation of the specialized habitat – There are more than 8300 ha of marsh complex within EcoDistrict 6E-11, which overlaps the Project location. As a result, the marshland within 120 m of the northern extent of the Project location represents approximately 0.06% of the available habitat for American Bittern present within the planning areas. As a result, this criteria is not met.
- Amount of vertical stratification of site – No vertical stratification was noted during the site investigations within the marshland habitat. Therefore, this criteria is not met.
- Degree of disturbance – Disturbance is moderate in the surrounding area associated with a highway, agricultural operations, livestock operations, and residential properties within close proximity.
- Amount of adjacent residential development – There is minor residential development to the south of the Project location and the Village of Stanleyville is located to the west-southwest. Therefore, this criteria is not met.
- Provision of significant wildlife habitat – Marshlands may provide significant wildlife habitat for species of conservation concern (see Section 3.1.3).

Therefore, habitat for American Bittern is not considered to be a significant wildlife feature given that the species is not declining and suitable habitat is abundant in the area.

#### 3.1.3 *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 disturbances, 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.

The species of conservation with potential habitat on the Project location are discussed further in relation to these criteria below:

- **Monarch** – Monarchs are considered to be an apparently secure breeding within the province, though populations declines have been noted within the species. Monarchs are not solely or primarily found in Ontario. Several milkweed plants were observed providing suitable habitat conditions, though several invasive species were also noted and disturbance is ongoing as a result of agricultural operations. The size of the species population at the site is unknown. Milkweed are abundant along the edges of the hedgerows and in areas that are no longer in active hay production, such as around the residence within 120 m east of the Project location. Milkweed are an extremely common weed of waste areas and abandoned farmland and pastureland. The site is located on private land and therefore long-term protection cannot be assured. Monarch were observed during the site investigation, though no confirmed breeding at the Milkweed was noted. Therefore, based on the abundance of Milkweed within the province and local area, and presence of invasive species within the habitat, there is no significant habitat for Monarch found on or within 120 m of the Project location.
- **Northern Flicker** – Confirmed breeding habitat for Northern Flicker was noted within the hedgerows within 120 m of the Project location. Northern Flicker are not considered to be a rare species, however their populations are undergoing declines within the province (Ontario Partners in Flight, 2006). Their range is not solely or primarily found within Ontario. Habitat conditions within the hedgerows were considered to be of high quality (tall trees in proximity to suitable foraging habitat). A single male was confirmed as occurring on or within 120 m of the Project location during the site investigation. The site is located on private land, and therefore, long-term protection cannot be assured. Given the small size of populations on or within 120 m of the Project location and the abundance of suitable breeding habitat within the region, this habitat type is not considered to meet the criteria for significance.
- **Baltimore Oriole** - Confirmed breeding habitat for Baltimore Oriole was noted within the hedgerows within 120 m of the Project location. Baltimore Oriole are not considered to be a rare species, however their populations are undergoing declines within the province (Ontario Partners in Flight, 2006). Their range is not solely or primarily found within Ontario. Habitat conditions within the hedgerows were considered to be of high quality (tall trees in proximity to suitable foraging habitat). A single male was confirmed as occurring on or within 120 m of the

Project location during the site investigation. The site is located on private land, and therefore, long-term protection cannot be assured. Given the small size of populations on or within 120 m of the Project location and the abundance of suitable breeding habitat within the region, this habitat type is not considered to meet the criteria for significance.

- Eastern Wood Pewee – Eastern Wood Pewee are not considered to be a rare species within the Province, though there have been documented declines within the populations of the species. Eastern Wood Pewee range is not solely or primarily found within Ontario. At present, habitat on the Project location is considered to be of moderate quality, i.e. within a mature forest community, though with only a small amount of interior forest habitat present. Three singing males were recorded within the woodland community, representing a maximum of 3 pairs. Based on satellite imagery, this woodland is part of a much larger woodland, and one of several large woodlands within the regional area. Further, within the planning area (Ecodistrict 6E-11), there are more than 40,000 ha of interior forest within woodlands with more than 8 ha of interior forest. Therefore, this woodland with 3 ha of interior forest in the area where Eastern Wood Pewee were observed does not represent a large portion of these lands within the planning area. The site is located on private land and therefore long-term protection cannot be assured. Eastern Wood Pewee were recorded as breeding on and within 120 m of the Project location. Given that the species is not a rare species, that the site represents a small portion of the available habitat, and that a small number of individuals were recorded, this is determined to not be significant habitat.
- Brown Thrasher – Brown Thrasher are not considered to be a rare species within the Province, though there have been documented declines within the populations of the species. Brown Thrasher range is not solely or primarily found within Ontario. At present, habitat on the Project location is limited to a 0.75 ha area of shrub at the edge of the woodland community. Habitat adjacent to the Project location is of moderate quality. Only one Brown Thrasher was recorded within the suitable habitat, no evidence of breeding was recorded. The site is located on private land and therefore long-term protection cannot be assured. Given that the species is common, the small amount of habitat present, and only one individual being observed, this is determined to not be significant habitat.
- Eastern Meadowlark – Eastern Meadowlark are not considered to be a rare species within the Province, though there have been documented declines within the populations of the species. Eastern Meadowlark range is not solely or primarily found within Ontario. At present, habitat on the Project location is extremely poor given fields were ploughed in 2010. Habitat adjacent to the Project location is of moderate quality. The exact size of the species population at the site is unknown. There are at least 72,000 hectares of pastures and abandoned fields within EcoDistrict 6E-11, which overlaps the Project location; as a result, the Project location represents approximately 0.06% of the available habitat for Eastern Meadowlark present within the planning area. The site is located on private land and therefore long-term protection cannot be assured. Eastern Meadowlark were recorded as breeding within 120 m of the Project location. Given that the species is common, that the site represents a small portion of the available habitat and that habitat on the Project location at present is poor, this is determined to not be significant habitat.

- Field Sparrow – Field Sparrow are not considered to be a rare species within the Province, though there have been documented declines within the populations of the species. Field Sparrow range is not solely or primarily found within Ontario. At present, habitat on the Project location is extremely poor given fields were ploughed in 2010. Habitat adjacent to the Project location is of moderate quality. The exact size of the species population at the site is unknown. There are at least 72,000 hectares of pastures and abandoned fields within EcoDistrict 6E-11, which overlaps the Project location; as a result, the Project location represents approximately 0.06% of the available habitat for Field Sparrow present within the planning area. The site is located on private land and therefore long-term protection cannot be assured. Field Sparrow were recorded as breeding within 120 m of the Project location. Given that the species is common, that the site represents a small portion of the available habitat and that habitat on the Project location at present is poor, this is determined to not be significant habitat.
- Savannah Sparrow – Savannah Sparrow are not considered to be a rare species within the Province, though there have been documented declines within the populations of the species. Savannah Sparrow range is not solely or primarily found within Ontario. At present, habitat on the Project location is extremely poor given fields were ploughed in 2010. Habitat adjacent to the Project location is of moderate quality. The exact size of the species population at the site is unknown. There are at least 72,000 hectares of pastures and abandoned fields within EcoDistrict 6E-11, which overlaps the Project location; as a result, the Project location represents approximately 0.06% of the available habitat for Savannah Sparrow present within the planning areas. The site is located on private land and therefore long-term protection cannot be assured. Savannah Sparrow were recorded as breeding on and within 120 m of the Project location. Given that the species is common, that the site represents a small portion of the available habitat and that habitat on the Project location at present is poor, this is determined to not be significant habitat.
- Western Chorus Frog – Western Chorus Frog are not considered to be a rare species, though their populations are declining. Western Chorus Frog are not solely or primarily found within the province. Existing habitat within portions the wetland communities is considered to be of good quality for the species. The size of the species population within the wetland is unknown, though 14 individuals were recorded calling during surveys. The wetlands are part of a large wetland complex providing suitable breeding habitat. As the breeding habitat is associated with a wetland community, there is potential for long-term protection. Therefore, given the documented use of the habitat and declines in the species, the wetland communities are considered to be significant breeding habitat.
- 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 Power 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 and carried forward in the EIS.

- Eastern Ribbonsnake/Northern Map Turtle/Snapping Turtle – Potential habitat for these species was identified within the watercourses and wetlands within 120 m of the Project location. 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. These species 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 and carried forward in the EIS.

### **3.1.4 Animal Movement Corridors**

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

Evaluation 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

- 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 road kills 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).

Hedgerows, woodlands, and watercourses/wetlands 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 is a large animal movement corridor present in the local area (represented by the woodland surrounding the Project location), these features are not considered to be significant wildlife habitat.
- Woodlands on the western and southern portion of the Project location, as well as those within 120 m west of the Project location – There are several continuous areas of woodland identified on and within 120 m of the Project location. These woodlands connect several wooded areas with wetlands, watercourses, and open agricultural fields in the area. There are no target species identified for this corridor, though likely deer, coyotes, other mammals, birds, and species of amphibians and reptiles use the corridor. The corridor is mostly continuous (excepting some

roadways), mostly wide (100 to 200 m in most areas), and the risk of mortality is low. The corridor is located on private land, and therefore long-term protection cannot be assured. The corridor also provides resistance to soil erosion and assists in maintaining water quality within the watercourses and wetlands. As several criteria appear to be met, the woodlands are considered to be a significant animal movement corridor.

- Watercourses/Wetlands on and within 120 m of the Project location – The watercourse likely serves as an animal movement corridor for aquatic/semi-aquatic reptiles and amphibians. Specifically, the watercourses/wetlands likely provide for migratory movement from shallow water breeding areas to deeper water over-wintering areas found within the waterbodies downstream. The corridor is broken by roadways, where passage through culverts or across the road surface would be required. Risk of mortality is high given that larger species may need to cross road surfaces. As the corridor is represented by a watercourse, opportunity for protection is high. Therefore, as several criteria appear to be met, this feature is considered to be significant.

### 3.1.5 Overall Determination of Significance

Therefore based on the evaluations above, significant wildlife habitats are identified within

- all lands on and within 120 m of the Project location as significant habitat for Milksnake, a species of conservation concern, and as highly diverse areas
- wetlands/watercourse within 120 m of the Project location as a significant animal movement corridor and significant habitat for Western Chorus Frog, Eastern Ribbonsnake, Northern Map Turtle, and Snapping Turtle (species of conservation concern)
- wetland complexes within 120 m of the Project location as significant amphibian breeding habitat
- woodland on and within 120 m of the Project location to the northwest as forest providing a high diversity of habitat
- all woodlands on the western and southern portion of the Project location, in conjunction with woodlands west of the Project location, as a significant animal movement corridor.

## 3.2 Date of Beginning and Completion of Evaluation

The evaluation of wildlife habitat commenced with records reviews in June 2010 and was finalized with the completion of this Report in June 2011. Site visits were completed in association with this evaluation on June 23 and October 8, 2010, and May XX, June 1 and June 2, 2011..

## 3.3 Name and Qualification of Individual Conducting the Evaluation

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

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 (*Aegolius 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 as a Terrestrial Ecologist in 2006. Since joining Hatch, 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. Wetlands**

The assessment of the wetlands was completed separately by Natural Resource Solutions Inc. (NRSI), and is appended to this report as Appendix A. The results of the wetland assessment determined that the wetland complex within 120 m of the Project location is assumed to be a provincially significant wetland.

Dates of beginning and completion of the evaluation of wetlands are provided within Appendix A.

#### **5. Woodlands**

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.

## 5.1 Evaluation Criteria and Guidelines for Woodlands

The EOS was completed in consideration of the Evaluation Approach outlined in Section 6.2.2 of the NHAG (MNR, 2010b). The evaluation criteria recommended in the NHRM to assess significance of a woodland are as follows:

- 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, and at least 10 ha in size.
  - ◆ Linkages – Woodlands providing a connecting link between two other significant features within 120 m of the woodland, and at least 10 ha in size
  - ◆ 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), and at least 4 ha in size
  - ◆ 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, and at least 10 ha in size.
- 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, and at least 4 ha in size.
- 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. Woodland should be at least 10 ha in size.

## 5.2 Date of Beginning and Completion of Evaluation

The evaluation of wildlife habitat commenced with records reviews in June 2010 and was finalized with the completion of this Report in June 2011. Site visits were completed in association with this evaluation on June 23 and October 8, 2010, and June 1 and June 2, 2011.

## 5.3 Determination of Significance

There are three woodlands identified on and within 120 m of the Project location. These woodlands, shown in Figure 1.1, are evaluated individually below. Woodland sizes were calculated using the MNR Land Information Ontario wooded area layer, supplemented with boundaries confirmed during site investigations, in ArcMap 9.3.

### **5.3.1 Woodland 1**

This woodland is located along Narrows Lock Road, between the northern and southern portions of the Project location, within 120 m of the Project location. Woodland size is estimated to be 1.2 ha, which is less than the minimum size for all criteria. Therefore, this is not a significant woodland.

### **5.3.2 Woodland 2**

The woodland located on and within 120 m of the Project location, along the southeast boundary. Woodland size is estimated to be 0.6 ha, which is less than the minimum size for all criteria. Therefore, this is not a significant woodland.

### **5.3.3 Woodland 3**

This woodland is located on and within 120 m of the Project location. Woodland size is estimated to be 64 ha with approximately 3 ha of interior forest habitat. This woodland is located encompasses portions of the assumed provincially significant wetland as well as watercourses. The woodland has been identified as providing linkage habitat. The woodland does have areas dominated by maple and beech. The woodland is described as a mature forest community. The vegetation community was not considered to be uncommon, and is not known to contain economic or social functional values.

MNR (2010c) identifies this woodland as significant for water protection, linkages, and portions of old growth forest. As several of the criteria have been met, this woodland is considered to be significant.

## **5.4 Name and Qualifications of Evaluator**

Evaluations of woodlands were completed by Sean K. Male of Hatch. His qualifications have been previously provided.

## **6. Conclusions**

Results of the evaluation of significance are summarized in Table 5.1. Based on the evaluation of significance outlined above, there is significant wildlife habitat, woodlands and wetlands on and/or 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             | Valleyland         | No               | No                            |
|                         | Woodland           | Yes              | Yes                           |
|                         | Wildlife Habitat   | Yes              | Yes                           |
| PROVINCIALY SIGNIFICANT | Wetland            | No               | Yes (assumed)                 |
|                         | Earth Science ANSI | No               | No                            |
|                         | Life Science ANSI  | No               | No                            |

## 7. References

Hatch Ltd. 2010a. North Burgess Solar Project – Natural Heritage Records Review. Prepared for Northland Power Inc. on behalf of Northland Power Solar North Burgess L.P. August 2010.

Hatch Ltd. 2010b. North Burgess Solar Project – Natural Heritage Site Investigation. Prepared for Northland Power Inc. on behalf of Northland Power Solar North Burgess L.P. August 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. Natural Heritage Assessment Guide - Draft.

Ministry of Natural Resources (MNR). 2010c. Personal communication between H. Zurbrigg (MNR Kemptville) and S. Male (Hatch).

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

Ontario Partners in Flight. 2006. 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.**  
**Wetlands Site Investigation**

# Memo

Project No. 1142

**To: Sean Male**

**From: David Stephenson**

**Date: June 21, 2011**

**Re: North Burgess Solar Project Wetland Evaluation**

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The wetlands in the vicinity of the proposed North Burgess Solar Project lands are unevaluated at this time. The new Natural Heritage Assessment Guide (NHAG) for Renewable Energy Projects (OMNR 2010) allows for the evaluation of these wetlands using Appendix C.

Our assessment of the unevaluated wetland complex, within the catchment area provided on the attached Catchment Area map in accordance with the appropriate sections of the Ontario Wetland Evaluation System for Northern Ontario (MNR 2002), is attached as Table 1. It is our understanding that this table will be used by Hatch to identify potential negative environmental effects and mitigations as required for preparation of an EIS as per the NHAG.

The field study approach taken by NRSI during the August 11 and 12, 2010 site visit included:

- Collection and review of background information on wetland-related natural features in the vicinity of the project location.
- 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 location 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).
- Conducted field surveys of subject wetlands on the project location as well as on neighbouring lands. This included mapping of wetland vegetation communities based on Ontario Wetland Evaluation System (OWES) Northern Manual as well as Ecological Land Classification (ELC), and recording all species of flora and fauna within the wetlands.

As part of Appendix C of the NHAG, we have completed an interspersation map covering the wetlands in the catchment area, and have attached the interspersation map with this memo.

I trust that this information is adequate. If any further information or clarification is needed please contact me.

Yours Sincerely,  
Natural Resource Solutions Inc.

A handwritten signature in black ink, appearing to read "D. Stephenson", with a long horizontal line extending to the right.

David Stephenson, M.Sc.,  
Senior Biologist

**Work Cited**

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**Work Cited:**

Natural Heritage Information Centre (NHIC). 2010. Species Search. Ministry of Natural Resources. Online:  
<https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/mainSubmit.do>

Ontario Ministry of Natural Resources. 2010. Natural Heritage Assessment Guide for Renewable Energy Projects. Ontario Ministry of Natural Resources.

Ontario Ministry of Natural Resources. 2002. Ontario Wetland Evaluation System: Northern Manual.



**Table 1 Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects, Wetland Complex**

| Characteristic/<br>Ecological<br>Function | Evaluation Results   | Scoring |
|---|--|---------|
| <p><b>Actual Wetland Size (ha)</b></p>    | <p><b>Wetland 1:</b><br/>= 0.31ha<br/>Reed canary grass marsh (neM<sub>1</sub>)</p> <p><b>Wetland 2:</b><br/>= 0.66ha<br/>Graminoid meadow marsh (neM<sub>2</sub>)</p> <p><b>Wetland 3:</b><br/>= 13.13ha<br/>Willow thicket swamp (tsS<sub>1</sub>)<br/>Black ash swamp (hS<sub>2</sub>)</p> <p><b>Wetland 4:</b><br/>= 27.34ha<br/>Meadow marsh (reM<sub>3</sub>)<br/>Speckled alder thicket swamp (tsS<sub>3</sub>)<br/>Slender willow thicket swamp (tsS<sub>4</sub>)<br/>Mixed graminoid meadow marsh (neM<sub>4</sub>)<br/>Cattail marsh (reM<sub>5</sub>)<br/>Cattail marsh (reM<sub>6</sub>)<br/>Mixed graminoid meadow marsh (neM<sub>7</sub>)<br/>Reed canary grass marsh (neM<sub>8</sub>)<br/>Broad-leaved sedge marsh (neM<sub>9</sub>)<br/>Slender willow thicket swamp (tsS<sub>5</sub>)<br/>Giant manna grass marsh (neM<sub>10</sub>)<br/>Meadowsweet Thicket Swamp (tsS<sub>6</sub>)<br/>Black ash swamp (hS<sub>7</sub>)<br/>Black ash swamp (tsS<sub>8</sub>)<br/>Graminoid marsh (neM<sub>11</sub>)<br/>Reed canary grass marsh (neM<sub>12</sub>)<br/>Cattail marsh (reM<sub>20</sub>)<br/>Mixed graminoid meadow marsh (neM<sub>21</sub>)</p> <p><b>Wetland 5:</b><br/>= 4.73ha<br/>Slender willow thicket swamp (tsS<sub>9</sub>)<br/>Reed canary grass marsh (neM<sub>13</sub>)<br/>Reed canary grass marsh (neM<sub>14</sub>)<br/>Cattail marsh (reM<sub>15</sub>)<br/>Floating-leaved aquatic ecosite (fM<sub>19</sub>)</p> <p><b>Wetland 6:</b><br/>= 4.60ha<br/>Slender willow thicket swamp (tsS<sub>10</sub>)</p> |         |

|                               | <p>Slender willow thicket swamp (tsS<sub>11</sub>)</p> <p><b>Wetland 7:</b><br/>= 3.17ha<br/>Mixed willow thicket swamp (tsS<sub>12</sub>)<br/>Speckled alder thicket swamp (tsS<sub>13</sub>)<br/>Reed canary grass marsh (neM<sub>17</sub>)<br/>Mixed meadow marsh (neM<sub>18</sub>)</p> <p><b>Wetland 8:</b><br/>= 2.89ha<br/>Mixed shallow aquatic ecosite (suM<sub>16</sub>)<br/>Black ash swamp (hS<sub>24</sub>)</p> <p><b>Total : 56.52ha</b></p>   |      |                 |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
|-------------------------------|--|------|-----------------|--|-------|-----|--|-----|------|-----|--|-----|------|-------|------|-----|------|-------|------|------|------|----|
| <b>Wetland Type</b>           | <p>WETLAND TYPE (Fractional Area = area of wetland type/total wetland area)</p> <table border="1"> <thead> <tr> <th></th> <th>Fractional Area</th> <th></th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Bog</td> <td></td> <td>x 3</td> <td>0.00</td> </tr> <tr> <td>Fen</td> <td></td> <td>x 6</td> <td>0.00</td> </tr> <tr> <td>Swamp</td> <td>0.57</td> <td>x 8</td> <td>4.56</td> </tr> <tr> <td>Marsh</td> <td>0.43</td> <td>x 15</td> <td>6.45</td> </tr> </tbody> </table> <p><b>Wetland type score (maximum 15 points)</b> 11</p> <p><b>Fractional Area of Wetland Types:</b></p> <p><b>Swamp:</b><br/><i>Swamp (ha)</i><br/>Total ha = 32.22</p> <p>FA=32.22/56.52<br/>=0.57</p> <p><b>Marsh:</b><br/><i>Marsh (ha)</i><br/>Total ha = 24.30</p> <p>FA =24.30/56.52<br/>=0.43</p> |      | Fractional Area |  | Score | Bog |  | x 3 | 0.00 | Fen |  | x 6 | 0.00 | Swamp | 0.57 | x 8 | 4.56 | Marsh | 0.43 | x 15 | 6.45 | 11 |
|                               | Fractional Area  |      | Score           |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
| Bog                           |  | x 3  | 0.00            |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
| Fen                           |  | x 6  | 0.00            |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
| Swamp                         | 0.57   | x 8  | 4.56            |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
| Marsh                         | 0.43   | x 15 | 6.45            |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
| <b>Site Type</b>              | <p>Palustrine: 0.3354*2 =0.671</p> <p>Riverine: 0.6746*4 =2.698</p>  | 3    |                 |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |
| <b>Vegetation Communities</b> | <p>Number of communities with 1-3 forms:<br/>30 = 17.5 pts</p> <p>Number of communities with 4-5 forms:<br/>4 = 6.5</p>  | 24   |                 |  |       |     |  |     |      |     |  |     |      |       |      |     |      |       |      |      |      |    |

|  |   |     |
|--|---|-----|
| <b>Proximity to other Wetlands</b>               | Hydrologically connected by surface water to other wetlands (same dominant wetland type), within 0.5 km   | 8   |
| <b>Interspersion</b>                             | See Appended Interspersion Map.<br>Total vertical: 37<br>Total horizontal: 38<br>Total = 75   | 12  |
| <b>Open Water Types</b>                          | Open water occupies 5-25% of the wetland area, occurring in ponds of various sizes; vegetation occurs in dense patches or diffuse open stands. (Type 3).  | 14  |
| <b>Flood Attenuation (total)</b>                 | Details of Flood Attenuation calculations are provided below in Table 1.  | 100 |
| <b>Water Quality Improvement (Total)</b>         | Details of water quality improvement calculations are provided below Table 1.   |     |
| <b>Shoreline Erosion Control</b>                 | <b>Step 1:</b><br>If any part of the wetland is riverine or lacustrine (proceed to Step 2)<br>= Yes, therefore go to step 2<br><b>Step 2:</b><br>Choose the one characteristic that best describes the shoreline vegetation<br>= Emergent vegetation  | 8   |
| <b>Groundwater Recharge (Total)</b>              | Details of Groundwater Recharge calculations are provided below in Table 1.   | 5   |
| <b>Species Rarity (Total)</b>                    | No rare species noted during 2010 surveys within the wetland.<br><b>Section</b><br><b>4.1.2.1 Breeding Habitat for Endangered or Threatened Species =</b> none<br><b>4.1.2.2 Traditional Migration or Feeding Areas for an Endangered or Threatened Species =</b> none<br><b>4.1.2.3 and 4.1.2.4 Provincially Significant Plant and Animal Species =</b> none<br><b>4.1.2.5 Regionally Significant Species =</b> none<br><b>4.1.2.6 Locally Significant Species =</b> none<br><b>4.1.2.7 Species of Special Status =</b> none | 0   |
| <b>Significant Features and Habitats (Total)</b> | <b>Section:</b><br><b>4.2.1 Colonial Waterbirds =</b> none<br><b>4.2.2 Winter Cover for Wildlife =</b> none<br><b>4.2.3 Waterfowl Staging and/or Molting Area =</b> none<br><b>4.2.4 Waterfowl Breeding =</b> none  | 0   |
| <b>Fish Habitat (Total)</b>                      | No information regarding the fish community of the unnamed tributaries of Grants Creek that run through the subject property was found during the records review. A visual aquatic habitat survey of the tributaries was conducted on June 23, 2010. The main tributary on the property runs through several wooded areas and a large open wetland immediately adjacent to the western subject property boundary. It enters a wooded  |     |

|  |   |  |
|--|---|--|
|  | <p>area on the subject property and flows for approximately 300m before emerging into an open wetland with a large online pond created by a beaver dam across the tributary. The pond is approximately 20m wide by 60m long. It is surrounded by a hummocky meadow marsh comprised of a variety of grasses (e.g. Canada blue-joint, <i>Calamagrostis canadensis</i>), sedges and forbs. There is dense submergent and floating leaved vegetation throughout much of the open water area. The tributary then drains into Grants Creek, northwest of the subject property. This tributary, most notably within the wetland pond areas, likely provides seasonal fish habitat (e.g. wetland spawning, nursery and/or foraging functions) for the fish community of Grants Creek, and may provide permanent fish habitat for a resident fish community if it stays wet year round and sufficient flow is present to avoid stagnation. The wetland also provides some hydrology and water quality regulation for Grants Creek, which does provide permanent fish habitat for the resident fish community.</p> <p>The smaller tributaries of this main tributary include wetland habitats which may provide similar seasonal and/or permanent fish habitat functions.</p> |  |
|--|---|--|

**Flood Attenuation Calculations:**

**HYDROLOGICAL  
3.0 COMPONENT**

---

**FLOOD  
3.1 ATTENUATION**

---

If the wetland is a complex including isolated wetlands, apportion the 100 points according to area. For example if 10 ha of a 100 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:** Determination 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)  | 56.62 |
| (b) | Total area (ha) of upstream detention areas (include the wetland itself) | 56.62 |
| (c) | Ratio of (a):(b)   | 1.00  |
| (d) | Upstream detention factor: (c) x 2 = 2.00 (maximum allowable factor = 1) | 1.00  |

**Step 3:** Determination of Wetland Attenuation Factor (AF)

|     |   |       |
|-----|---|-------|
| (a) | Wetland area (ha)   | 56.62 |
| (b) | Size of catchment basin (ha) upstream of wetland (include wetland itself in catchment area) | 56.62 |
| (c) | Ratio of (a):(b)  | 1.00  |
| (d) | Wetland attenuation factor: (c) x 10 = 10.0 (maximum allowable factor = 1)                  | 1.00  |

**Step 4:**

Calculation of final score

|     |  |              |               |
|-----|--|--------------|---------------|
| (a) | Wetlands on large lakes or major rivers    |              | 0             |
| (b) | Wetland entirely isolated                  |              | 100           |
| (b) | All other wetlands --calculate as follows: |              |               |
|     | * Complex Formula - Isolated               |              |               |
| (c) | portion                                    | <u>100.0</u> | 1             |
|     | Initial Score                              |              | 100 *         |
|     | Upstream detention factor (DF) (Step 2)    |              | <u>1.00</u>   |
|     | Wetland attenuation factor (AF) (Step 3)   |              | <u>1.00</u>   |
|     | Final score: [(DF + AF)/2] x Initial score |              | <u>100.00</u> |
|     | =  |              | 99.7 + 0.4 =  |
| (c) | * Final score:=                            | <u>100.0</u> | 100           |

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

**Flood Attenuation Score (maximum 100 points)**

**100**

## Water Quality Improvement Calculations:

### 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                     | 0.675 | x | 1          | = | 0.675 |
| FA of palustrine wetland with no inflow    | 0.325 | x | 0.7        | = | 0.228 |
| FA of palustrine wetland with inflows      |       | x | 1          | = | 0.000 |
| 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: |   | 0.902 |

**Sum (WIF cannot exceed 1.0)**

0.90

**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 dominant 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)           | 0.57            | x | 0.75                               | = | 0.43        |
| FA of wetland with emergent, submergent or floating vegetation (re,be,ne,su,f,ff) | 0.43            | x | 1                                  | = | 0.43        |
| FA of wetland with little or no vegetation (u)                                    |                 | x | 0.5                                | = | 0.00        |
|   |                 |   | <b>Sum (PUT cannot exceed 1.0)</b> |   | <b>0.86</b> |

**Ground Water Discharge Calculations:**

**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     |          | 2) Hilly = 2          | 0        | 3) Steep = 5     |          |   |
| Wetland Area:                          | Large (>50%) = 0        | 0        | Moderate (5-50%) = 2  | 0        | Small "5%" = 5   |          |   |
| Upslope                                |                         |          |                       |          |                  |          | 0 |
| Catchment Area                         |                         |          |                       |          |                  |          | 0 |
| 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        | Yes = 10         |          |   |
| <b>Totals</b>                          |                         | <b>0</b> |                       | <b>2</b> |                  | <b>0</b> |   |

(Scores are cumulative maximum score 30 points)

**Groundwater Discharge Score (maximum 30 points)**

**2**



# North Burgess

## Catchment Area

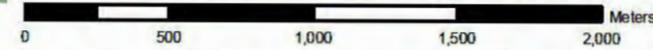
 **NATURAL RESOURCE SOLUTIONS INC.**  
Aquatic, Terrestrial and Wetland Biologists

August 9, 2010  
Project No: NRSI-1142  
UTM Zone 18, NAD 83  
Scale: 1:25,000 (at 11x17")

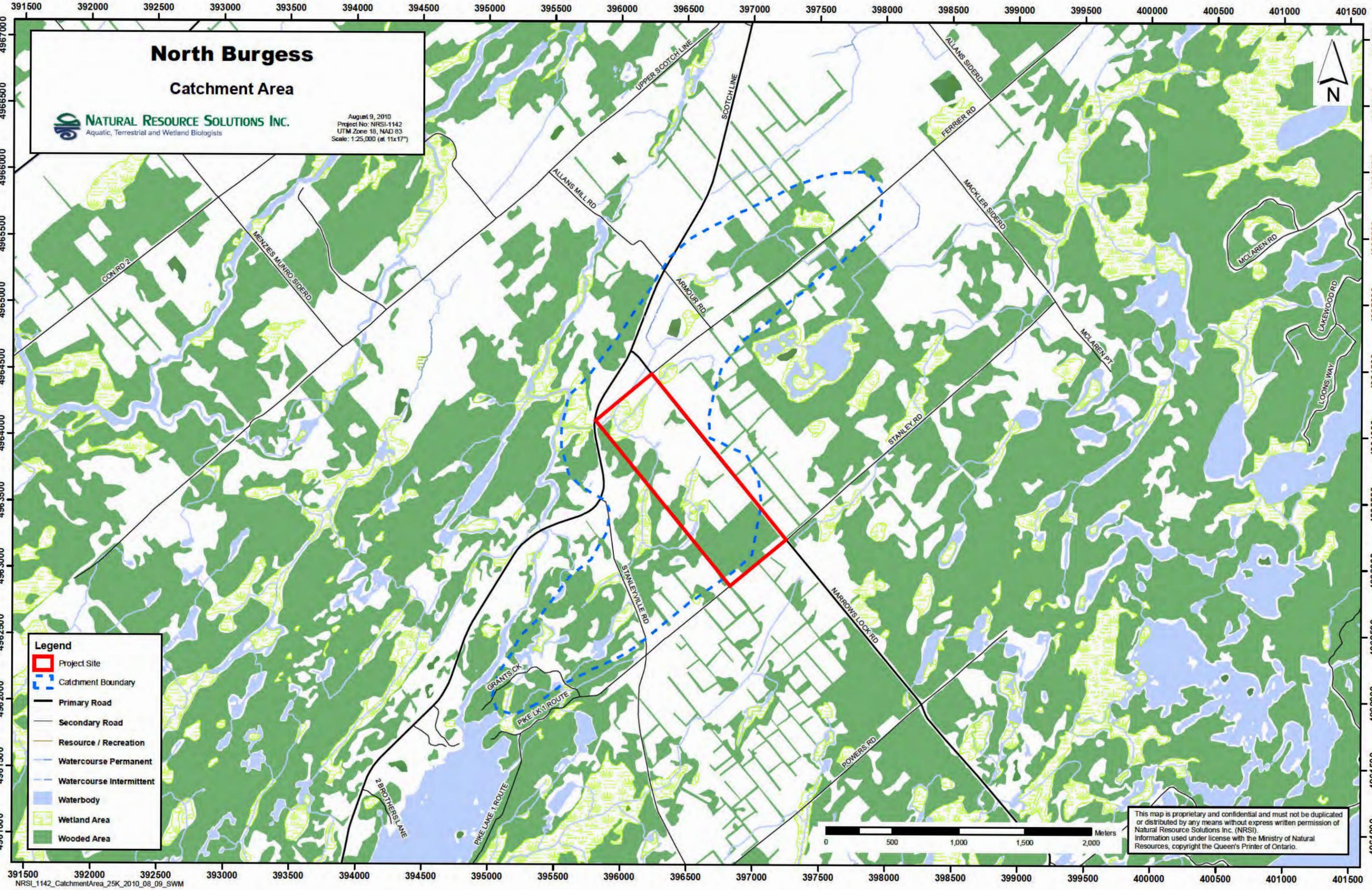


**Legend**

-  Project Site
-  Catchment Boundary
-  Primary Road
-  Secondary Road
-  Resource / Recreation
-  Watercourse Permanent
-  Watercourse Intermittent
-  Waterbody
-  Wetland Area
-  Wooded Area



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**Project Team:**

| <b>Member</b>                   | <b>Qualifications</b>  | <b>Role</b>   |
|---------------------------------|--|---|
| David Stephenson, M.Sc          | Certified Wetland Evaluator<br>Certified ELC<br>Certified Arborist | <ul style="list-style-type: none"><li>• Project Management</li><li>• Field Survey</li><li>• Data Analysis, Evaluation, Reporting</li><li>• Natural Heritage Assessment Guide Appendix C – for revised catchment area (air photo interpretation, interspersed mapping, and evaluation)</li></ul> |
| Barry Moss B.E.S.               | Certified ELC  | <ul style="list-style-type: none"><li>• Field Survey</li><li>• Data Analysis</li><li>• Evaluation</li></ul>   |
| Megan Anevich B.E.S.            | Field Biologist  | <ul style="list-style-type: none"><li>• Field Survey</li></ul>  |
| Cheryl-Anne Payette B.Sc<br>FWT | Field Biologist  | <ul style="list-style-type: none"><li>• Data Analysis</li><li>• Evaluation</li></ul>  |
| Shawn MacDonald, B.A.           | GIS Mapping  | <ul style="list-style-type: none"><li>• Mapping</li></ul>   |





# NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): SAM HA

Date: AUG 12/2010

Time (24h): 10:30

Field #: 53

Weather: Precipitation: NONE Temp (°C): 21

Map Code: NS3

Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: S

Site Type: R Dominant Form: h

% Open Water: 0

ELC Code: SWDUZ-1

Photos: = 0188, 0189

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h) 35%                      | deciduous trees  |
| c) 0                        | coniferous trees   |
| dc, dh, ds) 15%             | dead trees/shrubs  |
| ts) 20%                     | tall shrubs  |
| ls) 30%                     | low shrubs   |
| gc) 20%                     | ground cover   |
| ne) 70%                     | narrow emergents   |
| be) 0                       | broad emergents  |
| re) 0                       | riverine   |
| ff) 0                       | free-floating plants   |
| f) 0                        | floating plants  |
| su) 0                       | submerged plants   |
| m) 0                        | mosses   |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

634E, NLFR

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: NORTH

Project #: 1142

Observer(s): SAM HA

Date: AUG 12/2010

Time (24h): 10:45

Field #: 54

Weather: Precipitation: NONE Temp (°C): 21

Map Code: NS11

Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: M

Site Type: R Dominant Form: ne

% Open Water: 40

ELC Code: NSDU1

Photos: = 0190, 0191, 0192

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h) 0                        | deciduous trees  |
| c) 0                        | coniferous trees   |
| dc, dh, ds) 2%              | dead trees/shrubs  |
| ts) 2%                      | tall shrubs  |
| ls) 0                       | low shrubs   |
| gc) 10%                     | ground cover   |
| ne) 80%                     | narrow emergents   |
| be) 2%                      | broad emergents  |
| re) 10%                     | riverine   |
| ff) 0                       | free-floating plants   |
| f) 20%                      | floating plants  |
| su) 20%                     | submerged plants   |
| m) 0                        | mosses   |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

W BNU, SOSP  
RUSH THROATED HUMM NBIRD  
PRINTED TURTLE

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: NORTH BURGESS Project #: 1142  
 Observer(s): BAN, MA  
 Date: AUG 12/2010 Time (24h): 10:00  
 Field #: 51 Weather: Precipitation: NONE Temp (°C): 21  
 Map Code: 1536 Wind Speed & Direction: 2-W Cloud %: 60  
 Wetland Type: S Site Type: R Dominant Form: IS  
 % Open Water: 0 ELC Code: SW145-2  
 Photos: # 0184, 0185

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 3%                       |  |
| ls 50%                      |  |
| gc 20%                      |  |
| ne 30%                      |  |
| be 0                        |  |
| re 2%                       |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 10%                       |  |

|   |                 |
|---|-----------------|
| Rare Species (Local, Regional, Provincial):<br>NONE | Wildlife Notes: |
|---|-----------------|

SAR observations must also include a specific UTM location.  
 Forms: h=deciduous trees; c=coniferous trees; dh, dc, ds=dead trees/shrubs; ts=tall shrubs; ls=low shrubs; gc=ground cover; ne=narrow emergents; be=broad emergents; f=floating plants; ff=free-floating plants; su=submerged plants; m=mosses  
 Wetland Type: S=swamp; M=marsh; B=bog; F=fen  
 Site Type: L=lacustrine; P=palustrine; R=riverine; IS=isolated



# NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

## Wetland Vegetation Communities

Project Name: NORTH BURGESS Project #: 1142  
 Observer(s): BAN, MA  
 Date: AUG 12/2010 Time (24h): 10:15  
 Field #: 52 Weather: Precipitation: NONE Temp (°C): 21  
 Map Code: 1538 Wind Speed & Direction: 2-W Cloud %: 60  
 Wetland Type: S Site Type: R Dominant Form: IS  
 % Open Water: 0 ELC Code: SW145-1  
 Photos: # 0186, 0187

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 15%                       |  |
| c 0                         |  |
| dc, dh, ds 20%              |  |
| ts 70%                      |  |
| ls 30%                      |  |
| gc 5%                       |  |
| ne 10%                      |  |
| be 0                        |  |
| re 0                        |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

|   |                         |
|---|-------------------------|
| Rare Species (Local, Regional, Provincial):<br>NONE | Wildlife Notes:<br>PIWO |
|---|-------------------------|

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

**Wetland Vegetation Communities**

Project Name: NORTH BURGESS Project #: 1142

Observer(s): SAM, NA

Date: AUG 11/2010 Time (24h): 8:30

Field #: 27 Weather: Precipitation: NONE Temp (°C): 30

Map Code: re H3 Wind Speed & Direction: 1-10 Cloud %: 5

Wetland Type: M Site Type: R Dominant Form: re

% Open Water: 5% ELC Code: MANNET

Photos: #0138, 0139, 0142

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 1%               |  |
| ts 0                        |  |
| ls 10%                      | red oak, dogwood, winter white, white pine                     |
| gc 30%                      | white clover, blackberry, red clover, yellow clover            |
| ne 15%                      | red top, yellow flag, green frogbit, water hyacinth            |
| be 1%                       | water hyacinth   |
| re 35%                      | red top, yellow flag, green frogbit, water hyacinth            |
| ff 0                        |  |
| f 1%                        | water hyacinth, green frogbit                                  |
| su 0                        |  |
| m 0                         |  |

|   |  |
|---|--|
| Rare Species (Local, Regional, Provincial):<br>NONE | Wildlife Notes:<br>AM GO, YENA<br>BROWN WATER SNAKE<br>NLR |
|---|--|

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

**Wetland Vegetation Communities**

Project Name: NORTH BURGESS Project #: 1142

Observer(s): SAM, NA

Date: AUG 11/2010 Time (24h): 8:50

Field #: 28 Weather: Precipitation: NONE Temp (°C): 30

Map Code: +SSS Wind Speed & Direction: 1-10 Cloud %: 5

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

% Open Water: 0 ELC Code: SWTHI-1

Photos: #0140, 0141

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 1%                        |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 20%                      | swamp white oak, white pine, yellow pine                       |
| ls 15%                      | swamp white oak, yellow pine                                   |
| gc 5%                       | white clover, blackberry                                       |
| ne 10%                      | red top, yellow flag, green frogbit                            |
| be 0                        |  |
| re 5%                       | red top, yellow flag, green frogbit                            |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

|   |                                |
|---|--------------------------------|
| Rare Species (Local, Regional, Provincial):<br>NONE | Wildlife Notes:<br>AM GO, B-JA |
|---|--------------------------------|

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

**Wetland Vegetation Communities**

Project Name: NORTON SURVEYS Project #: 1142

Observer(s): BOB MA

Date: AUG 11/2010 Time (24h): 9:30

Field #: 29 Weather: Precipitation: NONE Temp (°C): 30

Map Code: 1354 Wind Speed & Direction: 1-3 Cloud %: 5

Wetland Type: S Site Type: P Dominant Form: 1

% Open Water: 0 ELC Code: SWTMS-3

Photos: 01-3

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 10%                       | ...  |
| c 0                         | ...  |
| dc,dh,ds 0                  | ...  |
| ts 70%                      | ...  |
| ls 20%                      | ...  |
| gc 30%                      | ...  |
| ne 20%                      | ...  |
| be 0                        | ...  |
| re 15%                      | ...  |
| ff 0                        | ...  |
| f 0                         | ...  |
| su 0                        | ...  |
| m 0                         | ...  |

|   |                              |
|---|------------------------------|
| Rare Species (Local, Regional, Provincial):<br>NONE | Wildlife Notes:<br>NONE, ... |
|---|------------------------------|

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

**Wetland Vegetation Communities**

Project Name: NORTON SURVEYS Project #: 1142

Observer(s): BOB MA

Date: AUG 11/2010 Time (24h): 9:30

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

Map Code: 1352 Wind Speed & Direction: 1-3 Cloud %: 5

Wetland Type: M Site Type: P Dominant Form: 1

% Open Water: 0 ELC Code: SWTMS-3

Photos: 01-4, 01-5

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         | ...  |
| c 0                         | ...  |
| dc,dh,ds 0                  | ...  |
| ts 0                        | ...  |
| ls 0                        | ...  |
| gc 30%                      | ...  |
| ne 60%                      | ...  |
| be 0                        | ...  |
| re 25%                      | ...  |
| ff 0                        | ...  |
| f 0                         | ...  |
| su 0                        | ...  |
| m 0                         | ...  |

|  |                         |
|--|-------------------------|
| Rare Species (Local, Regional, Provincial):<br>NONE<br>A few ... | Wildlife Notes:<br>NONE |
|--|-------------------------|

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.

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## Wetland Vegetation Communities

Project Name: NORTH BRASS

Project #: 1142

Observer(s): BBA, M2

Date: AUG 2 / 2010

Time (24h): 11:30

Field #: 57

Weather: Precipitation: NONE Temp (°C): 2

Map Code: NCH13

Wind Speed & Direction: 2-WS Cloud %: 60

Wetland Type: M

Site Type: R Dominant Form: ne

% Open Water: 0%

ELC Code: MASHN-14

Photos: 0198

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 11% green oak             |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 0                        |  |
| ls 10% slender green oak    |  |
| gc 10% green sedge, red top |  |
| ne 80% red sedge, green top |  |
| be 0                        |  |
| re 5% red sedge             |  |
| ff 0                        |  |
| f 2% sedge                  |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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



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## Wetland Vegetation Communities

Project Name: NORTH BRASS

Project #: 1142

Observer(s): BBA, M2

Date: AUG 12 / 2010

Time (24h): 11:45

Field #: 58

Weather: Precipitation: NONE Temp (°C): 2

Map Code: NCH14

Wind Speed & Direction: 2-WS Cloud %: 60

Wetland Type: M

Site Type: R Dominant Form: ne

% Open Water: 0

ELC Code: MASHN-14

Photos: 0199

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 5% slender green oak     |  |
| ls 10% green sedge, red top |  |
| gc 10% sedge, red top       |  |
| ne 30% red sedge, green top |  |
| be 2% broad emergent        |  |
| re 10% sedge                |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): BAN, MA

Date: AUG 12 / 2010

Time (24h): 11:00

Field #: 55

Weather: Precipitation: NONE Temp (°C): 21

Map Code: NC412

Wind Speed & Direction: 2-3 Cloud %: 60

Wetland Type: H

Site Type: R Dominant Form: NC

% Open Water: 0

ELC Code: MASH1-14

Photos: # 0193

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 27%                       |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 0                        |  |
| ls 0                        |  |
| gc 5%                       |  |
| ne 95%                      |  |
| be 0                        |  |
| re 2%                       |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): BAN, MA

Date: AUG 12 / 2010

Time (24h): 11:15

Field #: 56

Weather: Precipitation: NONE Temp (°C): 21

Map Code: #559

Wind Speed & Direction: 2-3 Cloud %: 60

Wetland Type: S

Site Type: P Dominant Form: +S

% Open Water: 50%

ELC Code: SW T43-3

Photos: # 0194 0195 0196 0197

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 5%               |  |
| ts 40%                      |  |
| ls 45%                      |  |
| gc 5%                       |  |
| ne 25%                      |  |
| be 0                        |  |
| re 5%                       |  |
| ff 0                        |  |
| f 30%                       |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

RW3L, Y2WA, SW2D

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): SAM MA

Date: AUG 12/2010

Time (24h): 8:50

Field #: 47

Weather: Precipitation: NONE Temp (°C): 21

Map Code: HCH9

Wind Speed & Direction: L-W Cloud %: 60

Wetland Type: H

Site Type: R Dominant Form: ne

% Open Water: 40

ELC Code: WASH-5

Photos: # 0176, 0177

| Forms % (Circle those >25%)                | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="checkbox"/>                 |  |
| c <input type="checkbox"/>                 |  |
| dc, dh, ds <input type="checkbox"/>        |  |
| ts <input type="checkbox"/>                |  |
| ls <input type="checkbox"/>                |  |
| gc <input type="checkbox"/>                |  |
| <input checked="" type="checkbox"/> ne 45% | ne 45% narrow emergents, mostly grasses                        |
| be <input type="checkbox"/>                | be 15% broad emergents, mostly sedges                          |
| re <input type="checkbox"/>                | re 10% reeds, mostly sedges                                    |
| ff <input type="checkbox"/>                | ff 5% floating plants  |
| f <input type="checkbox"/>                 | f 35% floating plants, mostly algae                            |
| su <input type="checkbox"/>                | su 25% submerged plants, mostly algae                          |
| m <input type="checkbox"/>                 |  |

| Forms % (Circle those >25%)                | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="checkbox"/>                 |  |
| c <input type="checkbox"/>                 |  |
| dc, dh, ds <input type="checkbox"/>        |  |
| ts <input type="checkbox"/>                |  |
| ls <input type="checkbox"/>                |  |
| gc <input type="checkbox"/>                |  |
| <input checked="" type="checkbox"/> ne 45% | ne 45% narrow emergents, mostly grasses                        |
| be <input type="checkbox"/>                | be 15% broad emergents, mostly sedges                          |
| re <input type="checkbox"/>                | re 10% reeds, mostly sedges                                    |
| ff <input type="checkbox"/>                | ff 5% floating plants  |
| f <input type="checkbox"/>                 | f 35% floating plants, mostly algae                            |
| su <input type="checkbox"/>                | su 25% submerged plants, mostly algae                          |
| m <input type="checkbox"/>                 |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

AMERICAN BITTERN  
GREEN HERON, GREY, TREE ANGO

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: NORTH BURGESS

Project #: 1142

Observer(s): SAM MA

Date: AUG 12/2010

Time (24h): 9:10

Field #: 48

Weather: Precipitation: NONE Temp (°C): 21

Map Code: +555

Wind Speed & Direction: L-W Cloud %: 60

Wetland Type: S

Site Type: R Dominant Form: +s

% Open Water: 0

ELC Code: WASH-5

Photos: # 0178, 0180

| Forms % (Circle those >25%)                | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="checkbox"/>                 |  |
| c <input type="checkbox"/>                 |  |
| dc, dh, ds <input type="checkbox"/>        |  |
| ts <input type="checkbox"/>                |  |
| ls <input type="checkbox"/>                |  |
| gc <input type="checkbox"/>                |  |
| <input checked="" type="checkbox"/> ne 40% | ne 40% narrow emergents, mostly grasses                        |
| be <input type="checkbox"/>                | be 0   |
| re <input type="checkbox"/>                | re 2% reeds  |
| ff <input type="checkbox"/>                | ff 0   |
| f <input type="checkbox"/>                 | f 0  |
| su <input type="checkbox"/>                | su 0   |
| m <input type="checkbox"/>                 | m 0  |

| Forms % (Circle those >25%)                | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="checkbox"/>                 |  |
| c <input type="checkbox"/>                 |  |
| dc, dh, ds <input type="checkbox"/>        |  |
| ts <input type="checkbox"/>                |  |
| ls <input type="checkbox"/>                |  |
| gc <input type="checkbox"/>                |  |
| <input checked="" type="checkbox"/> ne 40% | ne 40% narrow emergents, mostly grasses                        |
| be <input type="checkbox"/>                | be 0   |
| re <input type="checkbox"/>                | re 2% reeds  |
| ff <input type="checkbox"/>                | ff 0   |
| f <input type="checkbox"/>                 | f 0  |
| su <input type="checkbox"/>                | su 0   |
| m <input type="checkbox"/>                 | m 0  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

RED TAILED HAWK  
ANGO  
BARN SWALLOW

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.

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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 142

Observer(s): BAN, MA

Date: AUG 12/2010

Time (24h): 9:30

Field #: 49

Weather: Precipitation: NONE Temp (°C): 21

Map Code: R2H20

Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: M

Site Type: R Dominant Form: re

% Open Water: 2%

ELC Code: M2H1-1

Photos: # 079 081

| Forms % (Circle those >25%)                    | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="radio"/>                        |  |
| c <input type="radio"/>                        |  |
| dc,dh,ds <input type="radio"/>                 |  |
| ts <input type="radio"/>                       |  |
| ls <input type="radio"/>                       |  |
| gc 10% <input type="radio"/>                   | 10% aquatic emergent in narrow channel                         |
| <b>ne</b> 40% <input checked="" type="radio"/> | 40% narrow emergents, tall canopy grass                        |
| be 10% <input type="radio"/>                   | 10% narrow emergents, tall canopy grass <small>water</small>   |
| re 30% <input type="radio"/>                   | 30% narrow emergents   |
| ff <input type="radio"/>                       |  |
| f <input type="radio"/>                        |  |
| su 1% <input type="radio"/>                    | 1% submerged plants  |
| m <input type="radio"/>                        |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

MUSCRAE, RNSL

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: NORTH BURGESS

Project #: 142

Observer(s): BAN, MA

Date: AUG 12/2010

Time (24h): 9:45

Field #: 50

Weather: Precipitation: NONE Temp (°C): 21

Map Code: R2H10

Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: M

Site Type: R Dominant Form: re

% Open Water: 2%

ELC Code: M2H1-15

Photos: # 082 083

| Forms % (Circle those >25%)                    | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="radio"/>                        |  |
| c <input type="radio"/>                        |  |
| dc,dh,ds <input type="radio"/>                 |  |
| ts <input type="radio"/>                       |  |
| ls <input type="radio"/>                       |  |
| gc 5% <input type="radio"/>                    | 5% aquatic emergent in narrow channel                          |
| <b>ne</b> 95% <input checked="" type="radio"/> | 95% tall canopy grass, narrow emergents, tall canopy grass     |
| be 1% <input type="radio"/>                    | 1% narrow emergents  |
| re 2% <input type="radio"/>                    | 2% narrow emergents  |
| ff <input type="radio"/>                       |  |
| f <input type="radio"/>                        |  |
| su <input type="radio"/>                       |  |
| m <input type="radio"/>                        |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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



# NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

## Wetland Vegetation Communities

Project Name: NORTH BURGESS Project #: 1142

Observer(s): BOB HA

Date: AUG 11/2010 Time (24h): 4:00

Field #: 45 Weather: Precipitation: NONE Temp (°C): 30

Map Code: NCH7 Wind Speed & Direction: 1-WS Cloud %: 5

Wetland Type: U Site Type: 2 Dominant Form: SC

% Open Water: 0 ELC Code: H4HH-14

Photos: 2 0178

| Forms % (Circle those >25%)       | Species (dominant species, secondary species, present species) |
|-----------------------------------|--|
| h <input type="checkbox"/>        |  |
| c <input type="checkbox"/>        |  |
| dc,dh,ds <input type="checkbox"/> |  |
| ts <input type="checkbox"/>       |  |
| ls <input type="checkbox"/>       |  |
| gc 25% <i>gr. pur. wood</i>       | <i>gr. pur. wood</i>   |
| ne 75% <i>grass</i>               | <i>grass</i>   |
| be <input type="checkbox"/>       |  |
| re <input type="checkbox"/>       |  |
| ff <input type="checkbox"/>       |  |
| f <input type="checkbox"/>        |  |
| su <input type="checkbox"/>       |  |
| m <input type="checkbox"/>        |  |



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS Project #: 1142

Observer(s): BOB HA

Date: AUG 12/2010 Time (24h): 8:30

Field #: 46 Weather: Precipitation: NONE Temp (°C): 21

Map Code: NCH3 Wind Speed & Direction: 1-WS Cloud %: 60

Wetland Type: M Site Type: 2 Dominant Form: SC

% Open Water: 0 ELC Code: H4HH-14

Photos: 2 0179 0180

| Forms % (Circle those >25%)       | Species (dominant species, secondary species, present species) |
|-----------------------------------|--|
| h <input type="checkbox"/>        |  |
| c <input type="checkbox"/>        |  |
| dc,dh,ds <input type="checkbox"/> |  |
| ts <input type="checkbox"/>       |  |
| ls 10% <i>red oak</i>             | <i>red oak</i>   |
| gc 10% <i>purple loosestrife</i>  | <i>purple loosestrife</i>                                      |
| ne 80% <i>grass</i>               | <i>grass</i>   |
| be <input type="checkbox"/>       |  |
| re <input type="checkbox"/>       |  |
| ff <input type="checkbox"/>       |  |
| f <input type="checkbox"/>        |  |
| su <input type="checkbox"/>       |  |
| m <input type="checkbox"/>        |  |

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

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: NORTH BURRESS

Project #: 1142

Observer(s): BAN, HA

Date: AUG 11/2010 Time (24h): 13:40

Field #: 43 Weather: Precipitation: NONE Temp (°C): 30

Map Code: HS24 Wind Speed & Direction: 1-W Cloud %: 5

Wetland Type: S Site Type: R Dominant Form: h

% Open Water: 5% ELC Code: SW542-1

Photos: + 0169, 0170

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 80%                       | white oak, black oak, green oak                                |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 40%                      | white oak, black oak, green oak                                |
| ls 10%                      | white oak  |
| gc 5%                       | yellow pine, white pine, red pine                              |
| ne 0                        |  |
| be 0                        |  |
| re 0                        |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 15%                       | green moss   |



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## Wetland Vegetation Communities

Project Name: NORTH BURRESS

Project #: 1142

Observer(s): BAN, HA

Date: AUG 11/2010 Time (24h): 13:50

Field #: 44 Weather: Precipitation: NONE Temp (°C): 30

Map Code: HS24 Wind Speed & Direction: 1-W Cloud %: 5

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

% Open Water: 15% ELC Code: SWTH-1

Photos: ± 0171, 0172

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 5%               |  |
| ts 50%                      | spotted alder, tall dogwood, white oak                         |
| ls 30%                      | spotted alder, narrow leaved birch                             |
| gc 30%                      | white pine, black pine, red pine                               |
| ne 40%                      | fox sedge, cord sedge, grass                                   |
| be 2%                       | common sparganium, blue flag                                   |
| re 5%                       | reeds  |
| ff 0                        |  |
| f 0%                        | hydrilla, sagittaria   |
| su 2%                       | submerged plants   |
| m                           |  |

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

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

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

GRER, SCCH

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

MONARCH



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): BAN NA

Date: AUG 11, 2010

Time (24h): 12:20

Field #: 39

Weather: Precipitation: NONE Temp (°C): 30

Map Code: +5512

Wind Speed & Direction: 1-3 Cloud %: 5

Wetland Type: S

Site Type: R Dominant Form: +3

% Open Water: 50%

ELC Code: SWTMB-6

Photos: 0162, 0163

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 1%                        |  |
| c 0                         |  |
| dc, dh, ds 2%               |  |
| ts 30%                      |  |
| ls 0%                       |  |
| gc 0                        |  |
| ne 0                        |  |
| be 10%                      |  |
| re 35%                      |  |
| ff 0                        |  |
| f 2%                        |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

GEER

WOOD DUCK

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): BAN NA

Date: AUG 11, 2010

Time (24h): 12:40

Field #: 40

Weather: Precipitation: NONE Temp (°C): 30

Map Code: NEM18

Wind Speed & Direction: 1-3 Cloud %: 5

Wetland Type: M

Site Type: R Dominant Form: FC

% Open Water: 0

ELC Code: WAMUS-1

Photos: 0164, 0165

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 2%               |  |
| ts 5%                       |  |
| ls 5%                       |  |
| gc 30%                      |  |
| ne 40%                      |  |
| be 0                        |  |
| re 30%                      |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

MONARCH

SAR observations must also include a specific UTM location.

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

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

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): SAM HA

Date: AUG 11 2016

Time (24h): 13:00

Field #: 41 Weather: Precipitation: NONE Temp (°C): 30

Map Code: 1049 Wind Speed & Direction: -WS Cloud %: 5

Wetland Type: 1 Site Type: 2 Dominant Form: SC

% Open Water: 35% ELC Code: MBSM1-14

Photos: # 0126

| Forms % (Circle those ≥25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 2%                        | WETLAND  |
| dc, dh, ds 1%               |  |
| ts 15%                      | WETLAND  |
| ls 5%                       | WETLAND  |
| gc 10%                      | WETLAND  |
| <u>ne 50%</u>               | WETLAND  |
| be 2%                       | WETLAND  |
| re 0                        |  |
| ff 1%                       | WETLAND  |
| f 2%                        | WETLAND  |
| su 20%                      | WETLAND  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

SEER NLR  
RED TREE FROG

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): SAM HA

Date: AUG 11 2016

Time (24h): 13:20

Field #: 42 Weather: Precipitation: NONE Temp (°C): 30

Map Code: 1049 Wind Speed & Direction: -WS Cloud %: 5

Wetland Type: M Site Type: R Dominant Form: SU

% Open Water: 40% ELC Code: 104-1

Photos: # 0127-0128

| Forms % (Circle those ≥25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 1%                        | WETLAND  |
| c 0                         |  |
| dc, dh, ds 2%               |  |
| ts 2%                       | WETLAND  |
| ls 5%                       | WETLAND  |
| gc 5%                       | WETLAND  |
| <u>ne 10%</u>               | WETLAND  |
| be 10%                      | WETLAND  |
| re 20%                      | WETLAND  |
| ff 0                        |  |
| f 10%                       | WETLAND  |
| <u>SU 40%</u>               | WETLAND  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

SEER NLR  
RED SWAMP  
SEER  
EMPE

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): BAH HA

Date: AUG 11 / 2010 Time (24h): 0:50

Field #: 31 Weather: Precipitation: NONE Temp (°C): 30

Map Code: NEM1 Wind Speed & Direction: 1-W Cloud %: 5

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

% Open Water: 0 ELC Code: NEM1-S

Photos: 0146, 0147

| Forms % (Circle those >25%)         | Species (dominant species, secondary species, present species) |
|-------------------------------------|--|
| h <input type="checkbox"/>          |  |
| c <input type="checkbox"/>          |  |
| dc, dh, ds <input type="checkbox"/> |  |
| ts <input type="checkbox"/>         |  |
| ls <input type="checkbox"/>         |  |
| gc 15%                              | various low shrubs, narrow emergents                           |
| ne 30%                              | reed, sedge, grass   |
| be <input type="checkbox"/>         |  |
| re 25%                              | reed, sedge, grass   |
| ff <input type="checkbox"/>         |  |
| f <input type="checkbox"/>          |  |
| su <input type="checkbox"/>         |  |
| m <input type="checkbox"/>          |  |

Rare Species (Local, Regional, Provincial):

\* constructed swale

NONE

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 1142

Observer(s): BAH HA

Date: AUG 11 / 2010 Time (24h): 10:15

Field #: 32 Weather: Precipitation: NONE Temp (°C): 30

Map Code: NEM2 Wind Speed & Direction: 1-W Cloud %: 5

Wetland Type: S Site Type: P Dominant Form: h

% Open Water: 0 ELC Code: SWDM2-1

Photos: 0148, 0149

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 70%                       | black spruce, green spruce, white spruce                       |
| c <input type="checkbox"/>  |  |
| dc, dh, ds 5%               |  |
| ts 40%                      | various shrubs, black spruce                                   |
| ls 30%                      | various shrubs, black spruce                                   |
| gc 60%                      | various low shrubs, narrow emergents                           |
| ne 5%                       | reed, sedge  |
| be <input type="checkbox"/> |  |
| re <input type="checkbox"/> |  |
| ff <input type="checkbox"/> |  |
| f <input type="checkbox"/>  |  |
| su <input type="checkbox"/> |  |
| m 50%                       | various mosses   |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS

Project #: 142

Observer(s): SAM HA

Date: AUG 11/2010

Time (24h): 10:35

Field #: 33

Weather: Precipitation: NONE Temp (°C): 30

Map Code: 024B

Wind Speed & Direction: 1-2 Cloud %: 5

Wetland Type: M

Site Type: R Dominant Form: re

% Open Water: 30

ELC Code: MASH-1

Photos: # 0150 0151 0152 0153

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 5%                        | black oak  |
| c 3%                        | white oak  |
| dc, dh, ds 2%               |  |
| ts 10%                      | smooth dogwood   |
| ls 10%                      | smooth dogwood   |
| gc 5%                       | purple loosestrife, narrow leaved cattail                      |
| ne 25%                      | reed, narrow grass, tall grass, large leaf                     |
| be 10%                      | smooth dogwood, narrow leaved cattail, large leaf              |
| re 35%                      | reed, narrow grass, tall grass, large leaf                     |
| ff 5%                       | large leaf   |
| f 15%                       | large leaf   |
| su ?                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

634E

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: NORTH BURGESS

Project #: 142

Observer(s): SAM HA

Date: AUG 11/2010

Time (24h): 10:50

Field #: 34

Weather: Precipitation: Temp (°C)

Map Code: 024B

Wind Speed & Direction: Cloud %:

Wetland Type: M

Site Type: R Dominant Form: re

% Open Water: 0

ELC Code: MASH-1b

Photos: 0154

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 0                        |  |
| ls 0                        |  |
| gc 30%                      | purple loosestrife, narrow leaved cattail                      |
| ne 60%                      | reed, narrow grass, tall grass, large leaf                     |
| be 0                        |  |
| re 10%                      | reed, narrow grass, tall grass, large leaf                     |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

MONARCH

SAR observations must also include a specific UTM location.

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

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

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



# NATURAL RESOURCE SOLUTIONS INC.

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## Wetland Vegetation Communities

Project Name: NORTH SUESS

Project #: 1142

Observer(s): SAH NA

Date: AUG 11, 2010

Time (24h): 11:10

Field #: 35

Weather: Precipitation: NONE Temp (°C): 30

Map Code: RENS

Wind Speed & Direction: 1-W Cloud %: 5

Wetland Type: 4

Site Type: P Dominant Form: re

% Open Water: 5

ELC Code: MANN1

Photos: 0155

| Forms % (Circle those >25%)            | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="checkbox"/>             |  |
| c <input type="checkbox"/>             |  |
| dc, dh, ds <input type="checkbox"/>    |  |
| ts <input type="checkbox"/>            |  |
| ls <input type="checkbox"/>            |  |
| gc <input type="checkbox"/>            | 5% mixed herbaceous, groundcover                               |
| ne <input checked="" type="checkbox"/> | 25% tall grasses, some many grass                              |
| be <input type="checkbox"/>            | 2% water lilies  |
| re <input checked="" type="checkbox"/> | 5% reeds   |
| ff <input type="checkbox"/>            |  |
| f <input type="checkbox"/>             |  |
| su <input type="checkbox"/>            |  |
| m <input type="checkbox"/>             |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

2038L AMGO

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.

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## Wetland Vegetation Communities

Project Name: NORTH SUESS

Project #: 1142

Observer(s): SAH NA

Date: AUG 11, 2010

Time (24h): 11:30

Field #: 36

Weather: Precipitation: NONE Temp (°C): 30

Map Code: RENS

Wind Speed & Direction: 1-W Cloud %: 5

Wetland Type: H

Site Type: P Dominant Form: re

% Open Water: 0

ELC Code: MANN1

Photos: 0156

| Forms % (Circle those >25%)            | Species (dominant species, secondary species, present species) |
|--|--|
| h <input type="checkbox"/>             |  |
| c <input type="checkbox"/>             |  |
| dc, dh, ds <input type="checkbox"/>    |  |
| ts <input type="checkbox"/>            |  |
| ls <input type="checkbox"/>            |  |
| gc <input checked="" type="checkbox"/> | 35% mixed herbaceous, groundcover, some grasses                |
| ne <input checked="" type="checkbox"/> | 60% tall grasses, some many grass                              |
| be <input type="checkbox"/>            |  |
| re <input checked="" type="checkbox"/> | 40% dark green, some many grass                                |
| ff <input type="checkbox"/>            |  |
| f <input type="checkbox"/>             |  |
| su <input type="checkbox"/>            |  |
| m <input type="checkbox"/>             |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

NLFR

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: NORTH BURGESS

Project #: 1142

Observer(s): BAN MA

Date: AUG 11/2010

Time (24h): 11:50

Field #: 37

Weather: Precipitation: NONE Temp (°C): 30

Map Code: +5311

Wind Speed & Direction: 1-W Cloud %: 5

Wetland Type: S

Site Type: P Dominant Form: -3

% Open Water: 0

ELC Code: SWTN3-3

Photos: 0157, 0158, 0159

| Forms % (Circle those >25%)         | Species (dominant species, secondary species, present species) |
|-------------------------------------|--|
| h <input type="checkbox"/>          |  |
| c <input type="checkbox"/>          |  |
| dc, dh, ds <input type="checkbox"/> |  |
| ts <input type="checkbox"/> 35%     | Shrub willow, sp. willow, sp. willow                           |
| ls <input type="checkbox"/> 0%      | Common cattail, sp. grass, sp. grass                           |
| gc <input type="checkbox"/> 10%     | Sp. grass, sp. grass, sp. grass                                |
| ne <input type="checkbox"/> 5%      | Sp. grass  |
| be <input type="checkbox"/>         |  |
| re <input type="checkbox"/> 5%      | Sp. grass  |
| ff <input type="checkbox"/>         |  |
| f <input type="checkbox"/>          |  |
| su <input type="checkbox"/>         |  |
| m <input type="checkbox"/>          |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

ALFD, SOSP, NOEL

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: NORTH BURGESS

Project #: 1142

Observer(s): BAN MA

Date: AUG 11/2010

Time (24h): 12:00

Field #: 38

Weather: Precipitation: NONE Temp (°C): 30

Map Code: +5310

Wind Speed & Direction: 1-W Cloud %: 5

Wetland Type: S

Site Type: P Dominant Form: -3

% Open Water: 10

ELC Code: SWTN3-2

Photos: 0160, 0161

| Forms % (Circle those >25%)         | Species (dominant species, secondary species, present species) |
|-------------------------------------|--|
| h <input type="checkbox"/>          |  |
| c <input type="checkbox"/>          |  |
| dc, dh, ds <input type="checkbox"/> |  |
| ts <input type="checkbox"/> 30%     | Shrub willow, sp. willow                                       |
| ls <input type="checkbox"/> 25%     | Shrub willow, sp. willow, narrow leaved sp. grass              |
| gc <input type="checkbox"/> 40%     | Sp. grass, sp. grass, sp. grass                                |
| ne <input type="checkbox"/> 25%     | Sp. grass, sp. grass, sp. grass                                |
| be <input type="checkbox"/> 5%      | Common cattail, sp. grass, sp. grass                           |
| re <input type="checkbox"/> 5%      | Sp. grass, sp. grass, sp. grass                                |
| ff <input type="checkbox"/>         |  |
| f <input type="checkbox"/>          |  |
| su <input type="checkbox"/>         |  |
| m <input type="checkbox"/>          |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

ALFR, GRCB

GRFR

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



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS Project #: 1142

Observer(s): BAN, MA

Date: AUG 12/2010 Time (24h): 12:00

Field #: 59 Weather: Precipitation: NONE Temp (°C): 21

Map Code: RE M15 Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: H Site Type: E Dominant Form: T0

% Open Water: 30 ELC Code: NASH1-1

Photos: = 0200, 0202

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 2%                        |  |
| c 0                         |  |
| dc, dh, ds 0                |  |
| ts 0                        |  |
| ls 0                        |  |
| gc 5%                       |  |
| ne 25%                      |  |
| be                          |  |
| re 70%                      |  |
| ff                          |  |
| f                           |  |
| su 25%                      |  |
| m 0                         |  |



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## Wetland Vegetation Communities

Project Name: NORTH BURGESS Project #: 1142

Observer(s): BAN, MA

Date: AUG 12/2010 Time (24h): 12:15

Field #: 60 Weather: Precipitation: NONE Temp (°C): 21

Map Code: 2-4.9 Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: H Site Type: E Dominant Form: 4

% Open Water: 50 ELC Code: SAF-1

Photos: = 201, 203

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 15%                       |  |
| dc, dh, ds 30%              |  |
| ts 5%                       |  |
| ls 0                        |  |
| gc 2%                       |  |
| ne 5%                       |  |
| be 5%                       |  |
| re 5%                       |  |
| ff 5%                       |  |
| f 40%                       |  |
| su 30%                      |  |
| m 0                         |  |

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

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



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Aquatic, Terrestrial and Wetland Biologists

## Wetland Vegetation Communities

Project Name: UOBY BURGESS Project #: 1142

Observer(s): SAN MA

Date: AUG 12/2010 Time (24h): 13:00

Field #: 61 Weather: Precipitation: NONE Temp (°C): 21

Map Code: +S51 Wind Speed & Direction: 2-W Cloud %: 60

Wetland Type: S Site Type: P Dominant Form: +S

% Open Water: 0 ELC Code: SWTH 3

Photos:

| Forms % (Circle those >25%) | Species (dominant species, secondary species, present species) |
|-----------------------------|--|
| h 0                         |  |
| c 0                         |  |
| dc, dh, ds 10%              |  |
| ts 60%                      |  |
| ls 25%                      |  |
| gc 0                        |  |
| ne 0                        |  |
| be 0                        |  |
| re 0                        |  |
| ff 0                        |  |
| f 0                         |  |
| su 0                        |  |
| m 0                         |  |

Rare Species (Local, Regional, Provincial):

NONE

Wildlife Notes:

NONE

\* wetland not visible from road

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



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## Wetland Vegetation Communities

Project Name: Project #:

Observer(s):

Date: Time (24h):

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

Map Code: Wind Speed & Direction: Cloud %:

Wetland Type: Site Type: Dominant Form:

% Open Water: ELC Code:

Photos:

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

Rare Species (Local, Regional, Provincial):

Wildlife Notes:

SAR observations must also include a specific UTM location.

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

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

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