

Ministry of Natural Resource
Bald Eagle Survey Confirmation E-mail
March 1, 2013

Ramkissoon, Kristy

From: St.James, Katherine
Sent: Tuesday, March 12, 2013 11:43 AM
To: Ramkissoon, Kristy; Christiansen, Fiona
Subject: FW: Port Ryerse Bald Eagle surveys

-----Original Message-----

From: Webb, Jason (MNR) [mailto:Jason.Webb@ontario.ca]
Sent: Friday, March 01, 2013 9:57 AM
To: St.James, Katherine
Cc: Beal, Jim (MNR); Christiansen, Fiona; Ramkissoon, Kristy; Adam Rosso (adam.rosso@boralex.com)
Subject: RE: Port Ryerse Bald Eagle surveys

Katherine,

Upon reviewing the results of the Bald Eagle Winter Roost survey for the Port Ryerse Wind Farm, MNR is satisfied with the survey effort and can confirm that the habitat is not significant.

No mitigation or future consideration for post-construction surveys will be necessary for this specific habitat type at the Port Ryerse Wind Farm project location.

If you have any additional questions please let me know.

Thanks,

Jason Webb
Planning Ecologist
Southern Region Planning Unit
Ministry of Natural Resources
300 Water Street, 4th Floor, South Tower Peterborough, Ontario K9J 8M5
(705) 755 - 3202
jason.webb@ontario.ca

-----Original Message-----

From: St.James, Katherine [mailto:Katherine.St.James@stantec.com]
Sent: March 1, 2013 9:52 AM
To: Webb, Jason (MNR)
Cc: Beal, Jim (MNR); Christiansen, Fiona; Ramkissoon, Kristy; Adam Rosso (adam.rosso@boralex.com)
Subject: RE: Port Ryerse Bald Eagle surveys

Good morning Jason,

Attached is the final memo with corrected map, for everyone's records.

Thank you!

Katherine

-----Original Message-----

From: Webb, Jason (MNR) [mailto:Jason.Webb@ontario.ca]
Sent: Thursday, February 28, 2013 9:43 AM
To: St.James, Katherine

Cc: Beal, Jim (MNR)
Subject: RE: Port Ryerse Bald Eagle surveys

Hi Katherine,

I'm not in the office today so as a follow up to my voice message I will just outline the small change.

On the map can you change the point location "Significant Bald Eagle Winter Roost" to Candidate Bald Eagle Winter Roost? The same change should be applied to the 400m habitat Buffer associated with the roost.

We just don't want the map to say that the habitat is significant whereas the letter explains how it didn't meet criteria.

The survey results and content within the letter is sufficient.

If you have any questions please let me know.

Thanks,

Jason

From: St.James, Katherine [Katherine.St.James@stantec.com]
Sent: Monday, February 25, 2013 2:47 PM
To: Beal, Jim (MNR)
Cc: Cameron, Amy (MNR); Halloran, Joe (MNR); Webb, Jason (MNR); Christiansen, Fiona; Adam Rosso (adam.rosso@boralex.com)
Subject: RE: Port Ryerse Bald Eagle surveys

Good afternoon Jim,

We've completed the bald eagle surveys as part of the pre-construction commitments for the Port Ryerse Wind Farm. Please see the attached memo. We look forward to your review.

Thank you!
Katherine

Katherine St.James
Stantec
70 Southgate Drive Suite 1
Guelph ON N1G 4P5
Ph: (519) 836-6050
Fx: (519) 836-2493
katherine.stjames@stantec.com
stantec.com<<http://www.stantec.com>>

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From: Webb, Jason (MNR) [mailto:Jason.Webb@ontario.ca]
Sent: Monday, February 11, 2013 10:59 AM
To: St.James, Katherine
Subject: RE: Port Ryerse Bald Eagle surveys

Hi Katherine,

You can submit the results of the pre-construction surveys to MNR for a quick review at which point you will receive confirmation of the results via e-mail with MOE cc'd.

Can you please submit the results to jim.beal@ontario.ca with a cc to amy.cameron@ontario.ca joe.halloran@ontario.ca and myself?

Thanks,

Jason Webb
Planning Ecologist
Southern Region Planning Unit
Ministry of Natural Resources
300 Water Street, 4th Floor, South Tower Peterborough, Ontario K9J 8M5
(705) 755 - 3202
jason.webb@ontario.ca

From: St.James, Katherine [<mailto:Katherine.St.James@stantec.com>]
Sent: February 11, 2013 10:49 AM
To: Webb, Jason (MNR)
Subject: Port Ryerse Bald Eagle surveys

Good morning Jason,

Thanks for getting back to me on the wetland spanning question.

Another quick question for you: we have completed the bald eagle surveys as part of the condition of your approval for the NHA (we had committed to pre-construction surveys). For the results letter, do we submit that to the MNR and/or the MOE?

Thanks!
Katherine

Katherine St.James
Stantec
70 Southgate Drive Suite 1
Guelph ON N1G 4P5
Ph: (519) 836-6050
Fx: (519) 836-2493
katherine.stjames@stantec.com
[stantec.com](http://www.stantec.com)

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Ministry of Natural Resources
NHA Confirmation Letter
November 21, 2012

**Ministry of
Natural Resources**

Renewable Energy Operations Team
300 Water Street
4th Floor, South Tower
Peterborough, Ontario K9J 8M5

**Ministère des
Richesses naturelles**



November 21, 2012

Boralex Inc.
772 Sherbrook Street West, Suite 200
Montreal, Quebec
H3A 1G1

RE: NHA Confirmation for Port Ryerse Wind Power Project

Dear Mr. Adam Rosso:

In accordance with the Ministry of the Environment's (MOE's) Renewable Energy Approvals (REA) Regulation (O.Reg.359/09), the Ministry of Natural Resources (MNR) has reviewed the natural heritage assessment and environmental impact study for the Port Ryerse Wind Power Project in Norfolk County, submitted by Boralex Inc. on November 15, 2012.

In accordance with Section 28(2) and 38(2)(b) of the REA regulation, MNR provides the following confirmations following review of the natural heritage assessment:

1. The MNR confirms that the determination of the existence of natural features and the boundaries of natural features was made using applicable evaluation criteria or procedures established or accepted by MNR.
2. The MNR confirms that the site investigation and records review were conducted using applicable evaluation criteria or procedures established or accepted by MNR, if no natural features were identified.
3. The MNR confirms that the evaluation of the significance or provincial significance of the natural features was conducted using applicable evaluation criteria or procedures established or accepted by MNR.
4. The MNR confirms that the project location is not in a provincial park or conservation reserve.
5. The MNR confirms that the environmental impact study report has been prepared in accordance with procedures established by the MNR.

In accordance with Section 28(3)(c) and 38(2)(c), MNR also offers the following comments in respect of the project.

Preconstruction Monitoring

In accordance with Appendix D of MNR's NHA Guide, a commitment has been made to complete pre-construction assessment(s) of habitat use for the following candidate significant wildlife habitats.

- i) Landbird Migratory Stopover Area (Spring surveys) - LBMS01
- ii) Bald Eagle Winter Perching Habitat – SCS03

MNR has reviewed and confirmed the assessment methods and the range of mitigation options. Pending completion of the assessments and determination of significance, the appropriate mitigation is expected to be implemented, as committed to in the environmental impact study.

Post-Construction Monitoring

In addition to the NHA, an Environmental Effects Monitoring Plan (EEMP) that address post-construction mortality monitoring and mitigation for birds and bats must be prepared and implemented. Environmental Effects Monitoring Plans for birds and bats must be prepared in accordance with MNR Guidelines and should be reviewed by MNR in advance of submitting a REA application to MOE in order to minimize potential delays in determining if the application is complete. Comments provided by the MNR with respect to the EEMP must be submitted as part of the application for a REA.

A commitment has been made in the Environmental Effects Monitoring Plan, part of the Design and Operations Report, to conduct post-construction monitoring and if determined necessary, implement mitigation measures. For the Port Ryerse Wind Power Project this includes;

- i) Avoidance/Disturbance Monitoring for Landbird Migratory Stopover Habitat – LBMS01

If results of pre-construction surveys deem the wildlife habitats to be significant then post-construction monitoring must be conducted following methods outlined in the EIS on the following habitats:

- i) Bald Eagle Winter Perching Habitat – SCS03

This confirmation letter is valid for the project as proposed in the natural heritage assessment and environmental impact study, including those sections describing the Environmental Effects Monitoring Plan and Construction Plan Report. Should any changes be made to the proposed project that would alter the NHA, MNR may need to undertake additional review of the NHA.

Where specific commitments have been made by the applicant in the NHA/EIS with respect to project design, construction, rehabilitation, operation, mitigation, or monitoring, MNR expects that these commitments will be considered in MOE's Renewable Energy Approval decision and, if approved, be implemented by the applicant.

In accordance with S.12 (1) of the Renewable Energy Approvals Regulation, this letter must be included as part of your application submitted to the MOE for a Renewable Energy Approval.

Please be aware that your project may be subject to additional legislative approvals as outlined in the Ministry of Natural Resources' *Approvals and Permitting Requirements Document*. These approvals are required prior to the construction of your renewable energy facility.

If you wish to discuss any part of this confirmation or additional comments provided, please contact Amy Cameron at amy.cameron@ontario.ca or 705-875-7481.

Sincerely,



Amy Cameron
Coordinator
Renewable Energy Operations Team
Southern Region MNR

cc Emily Gryck, Renewable Energy Operations Team, Project Manager, MNR
 Erin Cotnam, Renewable Energy Operations Team, Project Manager, MNR
 Jason Webb, Renewable Energy Operations Team, Planning Ecologist, MNR
 Mitch Wilson, Aylmer District, MNR
 Narren Santos, Environmental Approvals Access & Service Integration Branch, MOE
 Zeljko Romic, Environmental Approvals Access & Service Integration Branch, MOE
 Katherine St. James, Stantec
 Fiona Christiansen, Stantec

Natural Heritage Assessment & Environmental Impact Study



**PORT RYERSE
WIND POWER PROJECT**
NATURAL HERITAGE ASSESSMENT &
ENVIRONMENTAL IMPACT STUDY

File No.: 160960773
November 2012

Prepared for:

Boralex Inc.
772 Sherbrooke St. West
Suite 200
Montreal QC H3A 1G1

Prepared by:

Stantec Consulting Ltd.
Suite 1 – 70 Southgate Drive
Guelph, Ontario N1G 4P5

Record of Revisions

Revision	Date	Description
0	October 5, 2012	Initial Submission to the Ministry of Natural Resources for Comment
1	November 1, 2012	Second Submission to the Ministry of Natural Resources for Comment
2	November 6, 2012	Update of Second Submission to the Ministry of Natural Resources (based on REA regulation changes of November 2, 2012)
3	November 19, 2012	Submission to Municipalities and Aboriginal Communities
4	November 21, 2012	Third Submission to the Ministry of Natural Resources
5	November 23, 2012	Final Report

Executive Summary

Boralex Inc. ("Boralex") is proposing to develop the Port Ryerse Wind Project (the Project), a Class 4 Wind Generation Facility situated near the hamlet of Port Ryerse, within Norfolk County, Ontario.

Three wind turbine models have been assessed as part of the REA process; ultimately only one turbine model will be selected:

- Siemens SWT 3.0 113 (these are 3 MW turbines that will be customized to 2.5 MW for the Project;
- ENERCON E-92 2.35 MW; and,
- ENERCON E-82 E2 2.3 MW.

Regardless of the turbine model selected, the Project will consist of 4 wind turbine generators, located in the same locations, for a total maximum installed nameplate capacity of up to 10 MW. In addition to the 4 wind turbine generators, the Project will include step-up transformers located adjacent to the base of each turbine (step up voltage from approximately 0.69 kV to 27.6 kV), a 27.6 kV underground collector system, fibre optic data lines, a distribution substation, a permanent parking lot (if required), a meteorological tower; and turbine access roads.

Temporary components during construction include laydown areas at the turbine locations and crane pads. No operations and maintenance building or transmission line is anticipated to be required for the Project. No Project components are located within municipal road Rights of Way (ROWs).

The 27.6 kV underground collector lines will transport the electricity generated from each turbine to the distribution substation located on private property east of Port Ryerse Road. Directional bore techniques will be used where the underground collector lines cross valleylands and watercourses. At the substation, a dip-pole connection will be made directly into the Hydro One Networks Inc. (HONI) distribution system.

As three turbine models are currently being considered, a conservative approach has been followed to assess any potential Project impacts. The Siemens SWT 3.0 113 ultimately has a longer blade length (55 m), when compared to either ENERCON models, therefore the Siemens turbine is considered to be the theoretical "worst case scenario". As the ENERCON models may have a taller hub height (108 m) than Siemens, both models have been mapped to confirm property line setbacks.

Boralex has retained Stantec Consulting Ltd. (Stantec) to prepare a Renewable Energy Approval (REA) application, as required under Ontario Regulation 359/09 - Renewable Energy Approvals under Part V.0.1 of the Act of the *Environmental Protection Act* (O. Reg. 359/09). This Natural Heritage Assessment and Environmental Impact Study report has been prepared in

accordance with O. Reg. 359/09 and *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a). The Natural Heritage Assessment (NHA) report is provided to the Ministry of Natural Resources (MNR) for confirmation in advance of submission as part of the Renewable Energy Approval (REA) application to the Ministry of Environment (MOE).

Table of Contents

EXECUTIVE SUMMARY.....	E.1
1.0 INTRODUCTION	1.1
1.1 PROJECT OVERVIEW	1.1
1.2 REPORT REQUIREMENTS	1.2
1.3 GUIDANCE DOCUMENTS	1.4
2.0 RECORDS REVIEW	2.1
2.1 METHODS	2.1
2.2 RESULTS	2.1
2.2.1 Wetlands	2.1
2.2.1.1 Provincially Significant and Coastal Wetlands	2.1
2.2.1.2 Locally-Significant Wetlands.....	2.1
2.2.1.3 Unevaluated Wetlands	2.2
2.2.1.4 Summary.....	2.2
2.2.2 Woodlands	2.2
2.2.3 Wildlife Habitat	2.2
2.2.4 Areas of Natural and Scientific Interest (ANSIs), Provincial Plan Areas, Provincial Parks, and Conservation Reserves	2.10
2.3 SUMMARY OF NATURAL FEATURES AND BOUNDARIES IDENTIFIED	2.12
3.0 SITE INVESTIGATION	3.1
3.1 METHODS	3.1
3.1.1 Alternative Site Investigation Methods.....	3.2
3.1.2 Vegetation Community and Vascular Plants Assessment.....	3.2
3.1.3 Wetland Confirmation and Delineation	3.2
3.1.4 Woodlands	3.3
3.1.5 Wildlife and Wildlife Habitat	3.3
3.1.5.1 Seasonal Concentration Areas of Animals.....	3.3
3.1.5.2 Rare Vegetation Communities or Specialized Habitats.....	3.8
3.1.5.3 Habitats for Species of Conservation Concern	3.15
3.1.5.4 Animal Movement Corridors	3.17
3.2 RESULTS	3.18
3.2.1 Vegetation Community and Vascular Plants Assessment.....	3.19
3.2.2 Wetlands	3.19
3.2.3 Woodlands	3.19
3.2.4 Wildlife and Wildlife Habitat	3.19
3.2.4.1 Seasonal Concentration Areas of Animals.....	3.20
3.2.4.2 Rare Vegetation Communities or Specialized Habitats for Wildlife	3.21

PORT RYERSE WIND POWER PROJECT

NATURAL HERITAGE ASSESSMENT & ENVIRONMENTAL IMPACT STUDY

Table of Contents

November 2012

3.2.4.3	Species of Conservation Concern	3.23
3.2.4.4	Animal Movement Corridors	3.28
3.3	SITE INVESTIGATION RESULTS SUMMARY	3.29
3.4	QUALIFICATIONS	3.30

4.0	EVALUATION OF SIGNIFICANCE	4.1
4.1	METHODS	4.1
4.1.1	Woodlands	4.2
4.1.2	Wildlife and Wildlife Habitat	4.2
4.1.2.1	Seasonal Concentration Areas of Animals.....	4.2
4.1.2.2	Rare Vegetation Communities or Specialized Habitat for Wildlife	4.3
4.1.2.3	Habitat for Species of Conservation Concern	4.4
4.2	RESULTS	4.5
4.2.1	Woodlands	4.5
4.2.2	Wildlife and Wildlife Habitat	4.6
4.2.2.1	Seasonal Concentration Areas	4.6
4.2.2.2	Rare Vegetation Communities or Specialized Habitat for Wildlife	4.7
4.2.2.3	Habitat for Species of Conservation Concern	4.8
4.3	SUMMARY	4.8

5.0	ENVIRONMENTAL IMPACT STUDY	5.1
5.1	PROJECT FOOTPRINT OVERVIEW	5.1
5.2	NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE CONSTRUCTION AND DECOMMISSIONING PHASES OF THE PROJECT	5.3
5.2.1	Significant Woodlands	5.3
5.2.2	Significant Wildlife Habitats	5.4
5.2.2.1	Migratory Landbird Stopover Area	5.4
5.2.2.2	Bald Eagle Habitat.....	5.5
5.2.3	Generalized Significant Wildlife Habitats	5.5
5.3	OTHER GENERAL CONSTRUCTION MITIGATION	5.5
5.4	NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE OPERATIONAL PHASE OF THE PROJECT	5.8
5.4.1	Significant Woodlands	5.8
5.4.2	Significant Wildlife Habitat	5.8
5.5	ENVIRONMENTAL EFFECTS MONITORING PLAN	5.8
5.6	SUMMARY OF IMPACTS AND MITIGATION	5.9

6.0	CLOSURE	6.1
------------	----------------------	------------

7.0	LITERATURE CITED.....	7.1
------------	------------------------------	------------

List of Tables

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location	2.4
Table 2.2: Natural Features Carried Forward to Site Investigation	2.12
Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas.....	3.4
Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat.....	3.9
Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern	3.16
Table 3.4: Characteristics Used to Identify Candidate Animal Movement Corridors.....	3.18
Table 3.5: Summary of Site Investigation Results for Candidate Seasonal Concentration Areas	3.20
Table 3.6: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat.....	3.22
Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern	3.23
Table 3.8: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern	3.28
Table 3.9: Natural Features Carried Forward to Evaluation of Significance	3.29
Table 4.1: Criteria and Methods Used to Evaluate Seasonal Concentration Areas of Animals.....	4.2
Table 4.2: Criteria and Methods Used to Evaluate the Significance of Rare Vegetation Communities or Specialized Habitat for Wildlife	4.3
Table 4.3: Criteria and Methods Used to Evaluate the Significance of Habitat for Species of Conservation Concern	4.4
Table 4.4: Summary of Evaluation of Significance Results for Seasonal Concentration Areas	4.6
Table 4.5: Summary of Evaluation of Significance Results for Rare Vegetation Communities or Specialized Habitat for Wildlife.....	4.7
Table 4.6: Summary of Evaluation of Significance Results for Habitat for Species of Conservation Concern	4.8
Table 4.7: Natural Features Carried Forward to Evaluation of Significance	4.8
Table 5.1: Summary of Construction Phase Mitigation Measures Recommended	5.6

List of Appendices

Appendix A Figures

Appendix B Tables

Appendix C Field Notes

Appendix D Staff Summaries

Appendix E Pre-construction Field Survey Methods

List of Figures

Appendix A

Figure 1. Project Boundary

Figure 2. ELC and Natural Features

Figure 3. Candidate Significant Wildlife Habitat

Figure 4. Significant Natural Features and Wildlife Habitat

Acronyms Used

ANSI	Area of Natural and Scientific Interest
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
EIS	Environmental Impact Study
ELC	Ecological Land Classification
LPRCA	Long Point Region Conservation Authority
MNR	Ontario Ministry of Natural Resources
MOE	Ontario Ministry of the Environment
NHA	Natural Heritage Assessment
NHIC	Natural Heritage Information Centre
OWES	Ontario Wetland Evaluation System
PSW	Provincially Significant Wetland
REA	Renewable Energy Approval
SARA	Species at Risk Act
SWHTG	Significant Wildlife Habitat Technical Guide

1.0 Introduction

1.1 PROJECT OVERVIEW

Boralex Inc. ("Boralex") is proposing to develop the Port Ryerse Wind Project (the Project), a Class 4 Wind Generation Facility situated near the hamlet of Port Ryerse, within Norfolk County, Ontario.

Three wind turbine models have been assessed as part of the REA process; ultimately only one turbine model will be selected:

- Siemens SWT 3.0 113 (these are 3 MW turbines that will be customized to 2.5 MW for the Project;
- ENERCON E-92 2.35 MW; and,
- ENERCON E-82 E2 2.3 MW.

Regardless of the turbine model selected, the Project will consist of 4 wind turbine generators, located in the same locations, for a total maximum installed nameplate capacity of up to 10 MW. In addition to the 4 wind turbine generators, the Project will include step-up transformers located adjacent to the base of each turbine (step up voltage from approximately 0.69 kV to 27.6 kV), a 27.6 kV underground collector system, fibre optic data lines, a distribution substation, a permanent parking lot (if required), a meteorological tower; and turbine access roads.

Temporary components during construction include laydown areas at the turbine locations and crane pads. No operations and maintenance building or transmission line is anticipated to be required for the Project. No Project components are located within municipal road Rights of Way (ROWs).

The 27.6 kV underground collector lines will transport the electricity generated from each turbine to the distribution substation located on private property east of Port Ryerse Road. Directional bore techniques will be used where the underground collector lines cross valleylands and watercourses. At the substation, a dip-pole connection will be made directly into the Hydro One Networks Inc. (HONI) distribution system.

As three turbine models are currently been considered, a conservative approach has been followed to assess any potential Project impacts. The Siemens SWT 3.0 113 ultimately has a longer blade length (55 m), when compared to either ENERCON models, therefore the Siemens turbine is considered to be the theoretical "worst case scenario". As the ENERCON models may have a taller hub height (108 m) than Siemens, both models have been mapped to confirm property line setbacks.

1.2 REPORT REQUIREMENTS

This Natural Heritage Assessment and Environmental Impact Study report has been prepared in accordance with the Renewable Energy Approval (REA) Ontario Regulation 359/09 (O. Reg. 359/09) and *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a). The Natural Heritage Assessment (NHA) report is provided to the Ministry of Natural Resources (MNR) for confirmation in advance of submission as part of the Renewable Energy Approval (REA) application to the Ministry of Environment (MOE).

This NHA utilizes the definition of Project Location as provided in Section 2.3 of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a). As per the definition in the REA regulation, a renewable energy Project Location includes: “...a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any airspace in which a person is engaging in or proposes to engage in the project”.

A renewable energy project includes all activities associated with the construction, installation, use, operation, maintenance, changing or retiring of the renewable energy generation facility. Therefore, for the purposes of measuring the distance from the Project Location to a natural feature, a Project Location boundary is considered to be the outer limit of the Project Location Components as shown on **Figure 1, Appendix A**. The Project location includes all areas where site preparation and construction activities will occur and where infrastructure will be located (e.g. temporary structures, lay down areas, storage facilities, generation equipment, access roads, etc.).

In addition, for consultation purposes a ‘Study Area’ has also been defined (**Figure 1, Appendix A**). The Study Area is an area that encompasses the Project Location and uses existing roadways, where possible, to define the spatial limit of the boundary. The Project Study Area is generally bounded by Port Ryerse Rd to the west, Wooley and Gilbert Roads to the north, and Lake Ontario to the south and east. The Study Area is also used in the Records Review component of this NHA report in order to identify natural features in the vicinity of the Project Location.

An NHA is required to determine whether any of the following natural heritage features exist in and/or within 120 m of the Project Location:

- Wetlands and Coastal Wetlands
- Woodlands;
- Wildlife habitat;
- Life Science Areas of Natural and Scientific Interest (ANSIs) , or within 50 m of an Earth Science ANSI;

- Natural features in specified provincial plan areas; and,
- Provincial parks and conservation reserves.

This report identifies the presence and boundaries of all natural features in or within 120 m of the Project Location based on a review of background records (Section 2) and on-site field investigations (Section 3). An Evaluation of Significance was then completed for each identified feature based on either an existing MNR designation of the feature or by using evaluation criteria or procedures established or accepted by the MNR (Section 4). Where the Project Location is in or within 120 m of a significant or provincially significant natural feature based on the evaluations of significance, an Environmental Impact Study was completed which identifies and addresses, through mitigation, any potential negative environmental effects of the Project (Section 5).

For the purposes of verifying the accuracy of the Records Review and to identify any additional natural features, a 'Zone of Investigation' has been identified based on the requirements of O. Reg. 359/09 and the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2011a). The Zone of Investigation encompasses the Project Location plus an additional 120 m surrounding the Project Location (**Figure 1, Appendix A**) and is the area within which site-specific field investigations were completed to:

- Verify whether the analysis of the Project Location undertaken through the Records Review is accurate, and make any necessary corrections to the determinations in the Records Review report;
- Determine whether any additional natural features exist in or within 120 m of the Project Location, other than those identified in the Records Review report;
- Determine the boundaries of any natural feature located in or in or within 120 m of the Project Location (identified through the Records Review report or during Site Investigation); and,
- Determine the distance from the Project Location to the boundaries of any natural features.

This ensures that any negative environmental effects that may result from construction and operation of the Project will be assessed within this report as per the requirements of O. Reg. 359/09.

The results of the NHA/EIS are consolidated into this report, which is being submitted to MNR for confirmation in advance of submission of the REA application to the MOE. Written confirmation from the MNR, as well as any written comments received from the MNR, must be submitted along with the NHA/EIS to the MOE as part of the REA application.

1.3 GUIDANCE DOCUMENTS

During the preparation of this report, several guidance documents were referenced to ensure compliance with current standards and agency requirements. These documents include:

- Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2011a)
- Bats and Bat Habitats Guidelines for Wind Power Projects (MNR 2011b)
- Birds and Bird Habitats Guidelines for Wind Power Projects (MNR 2011c)
- Significant Wildlife Habitat Technical Guide (SWHTG) (MNR 2000)
- Ontario Wetland Evaluation System, Southern Manual (MNR 2002)
- Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (MNR 2012)

2.0 Records Review

2.1 METHODS

This Records Review report was prepared in accordance with O. Reg. 359/09, s. 25 (3).

Background data were collected and reviewed to identify natural features located in or within 120 metres of the Project Location (i.e., the Zone of Investigation). Agency names and the dates they were contacted as part of the Records Review are described in **Table 1, Appendix B**.

2.2 RESULTS

A review of available background information has indicated the presence of known natural features occurring within the Study Area. The results of the Records Review search were used to determine whether the Project Location is in a natural feature, within 50 m of an Earth Science ANSI, or in or within 120 m of other natural features (as defined in Section 1.2). The locations of the features found in the Study Area, including the boundaries of all natural features relative to the Project Location, are provided in **Figure 1, Appendix A**, and described in the following sections.

2.2.1 Wetlands

The Norfolk County Official Plan (2006) and Schedule “C” Natural Heritage Areas was searched for records of wetlands. The Long Point Region Conservation Authority, Land Information Ontario and the Natural Heritage Information Centre were also contacted or searched for records of wetlands. No wetlands were identified within the Study Area based on these records.

2.2.1.1 Provincially Significant and Coastal Wetlands

Provincially significant wetlands and coastal wetlands are those evaluated by individuals trained in the use of the Ontario Wetland Evaluation System and confirmed by MNR. No provincially-significant or coastal wetlands have been identified as present in or within 120 m of the Project Location.

2.2.1.2 Locally-Significant Wetlands

No locally-significant wetlands have been identified as present in or within 120 m of the Project Location.

2.2.1.3 Unevaluated Wetlands

No unevaluated wetlands have been identified as present in or within 120 m of the Project Location.

2.2.1.4 Summary

No wetlands have been identified in or within 120 m of the Project Location. Site Investigations will be undertaken to identify any unknown wetland features in or within 120 m of the Project Location.

2.2.2 Woodlands

Woodlands are defined as treed areas, woodlots or forested areas other than cultivated fruit or nut orchards or Christmas tree plantations that are located east and south of the Canadian Shield (MNR 2011a).

The Norfolk County Official Plan (Norfolk County 2006), Natural Heritage Information Centre (NHIC 2010), Long Point Regional Conservation Area and Land Information Ontario (LIO 2009) records have indicated two woodlands as 'Natural Heritage Features'. The details of records and dates they were received are provided in **Table 1, Appendix B**. These include an approximately 30 ha mixed woodland composed of deciduous forest, mixed forest, swamp and hedgerows, and an approximately 200 ha woodland composed of deciduous forest, mixed forest and swamp. The Project is located within the woodland in the south end of the Study Area (WO02) and within 120 m of the woodland in the north end (WO03).

The boundaries of the known woodlands identified in or within 120 m of the Project Location will be verified during the Site Investigation. Site Investigations will also identify any unknown woodland features are present in or within 120 m of the Project Location.

2.2.3 Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNR 2000) provides information on the identification, description, and prioritisation of significant wildlife habitat and is the MNR's recommended guide for assessing wildlife habitat. MNR has created draft Significant Wildlife Habitat Eco-regional Criteria Schedules that support the SWHTG. These schedules provide significance criteria that are reflective of the SWHTG and specific to the geographic area of each eco-region. The schedules do not replace the SWHTG, but are companion documents to present the significance criteria for identifying candidate significant wildlife habitat in an eco-region.

Wildlife habitat is defined in the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (MNR 2012) as an area where plants, animals and other organisms live, including

areas where species concentrate at a vulnerable point in their life cycle and that are important to migratory and non-migratory species. The Significant Wildlife Habitat Technical Guide (MNR 2000) groups wildlife habitats into four categories:

- Seasonal concentration areas of animals;
- Rare vegetation communities or specialized habitat for wildlife;
- Habitat for species of conservation concern; and
- Animal movement corridors.

The Norfolk County Official Plan (2006), NHIC and Land Information Ontario were searched for records of significant wildlife habitat. The Study Area is a possible stopover habitat for migrating shorebirds, waterfowl, landbirds and butterflies as indicated by records received.

Air photo interpretation – based on air photos obtained through First Base Solutions (see **Table 1, Appendix B**) – indicates that the Project Location is comprised almost entirely of agricultural land consistent with the dominant landscape condition near Port Ryerse, ON. Woodland features were also observed based on this air photo interpretation, which concurred with records obtained from Norfolk County Official Plan (2006), NHIC and Land Information Ontario. These features form the natural wildlife habitat found in or within 120 m of the Project Location. The agricultural fields and woodlands could provide migratory stopover habitat, as indicated by the sources listed above.

Secondary source data were used to determine potential wildlife use of the Study Area. Inventories of wildlife that have been recorded as occurring within the range of the Port Ryerse Wind Project Study Area were compiled from available literature. Sources reviewed included the Atlas of the Mammals of Ontario (Dobbyn 1994), the Ontario Herpetofaunal Summary (Oldham and Weller 2000), and the Ontario Breeding Bird Atlas (Cadman et al. 2007). The potential for species to be present within the Study Area will be limited by the habitat suitability and availability supported by the Study Area. Therefore the identified species recorded from these databases may not occur within the Port Ryerse Wind Study Area.

A review of background information to assess the potential for candidate significant wildlife habitat associated with southern Ontario to be supported in the Study Area is provided in **Table 2.1**.

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
Seasonal Concentration Areas of Animals				
Waterfowl stopover and staging areas - terrestrial	These areas are important habitat for migrating waterfowl. Fields with spring flooding act as resting and feeding opportunities.	The entire Project Location is considered to be a "Stopover Habitat Study Area" by the Norfolk County <i>Official Plan</i> . Project Location identified as a migration corridor making it a possible stopover area for waterfowl by MNR.	Norfolk County <i>Official Plan</i> ; wildlife habitat descriptions	Yes
Waterfowl stopover and staging areas – aquatic	These areas are important habitat for migrating waterfowl. Ponds, marshes, lakes, bays, coastal inlets and watercourses that provide an abundant food supply (aquatic invertebrates and vegetation) act as resting and feeding opportunities.	The entire Project Location is considered to be a "Stopover Habitat Study Area" by the Norfolk County <i>Official Plan</i> . Project Location identified as a migration corridor making it a possible stopover area for waterfowl by MNR.	Norfolk County <i>Official Plan</i> ; wildlife habitat descriptions	Yes
Shorebird migratory stopover areas	Relatively undisturbed shorelines along the Great Lakes that produce abundant food (clams, insects, snails and worms) are used by shorebirds during migration (MNR 2000).	The entire Project Location is considered to be a "Stopover Habitat Study Area" by the Norfolk County <i>Official Plan</i> . Project Location identified as a migration corridor making it a possible stopover area for shorebirds by MNR.	Norfolk County <i>Official Plan</i> ; wildlife habitat descriptions	Yes
Raptor wintering areas	Hay fields, pastures and open meadows that support large and productive small mammal populations can provide critical winter feeding areas (MNR 2000). The best roosting sites are typically found in relatively mature mixed or coniferous woodlands that abut windswept fields, with scattered trees and fence posts providing perches for	Unknown, possible.	No records obtained. Agricultural fields and adjacent woodlands present based on air photo interpretation	Yes

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
	hunting (MNR 2000).			
Bat hibernacula	Bats require specific environmental conditions for hibernating. These conditions are provided by features such as caves or abandoned mines (MNR 2000). Karst topography and areas of exposed bedrock can be indicators of potentially suitable hibernacula habitat for bats.	Unknown, unlikely. The region is highlighted as vulnerable to karst geology but Ontario Geological Survey (OGS) field surveys have not been documented in the background sources consulted. Karst features will be searched for during the site visit.	Ontario Geological Survey (OGS); no karst features or abandoned mines found	Yes
Bat maternity colonies	Depending on the species, maternity roosting colonies for bats can include tree foliage, tree cavities and crevices under loose bark, or buildings. Colonies form when density of roost trees is above 10 trees / ha.	Unknown, possible.	No records found. Woodlands present based on air photo interpretation.	Yes
Turtle wintering habitat	Wintering areas for turtles are generally the same general area as their core habitat: water that is deep enough not to freeze, with soft mud substrate (MNR 2012). Candidate turtle overwintering habitat is defined as permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen (MNR 2012).	Unknown, possible.	No records of turtle wintering areas found. Site investigations will be conducted.	Yes
Snake hibernacula	Potential hibernacula are overwintering areas that include features such as animal burrows, rock crevices, fractured rocks at the base of cliffs or karst areas that provide an access for reptiles to hibernate below the frost line (MNR 2000). These areas are often associated with water to prevent desiccation of the species.	Unknown, possible. Hedgerows, woodlands and drains could contain rock piles or piled debris that could be considered candidate snake hibernacula.	No records of snake hibernacula found. Site investigations will be conducted.	Yes

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
Colonial bird nesting sites – bank and cliff	Colonial bird nesting sites can be located in swamps and along large bodies of water for herons, islands for gulls and cliffs, and in banks and artificial structures for swallows (MNR 2000).	Unknown, possible.	No records of colonially nesting bird sites found. Site investigations will be conducted.	Yes
Colonial bird nesting sites – tree/shrub		Unknown, possible.		Yes
Colonial bird nesting sites – ground		Unknown, possible.		Yes
Migratory butterfly stopover areas	During fall migration, monarchs tend to move along the north shore of the Great Lakes (Calvert 2001). Fields and other open areas with a variety of habitat types that are found within 5 km of the Lake Erie or Lake Ontario shoreline are considered candidate significant wildlife habitat for migratory butterfly stopover areas (MNR 2000).	The entire Project Location is considered to be a “Stopover Habitat Study Area” by the Norfolk County <i>Official Plan</i> . The Project Location is located near the shoreline of Lake Erie.	Norfolk County <i>Official Plan</i> and LIO; wildlife habitat descriptions	Yes
Landbird migratory stopover areas	Migratory passerines are known to use forested landscapes along Great Lakes shorelines as stopover sites during spring and fall migration (Potter et al. 2007; MNR 2000). Landbirds tend to concentrate at tips of peninsulas, congregating in significant numbers at known significant stopover sites including Point Pelee and Long Point in Lake Erie, while raptors and shorebirds concentrate along the Great Lakes during migration. Areas that provide a diversity of habitat types ranging from open grasslands to large woodlands within 5 km of the Lake Erie or Lake Ontario shorelines are considered potential candidate significant wildlife habitat for migrating landbird stopover areas (MNR 2000).	The entire Project Location is considered to be a “Stopover Habitat Study Area” by the Norfolk County <i>Official Plan</i> . The Project Location is on a migration corridor as identified by MNR.	Norfolk County <i>Official Plan</i> and LIO; wildlife habitat descriptions	Yes

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
Winter deer congregation areas	Deer winter congregation areas are applicable in the southern areas of Ecoregion 7E where deer movement in the winter is not constrained by snow depth, but where deer congregate in suitable woodlands to reduce or avoid winter conditions. Forested or treed swamp ecosites >100 ha in size or smaller conifer plantations are considered candidate significant wildlife habitat (MNR 2012).	None identified by MNR.	MNR Records Review	No
Rare Vegetation Communities and Specialized Habitat for Wildlife				
Cliffs	Vertical to near vertical bedrock > 3 m in height.	Unknown, unlikely.	No records found. Site investigations will be conducted.	Yes
Talus slopes	Rock rubble at the base of a cliff made up of coarse rocky debris.	Unknown, unlikely.	No records found. Site investigations will be conducted.	Yes
Sand barrens	Exposed deep sandy soils and rock, sparsely vegetated. Vegetation low and patchy.	Unknown, unlikely.	No records found. Site investigations will be conducted.	Yes
Alvars	Level, mostly unfractured limestone, patchy mosaic of bare rock pavement, or shallow substrate over limestone bedrock.	Unknown, unlikely.	No records found. Site investigations will be conducted.	Yes
Old growth or mature forest stands	Relatively undisturbed forests, structurally complex, large proportion of older trees, contain a wide variety of trees and shrubs in various age classes. Supports a high diversity of wildlife species.	MNR indicates there are no old growth forest stands in Project area.	MNR Records Review	No
Savannahs	Located in open, sparsely woodlands usually with dry soils and scattered trees. Ground cover dominated by prairie grasses. Tree cover 25-60%.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Tall-grass prairies	Located in open treeless areas of non-cultivated land. Ground cover dominated by prairie grasses. Tree cover < 25%.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
Rare forest types	Forest stands with rare tree associations and/or rare tree species. Rare forest types listed in SWHTG Appendix J.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Rock barrens	Open to moderately-treed sites (up to 60% crown coverage) characterized by exposed bedrock and very shallow soils (less than 15 cm)	Unknown, unlikely.	No records found. Site investigations will be conducted.	Yes
Great Lake dunes	Open vegetation communities occurring on sand dunes along the shores of the Great Lakes. Soils are severely-drained calcareous sands.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Waterfowl nesting	Waterfowl nesting habitat typically includes upland habitat that is located near marshes, ponds or lakes. Sites considered candidate significant wildlife habitat for waterfowl nesting typically contain a high density of small and medium sized ponds, or are single wetlands that are large and diverse (MNR 2000).	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Bald Eagle and Osprey nesting, foraging and perching habitat	Some raptors require somewhat specialized habitats. Critical habitat features that would support specialized Bald Eagle and Osprey nesting habitat are identified as waterbodies with fish populations and trees with good visibility and flight lines.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Woodland raptor nesting habitat	Some raptors require somewhat specialized habitats. All natural or conifer plantation, woodland or forest stands greater than 30 ha with greater than 10 ha of interior habitat are considered candidate significant woodland raptor nesting habitat.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Turtle nesting habitat	Sandy or fine gravel soils in an open landscape setting with sparse vegetation are a requirement for turtle nesting	Unknown, possible.	No records found. Site investigations will be conducted.	Yes

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
	(MNR 2000). Areas that would be considered candidate significant wildlife habitat for turtle nesting include areas containing sandy or fine gravel soils (e.g. shoreline beaches) in proximity or adjacent to wetland habitat occupied by turtles (MNR 2012).			
Seeps and springs	Seepage areas and springs provide habitat for numerous uncommon species and may support a high diversity of plant species (MNR 2000). In winter, these areas provide foraging opportunities for Wild Turkey and White-tailed Deer (MNR 2000). Those that occur within forested areas where the canopy maintains cool, shaded conditions are most important (MNR 2000).	Unknown, possible.	No records obtained. Valleylands present based on air photo interpretation	Yes
Amphibian breeding habitat – woodland	Woodland ponds may provide important habitat for local amphibian populations. Ponds that contain a variety of vegetation structure in and around the edge of the pond, are undisturbed and are found adjacent to closed canopy woodlands with dense undergrowth that maintain a damp environment typically provide the best ponds for breeding (MNR 2012).	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Amphibian breeding habitat - wetland	Wetlands and pools >500 m ² and isolated from woodlands are considered candidate significant wetland amphibian breeding habitat.	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Habitat for Species of Conservation Concern				
Marsh bird breeding habitat	Marsh breeding bird nesting occurs in wetlands with emergent aquatic vegetation (MNR 2012).	Unknown, unlikely.	No records found. Site investigations will be conducted.	Yes
Woodland area-sensitive	Woodlands of at least 30 ha and 4 ha of interior habitat are considered to have the	Unknown, possible.	No records obtained. Woodlands present based on air photo	Yes

Table 2.1: Records Pertaining to Wildlife Habitat in and within 120 m of the Port Ryerse Wind Project Location

Habitat Type	Function (SWHTG)	Records Review Findings	Source(s)	Carried Forward to the Site Investigation
breeding birds	potential to host populations of area-sensitive species (MNR 2012).		interpretation	
Open country breeding bird habitat	Grasslands of at least 30 ha are considered to have the potential to host populations of area-sensitive species (MNR 2012).	Unknown, possible.	No records obtained. Agricultural fields present based on air photo interpretation	Yes
Shrub/early successional bird breeding habitat	Shrub thicket habitats greater than 10 ha are most likely to support and sustain a diversity of shrub /early successional bird breeding species (MNR 2012).	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Terrestrial crayfish habitat	Terrestrial crayfish use meadow and the edges of shallow marshes to construct burrows (MNR 2012). The Canadian range of terrestrial crayfish is restricted to southwestern Ontario (MNR 2012).	Unknown, possible.	No records found. Site investigations will be conducted.	Yes
Special concern and rare wildlife species	All special concern, S1-S3 and SH species.	Possible. For results of Records Review search for Species of Conservation Concern, see Table 3, Appendix B.	NHIC records, Atlas of the Mammals of Ontario, Ontario Herpetofaunal Summary Atlas, and Ontario Breeding Bird Atlas used to determine special concern and rare species possibly present in the Study Area	Yes
Animal Movement Corridors				
Amphibian movement corridors	Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another (MNR 2000).	Unknown, possible.	No records found. Site investigations will be conducted.	Yes

2.2.4 Areas of Natural and Scientific Interest (ANSIs), Provincial Plan Areas, Provincial Parks, and Conservation Reserves

MNR identifies two types of ANSIs: life science and earth science. Life Science ANSIs are significant representative areas of Ontario's biodiversity and natural landscapes, while Earth

Science ANSIs are representative of geological features and consist of significant examples of bedrock, fossils and landforms in Ontario.

Provincial Plan Areas include the Oak Ridges Moraine Plan Area and the Greenbelt Plan's Protected Countryside Area. Provincial Parks are those areas identified as such by Ontario Parks. Conservation Reserves are those areas identified as such by the MNR.

There are no Provincial Parks, Conservation Reserves, Earth Science ANSIs or Life Science ANSIs present within 120 m of the Project Location according to information provided in the MNR Records Review, the Natural Heritage Information Centre (NHIC) and Land Information Ontario records (LIO 2009). These will not be carried forward through to Site Investigation.

The Study Area is not located within the Niagara Escarpment Plan Area, the Oak Ridges Moraine Conservation Plan Area or the Protected Countryside of the Greenbelt Plan. These plans will not be carried forward through to Site Investigation.

2.3 SUMMARY OF NATURAL FEATURES AND BOUNDARIES IDENTIFIED

Table 2.2 is a summary of the natural features that will be carried forward to Site Investigation.

Table 2.2: Natural Features Carried Forward to Site Investigation

Feature	Carried Forward to Site Investigation (Y/N)	Results of the Records Review for natural features in or within 120 m of the Project location
Wetlands	Y	No records
Woodlands	Y	Two woodlands identified in Norfolk County Official Plan
Valleylands	Y	No records
Wildlife Habitat		
Seasonal Concentration Areas		
• Waterfowl stopover and staging areas (terrestrial)	Y	'Stopover Habitat Study Area' identified in Norfolk County Official Plan
• Waterfowl stopover and staging areas (aquatic)	Y	'Stopover Habitat Study Area' identified in Norfolk County Official Plan
• Shorebird migratory stopover areas	Y	'Stopover Habitat Study Area' identified in Norfolk County Official Plan
• Raptor wintering areas	Y	No records
• Bat hibernacula	Y	No records
• Bat maternity colonies	Y	No records
• Turtle wintering areas	Y	No records
• Snake hibernaculum	Y	No records
• Colonial bird nesting sites (bank and cliff)	Y	No records
• Colonial bird nesting sites (tree/shrub)	Y	No records
• Colonial bird nesting sites (ground)	Y	No records
• Migratory butterfly stopover areas	Y	'Stopover Habitat Study Area' identified in Norfolk County Official Plan
• Landbird migratory stopover areas	Y	'Stopover Habitat Study Area' identified in Norfolk County Official Plan
• Deer winter congregation areas	N	None identified by MNR
Rare Vegetation Communities or Specialized Habitat for Wildlife		
Rare Vegetation Communities		
• Cliffs and talus slopes • Sand barren • Alvar • Old growth forests • Savannah • Tallgrass prairie • Other rare vegetation communities listed in Appendix M of the SWHTG	Y	No records
Specialized Habitat for Wildlife		
• Waterfowl nesting area	Y	No records

Table 2.2: Natural Features Carried Forward to Site Investigation

Feature	Carried Forward to Site Investigation (Y/N)	Results of the Records Review for natural features in or within 120 m of the Project location
• Bald Eagle and Osprey nesting, foraging, and perching habitat	Y	No records
• Woodland raptor nesting habitat	Y	No records
• Turtle nesting habitat	Y	No records
• Seeps and springs	Y	No records
• Amphibian breeding habitat (woodland)	Y	No records
• Amphibian breeding habitat (wetland)	Y	No records
Habitat for Species of Conservation Concern		
• Marsh Bird Breeding Habitat	Y	No records
• Bird Breeding Habitat (woodland area-sensitive)	Y	No records
• Bird Breeding Habitat (open country)	Y	No records
• Bird Breeding Habitat (shrub/early successional)	Y	No records
• Terrestrial Crayfish	Y	No records
• Special Concern and Rare Wildlife Species	Y	No records
Animal Movement Corridors		
• Amphibian Movement	Y	No records
Protected Areas		
Areas of Natural and Scientific Interest (ANSI)	N	None present in the Study Area
• Life Science ANSI		
• Earth Science ANSI		
Specified Provincial Plan Areas	N	None present in the Study Area
Provincial Parks and Conservation Reserves	N	None present in the Study Area

3.0 Site Investigation

Site Investigations were conducted in accordance with O. Reg 359/09, s. 26 (1), Natural Heritage Site Investigation. This report is prepared in accordance with s. 26 (3) with guidance provided from the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a).

Site Investigations in support of this report were completed with the purpose of confirming the status and boundaries of natural features identified through the Records Review and identifying any additional features (**Section 3.1**). Data collected during the Records Review concerning natural features and species occurrences were used to guide the scope and direction of Site Investigations. The extent of the Site Investigation program and type of field surveys included in the program reflects the extent of natural features and triggers for significant wildlife habitat that are identified within the Study Area. The Project is primarily sited within actively farmed agricultural fields and has been sited outside of the majority of natural features in the Study Area.

Natural features that have the potential to occur in or within 120 m of the Project Location, as identified through the Records Review, are listed in **Table 2.2**. Site Investigations are required to confirm the presence of and delineate the boundaries of natural features within 120 m of the Project Location.

3.1 METHODS

The Site Investigations were undertaken to confirm the current conditions in and within 120 m of the Project Location, and were based on the information about the Project Location and siting that was current at the time of the respective survey. M. K. Ince and Associates Ltd (“MKI”) conducted the initial Ecological Land Classification (ELC) surveys in 2011 and 2012, including bat maternity roost plot surveys and significant wildlife habitat site investigations. The ELC work was re-surveyed and adjusted by Stantec Consulting Ltd. (“Stantec”) in September 2012. The final ELC map represents work done by both parties. Survey dates, times, duration, field personnel and weather conditions are presented in **Table 4, Appendix B**. Field notes for all work completed are included in **Appendix C**. All surveys conducted within the Study Area were completed by qualified personnel. Staff summaries and qualifications for personnel involved in conducting the Site Investigations are provided in **Appendix D**. Land access was available for all land parcels where Project components are proposed, and areas within 120 m of the Project Location were traversed on foot during Site Investigations where land access was available.

All Site Investigations were carried out in accordance with O. Reg. 359/09 and the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a), using guidance provided in the SWHTG (MNR 2000) and the Draft SWH Ecoregion 7E Criterion Schedule (MNR 2012).

3.1.1 Alternative Site Investigation Methods

Alternative Site Investigations comprised of visual scans from roadsides and/or property boundaries in combination with air photos. Alternative Site Investigations consisted of assessments conducted from roadsides and property boundaries in locations within 120 m of the Project Location where access was not available. Access was not granted only on residential properties, where access was not required for ELC or other surveys due to lack of natural features.

3.1.2 Vegetation Community and Vascular Plants Assessment

Ecological Land Classification (ELC) and preliminary botanical inventories of the vegetation communities in and within 120 m of the Project Location were conducted by MKI on May 11, 2011 and June 12, 2012. Stantec re-surveyed ELC on September 19-20, 2012 and September 24, 2012.

Vegetation communities were delineated on aerial photographs and checked in the field. Vascular plant species lists were recorded separately for each community. Community characterizations were then based on the ELC system (Lee et al., 1998). English colloquial names and scientific binomials of plant species generally follow Newmaster et al. (1998). Specific emphasis was placed on searching for plant species of conservation concern identified through the Records Review with historical occurrences within the study area.

Plant species were considered rare if designated provincially as S1 (critically imperiled), S2 (imperiled), S3 (vulnerable) or SH (historic record). Species having a high coefficient of conservatism (9 or 10) as designated by Oldham et al. (1995) were also considered species of conservation concern.

3.1.3 Wetland Confirmation and Delineation

Previously unidentified wetlands within 120 m of the Project Location, or partially within 120 m, were searched for during the course of the Site Investigations and, if found, delineated using OWES methods concurrently with the vegetation community assessment and vascular plant surveys. Wetland boundaries, if found, were mapped through reconciling aerial photographs and observations made during the Site Investigations in accordance with the methods described in detail in the Ontario Wetland Evaluation System (OWES) Southern Manual (MNR 2002).

3.1.4 Woodlands

The limits of all woodlands that occur, or partially occur, in or within 120 m of the Project Location were obtained through LIO and Norfolk County Official Plan mapping and confirmed during Site Investigations. The presence and boundaries of woodlands found in the records review were confirmed during site investigations by MKI on May 11, 2011 and June 12, 2012. Stantec re-surveyed these features on September 19-20, 2012 and September 24, 2012. In the field, woodland features were delineated using the driplines of the trees. Information regarding woodland size, ecological function and uncommon characteristics was collected during ELC surveys and through GIS analysis. Treed areas identified during vegetation surveys were compared to the definition of woodlands provided in O.Reg. 359/09 to delineate the limits of woodlands.

3.1.5 Wildlife and Wildlife Habitat

Site Investigations to determine the presence of candidate significant wildlife habitat were conducted by MKI on May 11, September 14-15, and November 16, 2011, and January 30, February 13, February 26, March 28, May 11, May 18, June 2, June 6-7, June 12, and June 24, 2012. Stantec completed additional wildlife habitat work on September 19-20, 2012 and September 24, 2012. Survey information (i.e., survey times, weather conditions and field personnel) for both parties is detailed in **Table 4, Appendix B**.

Site Investigations focused on identifying any previously unknown wildlife habitats and confirming whether wildlife habitats, as identified during the Records Review, occur in or within 120 m of the Project Location. Criteria used to identify wildlife habitat were derived from the SWHTG (MNR 2000) and the Draft SWH Ecoregion 7E Criterion Schedule (MNR 2012). Specific emphasis was placed on determining whether the natural features were candidate significant wildlife habitat, in or within 120 m of the Project Location.

3.1.5.1 Seasonal Concentration Areas of Animals

Seasonal concentration areas are areas where wildlife species occur in aggregations at certain times of the year, on an annual basis. Such areas are sometimes highly concentrated with members of a given species, or several species, within relatively small areas. In spring and autumn, migratory wildlife species will concentrate where they can rest and feed. Other wildlife species require habitats where they can survive winter. Seasonal concentration area habitats have been identified by using the habitat criteria found in the SWHTG (MNR 2000) and Draft Significant Wildlife Habitat: Ecoregion 7E Criteria Schedules (MNR 2012). The habitat criteria for each seasonal concentration area, and methods employed to identify them as candidate SWH in and within 120 m of the Project Location, have been summarized in Table 3.1.

Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas

Seasonal Concentration Area type	Criteria	Methods
Waterfowl Stopover and Staging Area (Terrestrial)	<ul style="list-style-type: none"> Fields with sheet water or fields utilized by Tundra Swans during Spring (mid-March to May) or annual spring melt water flooding found in any of the following Community Types: Meadow (CUM1), Thicket (CUT1). A 100-300 m radius buffer around habitat has been considered the candidate SWH. Agricultural fields with waste grains are considered SWH only if used by Tundra Swans in the Long Point, Rondeau, Lake St. Clair, Grand Bend and Point Pelee areas. 	<ul style="list-style-type: none"> ELC field surveys and GIS analysis of the landscape were used to identify cultural meadows and thickets that flood each spring.
Waterfowl Stopover and Staging Area (Aquatic)	<ul style="list-style-type: none"> The following Community Types: Meadow Marsh (MAM), Shallow Marsh (MAS), Shallow Aquatic (SA), Deciduous Swamp (SWD). Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) The combined area of the ELC ecosites and a 100 m radius area is the SWH. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. 	<ul style="list-style-type: none"> ELC field surveys and GIS analysis of the landscape were used to identify marshes, deciduous swamps and shallow aquatic habitats.
Shorebird Migratory Stopover Area	<ul style="list-style-type: none"> Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a significant wildlife habitat. The following community types: Meadow Marsh (MAM), Beach/Bar (BB), or Sand Dune (SD) 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were present along with un-vegetated or muddy shoreline habitats
Raptor Wintering Area	<ul style="list-style-type: none"> Presence of at least one cultural and at least one woodland ELC community i.e. Deciduous Forest (FOD), Mixed 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were present.

Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas

Seasonal Concentration Area type	Criteria	Methods
	<p>Forest (FOM) or Coniferous Forest (FOC), in addition to one of the following Upland Community Types: Meadow (CUM), Thicket (CUT), Savannah (CUS), Woodland (CUW) (<60% cover)</p> <ul style="list-style-type: none"> • 0 haThe habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering sites need to be > 20 ha with a combination of forest and upland, • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15 ha) with adjacent woodlands.5 ha0 ha 	
Bat Hibernacula	<ul style="list-style-type: none"> • Hibernacula may be found in caves, mine shafts, underground foundations and karsts. • May be found in these Community Types: Crevice (CCR), Cave (CCA). • The area includes a 1000 m radius around the entrance of the hibernaculum. • Buildings are not considered SWH 	<ul style="list-style-type: none"> • Karst formations, mine shafts, underground foundations and caves were searched for during vegetation community field surveys. • Data obtained from Ontario Geological Survey was searched for any mention of karst features and/or abandoned mines within 1120 m (1000 m plus the 120 m ZOI) of the Project Location.
Bat Maternity Colonies	<ul style="list-style-type: none"> • Maternity colonies considered significant wildlife habitat are found in forested ecosites. • Any of the following Community Types: Deciduous Forest (FOD) or Mixed Forest (FOM) that have>10/ha wildlife trees >25 cm diameter at breast height (dbh). • Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3. • Northern Myotis prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred. • The area of habitat includes the entire woodland or the forest stand ELC 	<ul style="list-style-type: none"> • ELC field surveys were used to determine if suitable vegetation communities were present. • Candidate bat maternity habitat was determined by figuring out what the density of snags/cavity tree was in the woodland. This was done by using randomly selected plots, with a 12.6 m radius, as described in <i>Bats and Bat Habitats</i> (MNR 2011b), throughout the applicable habitat. Results are provided in Appendix C. A minimum of 10 plots for woodlands 10 ha or less in size is required. An additional plot is required in larger woodlands for each hectare over 10 ha, up to a maximum of 35 plots.

Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas

Seasonal Concentration Area type	Criteria	Methods
	ecosite containing the maternity colony.	
Turtle Wintering Areas	<ul style="list-style-type: none"> Snapping and Midland Painted turtles utilize ELC community classes: Swamp (SW), Marsh (MA) and Open Water (OA). Shallow Water (SA), Open Fen (FEO) and Open Bog (BOO). Northern Map turtle- open water areas such as deeper rivers or streams and lakes can also be used as over-wintering habitat. For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrate. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen. The mapped ELC community with the overwintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles overwinter is the SWH. 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were present. Open water habitats were characterized by observations of substrate material and depth.
Snake Hibernacula	<ul style="list-style-type: none"> Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features. Wetlands such as conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover can be important over-wintering habitat. Any ecosite in southern Ontario other than very wet ones may provide habitat. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, RBTA1). The feature in which the hibernacula is located plus a 30 m buffer is the SWH 	<ul style="list-style-type: none"> Specialized Site Investigations were conducted to identify potential snake hibernacula. Surveys for snakes and associated hibernacula features were conducted along edges of natural feature communities, within natural features, and along hedgerows. Habitat features that would provide an underground route, act as a potential hibernacula including exposed rock crevices or inactive animal borrows were recorded.
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	<ul style="list-style-type: none"> Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces found in any of the following Community Types: Meadow (CUM), Thicket (CUT), Bluff (BL), Cliff (CL) and 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were present. A scan for man-made structures (e.g. concrete bridges, buildings, silos or barns)

Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas

Seasonal Concentration Area type	Criteria	Methods
	<ul style="list-style-type: none"> bridge abutments, silos, or barns for Cliff Swallows. A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests. Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. Does not include a licensed/permitted Mineral Aggregate Operation. 	<ul style="list-style-type: none"> suitable for and with evidence of previous use by nesting cliff swallows was completed. Hills with exposed substrate, including river banks, were also scanned for holes indicative of a Bank or Northern Rough-winged Swallow nesting colony.
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	<ul style="list-style-type: none"> Any of the following Community Types: Mixed Swamp (SWM), Deciduous Swamp (SWD), Treed Fen (FET). The edge of the colony and a minimum 300 m area of habitat or extent of the Forest Ecosite containing the colony or any island <15.0 ha with a colony is the SWH. Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree. 	<ul style="list-style-type: none"> Swamp habitat or marshes, with an abundance of dead trees, within 420 m of the Project Location (300 m plus the 120 m ZOI) were searched for the presence of large stick nests to assess the presence of colonially-nesting bird species within suitable ELC communities.
Colonial-Nesting Bird Breeding Habitat (Ground)	<ul style="list-style-type: none"> Any rocky island or peninsula within a lake or large river. Close proximity to watercourses in open fields or pastures with scattered trees or shrubs for Brewers Blackbird. Found in any of the following Community Types: Meadow Marsh (MAM1-6), Shallow Marsh (MAS1-3), Meadow (CUM), Thicket (CUT), Savannah (CUS). Nesting colonies of gulls and terns on islands or peninsulas associated with open water or in marshy areas Brewers Blackbird colonies are found loosely on the ground or in low bushes in close proximity to streams and irrigation ditches within farmlands. The edge of the colony and a minimum 150 m area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0 ha with a colony is the SWH. 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were present. Agricultural lands were analysed to determine if any pastures were present in or within 120 m of the Project location.
Migratory Butterfly Stopover Areas	<ul style="list-style-type: none"> A combination of ELC communities, one from each landclass is required: 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were

Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas

Seasonal Concentration Area type	Criteria	Methods
	<p>Field (CUM, CUT, CUS) and Forest (FOC, FOM, FOD, CUP)</p> <ul style="list-style-type: none"> Minimum of 10 ha in size with a combination of field and forest habitat present Located within 5 km of Lake Erie Habitat should not be disturbed, and it should contain an abundance of preferred nectar plants and woodland edge for shelter 	<p>present.</p> <ul style="list-style-type: none"> Habitat size and proximity to Lake Erie was calculated
Landbird Migratory Stopover Areas	<ul style="list-style-type: none"> The following community types: Forest (FOD, FOM, FOC) or Swamp (SWC, SWM, SWD) Woodlots must be >5 ha in size and within 5 km of Lake Erie – woodlands within 2 km of Lake Erie are more significant 	<ul style="list-style-type: none"> ELC field surveys were used to determine if suitable vegetation communities were present. Woodlot size and proximity to Lake Erie were calculated

3.1.5.2 Rare Vegetation Communities or Specialized Habitats

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. Some wildlife species require large areas of suitable habitat for their long-term survival. Many wildlife species require substantial areas of suitable habitat for successful breeding. Their populations decline when habitat becomes fragmented and reduced in size. Specialized habitat for wildlife is a community or diversity-based category, therefore, the more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife.

Rare Vegetation Communities and Candidate Specialized Wildlife Habitat have been identified by using the habitat criteria found in the SWHTG (MNR 2000) and Draft SWH Ecoregion 7E Criterion Schedule (MNR 2012). The habitat criteria for each rare vegetation community and specialized wildlife habitat type, as well as the methods employed to identify the natural features as candidate SWH's, in and within 120 m of the Project Location, have been summarized in **Table 3.2**.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
Cliffs and Talus Slopes	<ul style="list-style-type: none"> • A cliff is vertical to near vertical bedrock >3 m in height. • A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris • Any ELC Ecosite within Community Series: TAO, TAS, TAT, CLO, CLS, CLT • Most cliff and talus slopes occur along the Niagara Escarpment 	<ul style="list-style-type: none"> • ELC and preliminary botanical inventories conducted by Stantec and MKI were used to assess the presence of cliffs and talus slopes.
Sand Barrens	<ul style="list-style-type: none"> • Sand barrens typically are exposed sand, generally sparsely vegetated and cause by lack of moisture, periodic fires and erosion. • They have little or no soil and the underlying rock protrudes through the surface. • Usually located within other types of natural habitat such as forest or savannah. • Vegetation can vary from patchy and barren to tree covered is 60% or less. • Any of the following Community Types: SBO1 (Open Sand Barren Ecosite), SBS1 (Shrub Sand Barren Ecosite), SBT1 (Treed Sand Barren Ecosite). • Tree cover always $\leq 60\%$. • No minimum size for sand barren area. • Sand Barrens support rare species such as provincially Endangered Forked Three-awned Grass and American Badger. By extension, sand barren sites that could support these rare species (close proximity to other populations), historically or currently should be considered for higher priority conservation. • Site must not be dominated by exotic or introduced species (<50% vegetative cover of exotics) 	<ul style="list-style-type: none"> • ELC and preliminary botanical inventories conducted by MKI and Stantec were used to assess the presence of sand barrens.
Alvars	<ul style="list-style-type: none"> • An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. • The hydrology of alvars is complex, with alternating periods of inundation and drought. • Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number 	<ul style="list-style-type: none"> • ELC and preliminary botanical inventories conducted by MKI and Stantec were used to assess the presence of alvars.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
	<p>of characteristic or indicator plant.</p> <ul style="list-style-type: none"> • Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. • Vegetation cover varies from patchy to barren with a less than 60% tree cover. • Any of the following Community Types: ALO1(Open Alvar Rock Barren Ecosite), ALS1 (Alvar Shrub Rock Barren Ecosite), and ALT1 (Treed Alvar Rock Barren Ecosite) • An Alvar site > 0.5 ha in size • Alvar is particularly rare in ecoregion 7E where the only known sites are found in the western islands of Lake Erie • Site must not be dominated by exotic or introduced species (<50% vegetative cover of exotics) 	
Savannahs	<ul style="list-style-type: none"> • A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. • Tallgrass Prairie (TGP) and savannah were historically common in the near-shore areas of the Great Lakes. • In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario). • Any of the following Community Types: TPS1 (Dry-Fresh Tallgrass Mixed Savanna Ecosite), TPS2 (Fresh-Moist Tallgrass Deciduous Savanna Ecosite), TPW1 (Dry-Fresh Black Oak Tallgrass Deciduous Woodland Ecosite), TPW2 (Fresh-Moist Tallgrass Deciduous Woodland Ecosite), CUS2 (Bedrock Cultural Savannah Ecosite). • No minimum size to site • Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover of exotics) 	<ul style="list-style-type: none"> • ELC and preliminary botanical inventories conducted by MKI and Stantec were used to assess the presence of savannahs.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
Tall-grass Prairies	<ul style="list-style-type: none"> • A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. • Tallgrass Prairie (TGP) and savannah were historically common in the near-shore areas of the Great Lakes • In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario). • Any of the following Community Types: TPO1 (Dry Tallgrass Prairie Ecosite), TPO2 (Fresh-Moist Tallgrass Prairie Ecosite). • No minimum size to site • Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover of exotics) 	<ul style="list-style-type: none"> • ELC and preliminary botanical inventories conducted by MKI and Stantec were used to assess the presence of tall-grass prairies.
Other Rare Vegetation Communities	<ul style="list-style-type: none"> • Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps. • Provincially Rare S1, S2 and S3 vegetation communities • Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH. • The OMNR/NHIC will have up to date listing for rare vegetation communities. 	<ul style="list-style-type: none"> • ELC and preliminary botanical inventories conducted by MKI and Stantec were used to identify vegetation communities. The NHIC was referenced to assess the presence of other rare vegetation communities.
Waterfowl Nesting Area	<ul style="list-style-type: none"> • All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: • MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4 • Note: includes adjacency to Provincially Significant Wetlands • Nesting areas extend 120 m from a wetland greater than 0.5 ha • A nesting area could also extend from a 	<ul style="list-style-type: none"> • The results of ELC surveys and GIS analysis of the landscape were used to identify upland areas of open habitat that occurred adjacent to a marsh, pond, swamp or swamp thicket communities or clusters of these vegetation communities within 120 m of the Project Location.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
	<p>wetland greater than 0.5 ha that has smaller wetlands (less than 0.5 ha) within 120 m of it</p> <ul style="list-style-type: none"> • A nesting area may also extend 120 m from a cluster of 3 or more wetlands that are less than 0.5 ha and within 120 m of other wetlands where nesting is known to occur. • Field studies may indicate nesting areas are larger or smaller than 120 m but in any case provide enough habitat for waterfowl to successfully nest. • Upland areas should be at least 120 m wide • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nests. 	
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	<ul style="list-style-type: none"> • Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). • ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For Osprey the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH and maintaining undisturbed shorelines with large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of habitat from 400-800 m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat. 	<ul style="list-style-type: none"> • Searches for stick nests (active or not) as well as a vegetation community assessment using ELC were conducted during surveys in the fall of 2011 and spring of 2012.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> • All natural or conifer plantation woodland/forest stands combined >30 ha or with >4 ha of interior habitat. Interior habitat determined with a 200 m buffer. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Cooper's hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. • May be found in all forested ELC Ecosites. • May also be found in SWC, SWM, SWD and CUP3 • For Red-shouldered Hawk and Northern Goshawk a 400 m radius around the nest or 28ha of suitable habitat is the SWH. • For Barred Owl a 200 m radius around the nest is the SWH. • For Broad-winged Hawk and Coopers Hawk a 100 m radius around the nest is the SWH • For Sharp-shinned Hawk a 50 m radius around the nest is the SWH 	<ul style="list-style-type: none"> • Searches for stick nests (active or not) as well as a vegetation community assessment using ELC were conducted during surveys in the fall of 2011 and spring of 2012.
Turtle Nesting Areas	<ul style="list-style-type: none"> • Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC Ecosites: • MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, BOO1, FEO1 • Best nesting habitat for turtles is close to water, away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. 	<ul style="list-style-type: none"> • As lands within the Study Area consisted primarily of cultivated agricultural cropland, the search for turtle nesting habitat focused on watercourses and any marshy wetlands with mineral soils within 120 m of the Project Location. • ELC field surveys were used to determine if suitable vegetation communities were present

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
	<ul style="list-style-type: none"> The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is SWH. Travel routes from wetland to nesting area are to be considered within the SWH 	
Seeps and Springs	<ul style="list-style-type: none"> Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs. Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat 	<ul style="list-style-type: none"> As the Study Area consisted primarily of cultivated agricultural cropland, the search for seeps or springs focused on the woodlands within 120 m of the Project Location.
Amphibian Breeding Habitat (Woodland)	<ul style="list-style-type: none"> All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians Presence of a wetland, lake, or pond within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat The habitat is the woodland (ELC polygon) and wetland (ELC polygon) combined. A travel corridor connecting the woodland 	<ul style="list-style-type: none"> The ELC vegetation communities with the potential to support amphibian breeding habitat (woodland) were assessed by Stantec during vegetation assessment surveys. Each feature was visited, and areas of standing water or areas which showed evidence of holding water through the spring (based on topography and vegetation) were identified. Size of pools, presence and depth of standing water, surrounding vegetation community, emergent and submergent vegetation and canopy cover were recorded.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat

Rare Vegetation Communities and Specialized Wildlife Habitat types	Criteria	Methods
	and wetland polygons is to be included in the habitat.	
Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> • ELC Community Classes SW, MA, FE, BO, OA and SA. • Wetland areas >120 m from woodland habitats. • Wetlands and pools (including vernal pools) >500 m² (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. • The ELC ecosite wetland area and the shoreline are the SWH • If a SWH is determined for Amphibian Breeding Habitat (wetland) then Movement Corridors are to be considered. 	<ul style="list-style-type: none"> • ELC field surveys were used to determine if suitable vegetation communities were present • Each feature was visited, and areas of standing water or areas which showed evidence of holding water through the spring (based on topography and vegetation) were identified.

3.1.5.3 Habitats for Species of Conservation Concern

Vegetation communities in and within 120 m of the Project Location were assessed for their suitability to support the habitats of special concern and rare species that are known to occur or have the potential to occur within the vicinity of the Study Area (**Table 3, Appendix B**).

Habitat for species of conservation concern have been identified by using the habitat criteria found in the SWHTG (MNR 2000) and Draft SWH Ecoregion 7E Criterion Schedule (MNR 2012). The habitat criteria for each habitat for species of conservation concern type, as well as the methods employed to identify the natural features as candidate SWH's, in and within 120 m of the Project Location, have been summarized in **Table 3.3**.

Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern

Habitat for Species of Conservation Concern type	Criteria	Methods
Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> Nesting occurs in wetlands. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently it may be found in upland shrubs or forest at a considerable distance from water. All wetland habitats with shallow water and emergent aquatic vegetation. May include any of the following Community Types: Meadow Marsh (MAM), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO), or for Green Heron: Swamp (SW), Marsh (MA) and Meadow (CUM) Community Types. Area of the ELC ecosite is the SWH 	<ul style="list-style-type: none"> Site Investigations were conducted to assess the potential for this habitat using ELC.
Woodland Area-sensitive Bird Breeding Habitat	<ul style="list-style-type: none"> Habitats where interior forest breeding birds are breeding, typically large mature (>60yrs old) forest stands or woodlots >30 ha. Interior forest habitat is at least 200 m from forest edge habitat These include any of the following Community Types: Forest (FO), Treed Swamp (SW) 0 ha 	<ul style="list-style-type: none"> Site Investigations were conducted to assess the potential for woodlots within 120 m of the Project Location >30 ha in size with the potential to host populations of woodland area-sensitive bird breeding habitat, through the delineation and verification of forest communities by ELC.
Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> Grassland areas > 30 ha that are not Class 1 or Class 2 agricultural lands, and have no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Type: Meadow (CUM). Condition of existing habitat at site (level of disturbance) is an important consideration. where a grassland has a significant history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 yrs or older it should be considered significant if use is not intensive. 	<ul style="list-style-type: none"> Site Investigations were conducted to assess the potential for open country/grassland communities in and within 120 m of the Project Location to support area-sensitive bird species, through the delineation and verification of grassland communities by ELC.

Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern

Habitat for Species of Conservation Concern type	Criteria	Methods
Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> Oldfield areas succeeding to shrub and thicket habitats >10 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Types: Thickets (CUT), Savannahs (CUS), or Woodlands (CUW). Shrub thicket sites considered significant should have a history of longevity, either abandoned fields or pasturelands. The area of the SWH is the contiguous ELC ecosite field/thicket area. 	<ul style="list-style-type: none"> Site Investigations were conducted to assess the potential for this habitat type using ELC to delineate, cultural woodlands, thicket and savannah type communities.
Terrestrial Crayfish	<ul style="list-style-type: none"> Meadow and edges of shallow marshes (no minimum size) In the following community types: Meadow Marsh (MAM) and Shallow Marsh (MAS) Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. Area of the ELC ecosite polygon is the SWH 	<ul style="list-style-type: none"> Site Investigations were conducted to assess the potential for this habitat type using ELC to delineate meadow marsh and shallow marsh type communities.
S1-S3, SH and Special Concern Species	<ul style="list-style-type: none"> All Special Concern or provincially rare plant and animal species element occurrences within a 1 or 10 km grid. When an element occurrence is identified within a 1 km or 10 km grid for a Special Concern or provincially rare species; linking candidate habitat on the site needs to be completed to ELC ecosite. The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. 	<ul style="list-style-type: none"> Table 3, Appendix B provides a description of each species of conservation concern, (found within a 1 km grid overlaying the Project location), and their associated habitat. This list was then used to determine if any of the ELC communities present meet the habitat requirements listed. Those habitats that have corresponding ELC communities are candidate SWH.

3.1.5.4 Animal Movement Corridors

Vegetation communities within 120 m of the Project Location were assessed for their suitability to support animal movement corridors that are known to occur or have the potential to occur

within the vicinity of the Study Area. Assessments are only carried out for amphibian movement corridors when significant amphibian breeding habitat (wetland) has been identified.

Amphibian movement corridors are identified by using the habitat criteria found in the SWHTG (MNR 2000) and Draft Significant Wildlife Habitat: Ecoregion 7E Criteria Schedules (MNR 2012). The habitat criteria and methods to identify them in and within 120 m of the Project Location, have been summarized in **Table 3.4**.

Table 3.4: Characteristics Used to Identify Candidate Animal Movement Corridors

Animal Movement Corridor type	Criteria	Methods
Amphibian Movement Corridor	<ul style="list-style-type: none"> Corridors may be found in all ecosites associated with water Determined based on identifying significant amphibian breeding habitat (wetland). Movement corridors will be between breeding habitat and summer habitat Corridors should consist of native vegetation, roadless area, no gaps such as fields, waterways or bodies, and undeveloped areas are most significant. Corridors should be at least 200 m wide with gaps <20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their breeding habitat. 	<ul style="list-style-type: none"> Identified after Amphibian Breeding Habitat - Wetland (see Section 3.1.6.2) is confirmed Site Investigations, if necessary, will be conducted after this confirmation to identify movement corridors. These will include: <ul style="list-style-type: none"> Field studies conducted in spring when amphibian species are expected to be moving to breeding sites Movement studies could include a combination of drift fencing, pitfall traps, behavioural surveys, based on appropriateness for species found in amphibian breeding habitats (wetlands) and discussions with the MNR

3.2 RESULTS

The Project Location, and areas within 120 m of it, was comprised primarily of actively cultivated cropland and pasture. Natural features are described in **Section 3.2.1**.

Field notes for the Site Investigations carried out by MKI and Stantec are provided in **Appendix C**.

A summary of all natural features within 120 m of the Project Location is provided in **Tables 6, 7 and 8 (Appendix B)**.

3.2.1 Vegetation Community and Vascular Plants Assessment

Site Investigations identified two discrete naturally-vegetated woodland features and nine candidate SWH's in or within 120 m of the Project Location. Corrections to the records review included one valley feature and one woodland feature as located greater than 120 m from the Project Location. Corrections to the records review for wildlife habitat are listed in below in the sub-sections of 3.2.4 and in Table 3.9.

Each natural feature was delineated and assigned a unique identification number and an appropriate ELC vegetation community code (as per Lee et al., 1998) (**Figure 2, Appendix A**). The features are summarized in **Tables 6, 7 and 8 (Appendix B)**. Vegetation communities present are not considered provincially rare (NHIC 2010). These tables describe the type, attributes, composition, function and significance (if known) of each natural feature. Delineated ELC communities are shown on **Figure 2, Appendix A**.

3.2.2 Wetlands

There were no wetlands found in or within 120 m of the Project Location as a result of site investigations. No corrections are required to the Records Review. Wetlands will not be brought forward to the Evaluation of Significance.

3.2.3 Woodlands

Two woodlands were identified in or within 120 m of the Project Location during the Site Investigation (WO02 and WO03), and the boundaries confirmed to match those in LIO and Norfolk County Official Plan mapping. There are no corrections required to the Records Review as a result of site investigations. An Evaluation of Significance is required for both of these features. **Table 6 (Appendix B)** lists all woodlands identified and described their attributes, composition, and function. The Project Location passes under Woodland 2 (WO02): underground collector lines are proposed to pass under this woodland using directional drilling.

Potential woodland communities that were beyond 120 m of the Project Location and were not contiguous with identified features, as determined through air photo interpretation, were not included as part of the feature mapping.

3.2.4 Wildlife and Wildlife Habitat

Results of the Site Investigations for wildlife habitat are summarized in the following sections. The results are evaluated using criteria for significant wildlife habitat as outlined within the SWHTG (MNR 2000) and the Draft Significant Wildlife Habitat Ecoregion 7E Criterion (MNR 2012) in order to determine whether natural communities within 120 m of the Project Location support candidate significant wildlife habitat. Features associated with candidate significant wildlife habitat are identified in the following sections, and illustrated in **Figure 3, Appendix A**.

Table 7 (Appendix B) lists all candidate significant wildlife habitats identified and describes their attributes, composition, and function. Corrections to the Records Review are shown in **Section 3.3**.

In the following sections where habitat searches are conducted outside of the 120 m Zone of Investigation for the Project, it is due to the fact that some wildlife habitats present outside of the Project location may have boundaries that extend into the Project location based on the guidance provided by the SWHTG (MNR 2000) and the accompanying Ecoregion Criteria Schedules (MNR 2012). Thus if a 300 m buffer is applied to a habitat type, a search of 120 m plus 300 m (420 m) was searched for this habitat type.

Where a candidate significant wildlife habitat is located not in but within 120 m of the Project Location but outside 120 m of specific Project components that would have an operational impact, they are treated as 'Generalized Candidate Significant Wildlife Habitat' as described in Appendix D of the NHA Guide (MNR 2011a). This type of habitat is treated as significant and described further in the Environmental Impact Study Report.

3.2.4.1 Seasonal Concentration Areas of Animals

The Site Investigation involved a thorough assessment of natural areas for the SWH category, seasonal concentration areas of animals. Potential habitat for seasonal concentration areas was examined during the Site Investigation phase, and is discussed in **Table 3.5**.

Table 3.5: Summary of Site Investigation Results for Candidate Seasonal Concentration Areas

Seasonal Concentration Area types	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Waterfowl Stopover and Staging Area (Terrestrial)	No	Potential for fields with sheet water or field utilized by tundra swans during the spring in or within 420 m of Project Location given soils with high clay content and no tile drainage; however, no sheet water observed in spring 2012. Therefore, no potential waterfowl stopover areas are located in or within 120 m of the Project Location.	No
Waterfowl Stopover and Staging Area (Aquatic)	No	No suitable ELC ecosites identified. No suitable habitat identified within 220 m of Project Location (since the habitat includes 100 m surrounding the ecosites a 220 m radius from Project Location was applied) – no wetlands, ponds or lakes (closest potential habitat is ~260 m away on Lake Erie shoreline SE of T4).	No
Shorebird Migratory Stopover Area	No	No suitable ELC ecosites identified. No suitable habitat identified within 220 m of Project Location – no wetlands, ponds or lakes (closest potential habitat is ~260 m away on Lake Erie shoreline SE of T4).	No
Raptor Wintering Area	No	No suitable habitat identified in or within 120 m of the Project Location. No combination of fields and forest > 20 ha in size with at least 15 ha in least disturbed agricultural field/meadow. Agricultural fields consist of	No

Table 3.5: Summary of Site Investigation Results for Candidate Seasonal Concentration Areas

Seasonal Concentration Area types	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
		annual row crops (corn, winter wheat and soy).	
Bat Hibernacula	No	No caves, mine shafts, underground formations or karsts found in or within 1120 m of Project Location.	No
Bat Maternity Colonies	Yes	Density of snags was calculated by dividing the total number of snags found (12) by the total area of the 33 survey plots (1.7 ha); density calculated as 7 snags/ha in woodland WO02, therefore the density criterion for candidate bat maternity colony was not met. Woodland WO03 is identified as Generalized Candidate SWH.	No (WO02) and Generalized (WO03)
Turtle Wintering Areas	No	No permanent water bodies or large wetlands with water deep enough not to freeze and soft mud substrates were identified in or within 120 m of the Project Location.	No
Snake Hibernacula	No	No rock piles, stone walls, old foundations, karst or burrows were identified in or within 120 m of the Project Location during any of the site visits.	No
Colonial-Nesting Bird Breeding Habitat (bank/cliff)	No	No eroding banks, sandy hills, burrow pits, steep slopes, sand piles and cliff faces to provide for colonially-nesting bird breeding habitat identified in or within 120 m of Project Location (considered specifically in valleys, given evidence of eroding valley slopes).	No
Colonial-Nesting Bird Breeding Habitat (tree/shrub)	No	No nests in live or dead standing trees and no wetlands, lakes, islands and peninsulas within 120 m of the Project Location.	No
Colonial-Nesting Bird Breeding Habitat (ground)	No	No islands or peninsulas associated with open water or in marshy areas within 120 m of the Project Location for gulls and terns. No MAM1-6, MAS1-3, CUM, CUT, or CUS communities found within 120 m of the Project Location for Brewer's Blackbird.	No
Migratory Butterfly Stopover Areas	No	No undisturbed fields/meadows > 10 ha in size located within 120 m of Project Location to provide combination of field (undisturbed) and forest habitat for butterfly stopover.	No
Landbird Migratory Stopover Areas	Yes	Suitable habitat identified in woodland WO02 within 120 m of Project Location. Woodland WO03 is identified as Generalized Candidate SWH.	Yes (WO02) and Generalized (WO03)

3.2.4.2 Rare Vegetation Communities or Specialized Habitats for Wildlife

Site Investigation results pertaining to rare vegetation communities and specialized habitats in and within 120 m of the Project Location are summarized in **Table 3.6**. Rare vegetation community types or specialized habitats for wildlife that were not found to be candidate significant wildlife habitats will not be carried forward to the Evaluation of Significance phase.

Table 3.6: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat

Candidate Rare Vegetation Community/Specialized Wildlife Habitat	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Cliffs and Talus Slopes	No	Rare vegetation communities (cliffs and talus slopes) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Sand Barrens	No	Rare vegetation communities (sand barrens) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Alvars	No	Rare vegetation communities (alvars) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Savannahs	No	Rare vegetation communities (savannahs) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Tall-grass Prairies	No	Rare vegetation communities (tall-grass prairie) were not observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Other Rare Vegetation Communities	No	No other rare vegetation communities were observed during ELC and vegetation surveys in and within 120 m of the Project Location.	No
Waterfowl Nesting Area	No	No suitable ELC Ecosite codes or suitable nesting areas identified within 240 m of the Project Location for waterfowl nesting. No wetlands with open water were identified on site.	No
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	Yes	No Bald Eagle or Osprey nests identified (no nests or nesting behaviour noted) in suitable ELC ecosites.	Yes
Woodland Raptor Nesting Habitat	Yes	Woodland WO02 does not have interior habitat and is not considered candidate. Woodland WO03 contains 12 ha of interior habitat and is identified as Generalized Candidate SWH.	No (WO02) and Generalized (WO03)
Turtle Nesting Areas	No	No areas found adjacent to or within suitable ELC ecosites. No open sunny areas near water; no sand or gravel beaches adjacent to undisturbed shallow weedy areas of marshes lakes and rivers within 120 m of the Project Location were identified.	No
Seeps and Springs	Yes	Candidate identified in Woodland WO02 which contains headwaters of several intermittent streams. Woodland may contain seeps that would provide feeding and drinking areas for wildlife.	Yes
Amphibian Breeding Habitat (Woodland)	Yes	Both woodlands were classified as 'fresh to moist' and may contain vernal pooling in the spring. Both woodlands (WO02 and WO03) are considered candidate amphibian breeding habitat.	Yes
Amphibian Breeding Habitat (Wetland)	No	No suitable habitat areas found; no wetlands identified in or within 120 m of the Project Location.	No

3.2.4.3 Species of Conservation Concern

Site Investigation results pertaining to habitats for species of conservation concern in and within 120 m of the Project Location are summarized in **Table 3.7**. Species of conservation concern habitats for which no candidate significant wildlife habitat was found, will not be carried forward to the Evaluation of Significance phase.

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Marsh Bird Breeding Habitat	No	No suitable ELC ecosites identified in or within 120 m of the Project Location; no marshes, fens or bogs with shallow water and emergent aquatic vegetation.	No
Woodland Area-sensitive Bird Breeding Habitat	Yes	Woodland WO02 is larger than 30 ha (34 ha), but does not have interior habitat (habitat at least 200 m from forest edge). WO03 is 235 ha in size and provides 12 ha of interior habitat, but is treated as Generalized Candidate SWH because it is not located within 120 m of a proposed wind turbine.	No (WO02) and Generalized (WO03)
Open Country Bird Breeding Habitat	No	No >30 ha grassland areas not being actively used for farming located within 120 m of Project Location (all agricultural areas are actively used for row crops).	No
Shrub/Early Successional Bird Breeding Habitat	No	No large natural field areas succeeding to shrub and ticket habitats > 10 ha in size located within 120 m of Project Location. A few narrow thicket hedgerows were identified with a total area of 1.3 ha, however they do not meet the size criterion for this habitat.	No
Terrestrial Crayfish	No	No meadow or shallow marshes exist within 120 m of the Project Location.	No
Special Concern and Rare Wildlife Species			
Pignut Hickory	Yes	Pignut Hickory was identified within a hedgerow during Site Investigations.	Yes
Puttyroot	No	Puttyroot occurs in moist to swampy deciduous forests. Suitable habitat for Puttyroot does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Green Dragon	No	Green Dragon occurs in mesic to wet deciduous woods, thickets, and bottomlands. Suitable habitat for Green Dragon does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Yellow Bartonian	No	Yellow Bartonian occurs in wet meadows and sphagnum bogs. Suitable habitat for Yellow Bartonian does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Rugulose Grapefern	No	Rugulose Grapefern occurs in woodlands and edges, and grassy open areas. Suitable habitat for Rugulose Grapefern exists within 120 m of the Project Location; however, this species was not observed during Site Investigations.	No
Autumn Coral-root	No	Autumn Corral-root is found in dry, sandy woods, including old pine plantations. Suitable habitat for Autumn corral-root does not in or within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Yellow Corydalis	No	Yellow Corydalis is found in moist, loose soil on forested rock outcrops, slopes and bottomlands. Suitable habitat for Yellow Corydalis does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Annual Yellow Flatsedge	No	Annual Yellow Flatsedge is found in southwestern Ontario sites in moist, often sandy sites. Habitat for Annual Yellow Sedge exists within 120 m of the Project Location; however, this species was not observed during Site Investigations.	No
Ram's-head Lady's-slipper	No	Ram's-head Lady's Slipper usually occurs on acidic soils in coniferous and mixed forests, coniferous fens, and beach thickets. Suitable habitat for Ram's-head Lady's-Slipper does not exist in or within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Hairy Hawkweed	No	Hairy hawkweed occurs in dry sandy woods and prairies. Suitable habitat for Hairy hawkweed does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Yellow Stargrass	No	Yellow Stargrass occurs in sandy open ground and forests, as well as fens and mesic meadows. Suitable habitat for Yellow Stargrass does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Sharp-fruited Rush	No	Sharp-fruited rush occurs in wet soil in lowland forests, meadows, and shorelines. Suitable habitat for Sharp-fruited Rush does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Grass-leaved Rush	No	Grass-leaved rush preferred habitat includes open sandy ground, or prairies. Suitable habitat for grass-leaved rush does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Hairy Green Sedge	No	Hairy Green Sedge occurs in meadows, dry to mesic woods, with neutral to basic soils. More frequently occurring in open, non-forested habitats. Suitable habitat does exist within 120 m of the Project Location; however, this species was not observed during Site Investigations.	No

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Sundial Lupine	No	Sundial Lupine occurs in dry, open forests and clearings. Suitable habitat for Sundial Lupine does not exist in or within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Biennial Gaura	No	Biennial Gaura may occur on river banks, roadsides, fields, or vacant lots. These types of habitats occur within 120 m of the Project Location; as a result suitable habitat for Biennial Gaura exists within 120 m of the Project Location; however, this species was not observed during Site Investigations.	No
Slender Paspalum	No	Slender Paspalum grows in sandy open ground, fields and oak woodlands. Suitable habitat for Slender Paspalum does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Halberd-leaved Tearthumb	No	Halberd-leaved Tearthumb occurs in swamps and wet ground along streams and lakes. No swamps or wetlands were identified in or within 120 m of the Project Location. Suitable habitat for Halberd-leaved Tearthumb does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Broad Beech Fern	No	Broad Beech fern occurs in moist areas of rich deciduous forests such as the base of slopes and along seeps and streams. Suitable habitat exists within 120 m of the Project Location; however, this species was not observed during Site Investigations.	No
Moss Phlox	No	Moss Phlox occurs in sandy and gravelly soil or rock- ledges in clearings, shores, banks, and roadsides. Open areas within 120 m of the Project Location consist of active agriculture. As a result no suitable habitat for Moss Phlox exists within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Slender Knotweed	No	Slender Knotweed is found in dry, sandy open prairie, savannah, and woodland habitats. Suitable habitat for Slender Knotweed does not exist within 120 m of the Project Location. No prairie, woodland or savannah communities are found within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Dwarf Chinquapin Oak	No	Dwarf Chinquapin Oak is usually found on deep sand or dry shale, less often on calcareous soil at the edges of forests. Soils within 120 m of the Project Location are sandy; as a result suitable habitat for Dwarf Chinquapin Oak may exist within 120 m of the Project Location at forest edges; however, this species was not observed during Site Investigations.	No
Shiny Wedge Grass	No	Shiny wedge grass grows on clay and silt slopes and banks in deciduous or coniferous forests. Soils within 120 m of the Project Location have been described as sandy	No

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
		as a result suitable habitat for Shiny wedge grass does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	
Yellow Ladies'-tresses	No	Yellow Ladies-Tresses are found on dry, open sites, usually on acidic sandy soil. Open sites within 120 m of the Project Location consist of active agriculture. Suitable habitat is not found within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Palmate-leaved Violet	No	Palmate-leaved Violet is found in dry forests, with oak, hickory, beech and/or maple, and occasionally thickets. Suitable habitat for Palmate-leaved Violet is found within 120 m of the Project Location; however, this species was not observed during Site Investigations.	No
Painted Skimmer	No	The Painted Skimmer is most often found in habitats which include marshy bays, ponds and streams. This habitat is not found within 120 m of the Project Location. As a result habitat for the Painted Skimmer does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Cyrano Darner	No	Cyrano Darner primarily breeds in slow moving streams and lakes, occasionally foraging in forests. Although forested habitat occurs within 120 m of the Project Location, no breeding habitat exists within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Mottled Darner	No	Mottled Darner requires shallow ponds, bays and lakes for breeding and feeding habitat. No suitable habitat exists within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Green-striped Darner	No	Green-striped Darner requires marsh-bordered lakes or spring ponds for breeding and feeding habitat. Habitat for the Green-striped Darner does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Lilypad Clubtail	No	Lilypad Clubtail requires sluggish muck bottom streams, or ponds and lakes with abundant floating vegetation. It is also rarely observed south of the Canadian shield. No habitat to support Lilypad Clubtail exists within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Clamp-tipped Emerald	No	Clamp-Tipped Emerald requires fast flowing forest streams, which include rapids and pools. No habitat to support Clamp-Tipped Emerald exists within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Tulip Tree Silk Moth	No	No Tulip trees were identified during Site Investigations. As a result no habitat for the Tulip Tree Silk moth exists within 120 m of the Project Location. This species was not observed during Site Investigations.	No

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Monarch butterfly	No	There are no cultural meadows or areas with natural field vegetation >10 ha that would be able to support breeding for this species.	No
Snapping Turtle	No	No wetlands which would support Snapping Turtle exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Northern Map Turtle	No	No water bodies of sufficient size to support Northern Map Turtle exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Eastern Ribbonsnake	No	Eastern Ribbonsnake prefers sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water; wet meadows, grassy marshes or sphagnum bogs; borders of ponds, lakes or streams. No candidate reptile hibernacula were identified during Site Investigations. Critical habitat which would support Eastern Ribbonsnake (snake hibernacula) does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Eastern Milksnake	No	Eastern Milksnake prefers farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings. No candidate reptile hibernacula were identified during Site Investigations. Critical habitat which would support Eastern Milksnake (snake hibernacula) does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No
Red-headed Woodpecker	Yes	Suitable habitat for Red-headed Woodpecker is found within 120 m of the Project Location in the woodlands. This species was not observed during Site Investigations.	Yes (WO02) and Generalized (WO03)
Bald Eagle	Yes	Bald Eagles observed using winter and fall roosts during Site Investigation. Proximity to lake Erie of the observation may indicate suitable winter habitat. One immature and two adult Bald Eagles (<i>Haliaeetus leucocephalus</i>) were observed perched on a White Pine (<i>Pinus strobus</i>) along the shore of Lake Erie, located approximately 230 m southeast of T4, in winter 2011. This tree is part of a hedgerow extending from WO02. The location of the perch tree is provided on Figure 3, Appendix A . Further work is required to fully delineate the habitat. Preconstruction behavioural surveys will be conducted to determine the full extent of the habitat, including associated flight paths, as described in the Environmental Impact Study.	Yes
Small-footed Bat	Yes	Generalized candidate significant bat maternity roosting was identified in WO03, which could provide habitat for this species. This species will be considered under Bat Maternity Roosts and Bat Hibernacula.	Yes as Seasonal Concentration areas of

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
			animals – Bat Maternity Colony SWH type
Northern Long-eared Bat	Yes	Generalized candidate significant bat maternity roosting was identified in WO03, which could provide habitat for this species. This species will be considered under Bat Maternity Roosts and Bat Hibernacula.	Yes as Seasonal Concentration areas of animals – Bat Maternity Colony SWH type
Eastern Pipistrelle	Yes	Generalized candidate significant bat maternity roosting was identified in WO03, which could provide habitat for this species. This species will be considered under Bat Maternity Roosts and Bat Hibernacula.	Yes as Seasonal Concentration areas of animals – Bat Maternity Colony SWH type
Woodland Vole	No	Woodland vole requires mature forests with sandy soils and heavy leaf litter resulting in a deep humus layer. Woodlots within 120 m of the Project Location were identified as young, with few to no mature trees greater than 50 cm dbh. As a result, suitable habitat for woodland vole does not exist within 120 m of the Project Location. This species was not observed during Site Investigations.	No

3.2.4.4 Animal Movement Corridors

Site Investigation results pertaining to animal movement corridors in and within 120 m of the Project Location are summarized in **Table 3.8**. Animal movement corridors that were not observed in the Study Area will not be carried forward to the Evaluation of Significance phase.

Table 3.8: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern

Candidate Animal Movement Corridor	Present in or within 120 m of Project Location	Rationale	Carried Forward to EOS (Y/N)
Amphibian Movement Corridor	No	No candidate amphibian breeding habitat (wetland) was identified; therefore, there are no amphibian movement corridors identified.	No

3.3 SITE INVESTIGATION RESULTS SUMMARY

Table 3.9 provides a summary of the natural features that will be carried forward to the Evaluation of Significance.

Table 3.9: Natural Features Carried Forward to Evaluation of Significance

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Identified in Records Review	Evaluation of Significance Required
Woodlands				
W002	Woodland	WT – 3 AR – 9 UL – overlapping BO – 5	Yes	Yes
W003	Woodland	AR – 58	Yes	Yes
Seasonal Concentration Areas				
LBMS01	Landbird Migratory Stopover Areas	WT – 3 AR – 9 UL – overlapping BO – 5	No	Yes
Rare Vegetation Communities and Specialized Habitat for Wildlife				
SPA01	Seeps and Springs	WT – 3 AR – 9 UL – overlapping BO – 5	No	Yes
ABH01	Amphibian Breeding Habitat (Woodland)	AR – 58	No	Yes
ABH03	Amphibian Breeding Habitat (Woodland)	WT – 3 AR – 9 UL – overlapping BO – 5	No	Yes
Habitat for Species of Conservation Concern				
SCS01	Pignut Hickory	WT – 45 AR – 98 UL – 96 BO – 58	No	Yes
SCS03	Bald Eagle	habitat extent to be determined through preconstruction surveys	No	Yes
RHW01	Red-headed Woodpecker	WT – 3 AR – 9 UL – overlapping BO – 5	No	Yes
Generalized Significant Wildlife Habitats				
Landbird Migratory Stopover Area (W003), Woodland Area-Sensitive Bird Breeding Habitat (W003), Woodland Raptor Nesting Habitat (W003), Bat Maternity Colony (W003), Red-Headed Woodpecker Habitat (RHW02)		Not within 120 m of infrastructure identified in Appendix D of the Natural Heritage Assessment guide that will have an operational impact on the habitats. Therefore these habitats will be carried forward to the Environmental Impact Study where they will be treated as significant and general construction mitigation will be applied.	No	Significant - Generalized

Legend: WT: Wind Turbine; UL: Underground Transmission Line; AR: Access Road, OL: Overhead Transmission Line, BO: Balance of Operations, BU: Building/Substation

Natural features identified in the Records Review were confirmed through the Site Investigation program. Corrections made to the Records Review are provided in **Table 5, Appendix B**.

3.4 QUALIFICATIONS

Personnel responsible for conducting the Site Investigation are listed in **Table 4, Appendix B**. Staff summaries and qualifications are provided in **Appendix D**.

4.0 Evaluation of Significance

Natural heritage information collected from the Records Review and Site Investigation were analyzed to determine the significance and sensitivity of existing natural heritage features and their ecological functions. For all natural features existing in, or within 120 m of, the Project Location, a determination was made of whether the natural feature is provincially significant, significant, not provincially significant or not significant.

Natural features present in and within 120 m of the Project Location requiring an Evaluation of Significance are identified in **Table 3.10**.

4.1 METHODS

4.1.1 Wetlands

Wetlands were determined to be provincially significant if they had been identified as such by MNR. This information was obtained from Natural Heritage Information Centre (NHIC) and through correspondence with the local MNR District. Locally significant wetlands are those that have been evaluated but did not receive sufficient points to be considered provincially significant. Wetlands that have yet to be examined are termed unevaluated and were assessed during the Site Investigations using evaluation criteria or procedures established or accepted by MNR.

Sources used in the Evaluation of Significance to assess the natural features within 120 m of the Project Location included:

- Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2011a);
- Significant Wildlife Habitat Technical Guide (MNR 2000); and
- Draft SWH Ecoregion 7E Criterion Schedule (MNR 2012).

Provincial designations for special concern species were obtained from the most recent Committee on the Status of Species at Risk in Ontario (COSSARO 2010) assessments. Federally, designations for endangered, threatened and special concern species were obtained from the most recent Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2010) assessments and the schedules of the *Species at Risk Act* (SARA) were used to determine species protection.

Within the context of O. Reg 359/09, endangered and threatened species are addressed as part of MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements and are therefore not included as part of this NHA. Information required with regards to endangered and threatened species is being submitted to MNR under separate

cover as part of the Port Ryerse Wind Power Project APRD Report. Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process.

Specific methods used in the Evaluation of Significance for each type of natural feature are detailed in the following sections.

4.1.2 Woodlands

Guidance provided in Section 6.2.2 of the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2011a) was used to evaluate woodlands. The Study Area falls within Norfolk County, which has a forested cover of 25% (Norfolk County 2010). This falls in the 16-30% category of woodlands (MNR 2011a). As described in **Section 3.2.3**, two woodlands were located within 120 m of the Project Location, and required an Evaluation of Significance.

4.1.3 Wildlife and Wildlife Habitat

4.1.3.1 Seasonal Concentration Areas of Animals

The criteria and methods used to evaluate the significance of candidate significant wildlife seasonal concentration areas in and within 120 m of the Project Location are presented in **Table 4.1**.

Table 4.1: Criteria and Methods Used to Evaluate Seasonal Concentration Areas of Animals

Candidate Seasonal Concentration Area	Criteria	Methods	Natural Feature ID
Landbird Migratory Stopover Areas	<ul style="list-style-type: none">Studies confirm the use of the woodlot by >200 birds/day and with >35 species with at least 10 bird species recorded on at least 5 different survey dates.	<ul style="list-style-type: none">Studies completed during fall migration period (August-October). Evaluation methods followed "Bird and Bird Habitats: Guidelines for Wind Power Projects" for woodland migratory bird stopover areasA combination of standardized walking transects established within and along the edge of candidate habitat, were conducted in the early morning hours.A commitment has been made to complete pre-construction surveys of habitat use during the spring migration season as well to provide full baseline information	<ul style="list-style-type: none">LBMS01

4.1.3.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for rare vegetation communities or specialized habitat for wildlife in or within 120 m of the Project Location are presented in **Table 4.2**.

Table 4.2: Criteria and Methods Used to Evaluate the Significance of Rare Vegetation Communities or Specialized Habitat for Wildlife

Candidate Rare Vegetation Community or Specialized Habitat for Wildlife	Criteria	Methods	Natural Feature ID
Seeps and Springs	<ul style="list-style-type: none"> • Presence of a site with 2 or more seeps/springs is considered significant • The area of the ELC forest ecosite is the SWH 	<ul style="list-style-type: none"> • A search for seeps and springs was conducted concurrently with ELC vegetation community classification, conducted by M.K. Ince and Associates and Stantec • During the ELC surveys, the entire woodland was searched for evidence of seeps and/or springs • Seeps and springs are where ground water reaches the surface, typical of headwater areas 	<ul style="list-style-type: none"> • SPA01
Amphibian Breeding Habitat (Woodland)	<ul style="list-style-type: none"> • Presence of breeding population of 1 or more of the listed salamander species (i.e., Eastern Newt, Blue-spotted Salamander or Spotted Salamander) or 2 or more of the listed frog species (i.e., Gray Treefrog, Spring Peeper, Western Chorus Frog or Wood Frog) with at least 20 individuals (adults, juveniles, eggs/larval masses). • The habitat is the woodland (ELC polygons) and wetland (ELC polygons) combined, or in the case of a wetland, the wetland and shoreline. • A travel corridor connecting the woodland and wetland polygons is to be included in the habitat. 	<ul style="list-style-type: none"> • M.K. Ince and Associates undertook studies to determine presence of a breeding population. These were conducted during the spring (April-June) when amphibians were concentrated around suitable breeding habitat within or near the woodland. • Salamander observational studies were conducted by M. K. Ince and Associates, prior to leaf-out period on March 28, 2012, to search for breeding populations of one or more of the salamander species in the wooded areas and their egg masses in any wet areas or pooling water. Focused surveys were done at five survey stations and Salamander Egg Surveys Observation Forms were filled out. Salamanders and their egg masses were also 	<ul style="list-style-type: none"> • ABH01, ABH03

Table 4.2: Criteria and Methods Used to Evaluate the Significance of Rare Vegetation Communities or Specialized Habitat for Wildlife

Candidate Rare Vegetation Community or Specialized Habitat for Wildlife	Criteria	Methods	Natural Feature ID
		<p>searched for during all spring site visits.</p> <ul style="list-style-type: none"> Evaluation methods for anuran call surveys followed the 'Marsh Monitoring Protocol' (BSC 2003). This type of surveys involves three visits, one in each of early, mid and late spring. Three-minute anuran call counts are conducted after dark when temperatures meet the standards of this protocol for the different seasons of anurans. 	

4.1.3.3 Habitat for Species of Conservation Concern

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for species of conservation concern for wildlife in and within 120 m of the Project Location are presented in **Table 4.3** on the following page.

Table 4.3: Criteria and Methods Used to Evaluate the Significance of Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Criteria	Methods	Natural Feature ID
Special Concern and Rare Wildlife Species	<ul style="list-style-type: none"> Presence of Pignut Hickory 	<ul style="list-style-type: none"> This species was identified in a hedgerow by M.K. Ince and Associates during ELC classification The Ecoregion criteria schedule 7E indicates that the habitat should be mapped to the finest ELC scale that protects the habitat form and function. 	<ul style="list-style-type: none"> SCS01
	<ul style="list-style-type: none"> Annual use of winter perching habitat by Bald Eagle 	<ul style="list-style-type: none"> This species was first observed incidentally by M.K. Ince and Associates biologists, on a candidate winter perch, during the site investigations. A commitment has been made to 	<ul style="list-style-type: none"> SCS03

Table 4.3: Criteria and Methods Used to Evaluate the Significance of Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Criteria	Methods	Natural Feature ID
		<p>treat this candidate SWH as significant until such time as preconstruction behavioural studies can be completed during the winter of 2012/2013 and the full extent of the habitat delineated.</p> <ul style="list-style-type: none"> The EIS describes how the habitat boundary is delineated and how the habitat will be verified as significant vs. non-significant wildlife habitat. 	
	<ul style="list-style-type: none"> Presence of Red-headed Woodpecker 	<ul style="list-style-type: none"> Field investigations were conducted in the identified habitats in spring and early summer when birds are singing and defending their territories by M.K. Ince and Associates Avian point count surveys were conducted at seven locations that exhibited characteristics of suitable red-headed woodpecker habitat (forest edges, hedgerows). Point counts were done three times in June, each survey 10 days apart. Field staff recorded all birds observed within a 150 m radius of the point count locations for 10 minutes. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" 	<ul style="list-style-type: none"> RHW01

4.2 RESULTS

Results of the Evaluation of Significance are shown in **Figure 4, Appendix A** and outlined in **Tables 9 and 10, Appendix B**. The locations of individual features relative to the Project Location are shown on figure 4. The following sections summarize the results of the Evaluation of Significance for natural features within 120 m of the Project Location.

4.2.1 Woodlands

Criteria for woodland significance were applied to each of the woodland features located within 120 m of the Project Location. If at least one criteria was met, the woodland was determined to be significant. Results of the evaluation are provided in **Table 8, Appendix B**. According to

Ontario Base Mapping (LIO 2009), neither of the woodlands were found to be the largest in the lower-tier or single-tier municipality, and as such are not significant by this criterion. The woodland cover within the county is 25% which falls in the 16-30% category (Norfolk County 2010).

Both of the woodlands (WO02 and WO03) met the criteria for significance based on criteria standards within the Natural Heritage Assessment Guide for Renewable Energy Projects.

WO02 is a deciduous woodland made up of three vegetation communities: FOD9-4 (Fresh-moist Shagbark Hickory Deciduous Forest), FOD5-2 (Dry – Fresh Sugar Maple Beech Deciduous Forest), and FOD 4-2 (Dry – Fresh White Ash Deciduous Forest). It meets the criteria for significance in four categories: size (> 4 ha), proximity to other significant woodlands or habitats (it contains significant wildlife habitat as a landbird migratory stopover area), water protection (it contains streams), and woodland diversity representation (it is dominated by native tree species).

WO03 is a deciduous woodland containing one vegetation community: FOD7-4 (Black Walnut Lowland Deciduous Forest). It meets the criteria for significance in five categories: size (> 4 ha), interior habitat (it contains 12 ha of interior habitat), proximity to other significant woodlands or habitats (it contains generalized significant wildlife habitat), water protection (it contains streams), and woodland diversity representation (it is dominated by native tree species).

The two significant woodlands located within 120 m of the Project Location are shown on **Figure 4, Appendix A**. The Project Location is proposed to pass under one significant woodland (Woodland 2 – WO02). Underground cabling is proposed to cross under two thin sections of Woodland 2, using directional drilling. An Environmental Impact Study has been completed for both significant woodlands (**Section 5.2.1**).

4.2.2 Wildlife and Wildlife Habitat

4.2.2.1 Seasonal Concentration Areas

Evaluations of significance for candidate SWH for seasonal concentration areas in or within 120 m of the Project Location are presented in **Table 4.4**. Results of the field surveys, where applicable, are provided in **Appendix C**. These features are shown on **Figure 4, Appendix A**.

Table 4.4: Summary of Evaluation of Significance Results for Seasonal Concentration Areas

Candidate Seasonal Concentration Areas	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Landbird Migratory	Yes	LBMS01 was surveyed for twenty early-morning visits in the fall of 2012. Ten of the twenty visits had greater than 200	Yes

Table 4.4: Summary of Evaluation of Significance Results for Seasonal Concentration Areas

Candidate Seasonal Concentration Areas	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Stopover Areas		individual birds and all twenty visits had greater than 10 species. Greater than 35 species were observed over the entire season. Therefore, this habitat is significant landbird migratory stopover habitat. Further spring surveys have been committed to prior to construction to complete baseline data for this habitat.	

4.2.2.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

Evaluations of significance for candidate SWH for rare vegetation communities or specialized habitat for wildlife within 120 m of the Project Location are presented in **Table 4.5**. Results of the field surveys, where applicable, are provided in **Appendix C**. These features are shown on **Figure 4, Appendix A**.

Table 4.5: Summary of Evaluation of Significance Results for Rare Vegetation Communities or Specialized Habitat for Wildlife

Candidate Rare Vegetation Communities or Specialized Habitat for Wildlife	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Seeps and Springs	No	A detailed survey of WO02 was conducted on 2012-06-12. In addition, seeps and springs were searched for during five other site visits. There were no seeps or spring found within WO02. Consequently, this candidate SWH does not meet the criteria for significance and is not carried forward to the <i>Environmental Impact Study Report</i> .	No
Amphibian Breeding Habitat (Woodland)	No	No salamanders or egg masses were observed during the focused salamander surveys or during the remainder of the spring site visits. No anuran calls were observed at habitat ABH01(c) during any of the focused anuran call counts. This candidate SWH does not meet criteria for significance and will not be carried forward to the <i>Environmental Impact Study Report</i> . Four species were observed at habitat ABH03(c): gray treefrog (two individuals), American toad (two individuals), spring peeper (three individuals), and green frog (one individual). Due to the low number of individuals (<20), this candidate SWH does not meet criteria for significance and will not be carried forward to the <i>Environmental Impact Study Report</i> .	No

4.2.2.3 Habitat for Species of Conservation Concern

Evaluations of significance for candidate SWH for rare vegetation communities or specialized habitat for wildlife in or within 120 m of the Project Location are presented in **Table 4.6**. Results of the field surveys, where applicable, are provided in **Appendix C**. These features are shown on **Figure 4, Appendix A**.

Table 4.6: Summary of Evaluation of Significance Results for Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)
Bald Eagle Winter Perching Habitat	Yes	This habitat is considered significant until such time as preconstruction surveys have been completed.	Yes
Pignut Hickory	Yes	Following consultation with the MNR it was confirmed that the entire fencerow habitat, or SCS01(c), is evaluated as significant. The presence of a single tree within the fencerow requires that the entire fencerow ELC polygon (finest ELC Ecosite identified through detailed field studies) is SWH. Therefore, SCS01 will be carried forward to the <i>Environmental Impact Study Report</i> .	Yes
Red-headed Woodpecker	No	No Red-headed Woodpeckers were observed during any field surveys in the Study Area, including targeted breeding Red-headed Woodpecker surveys in June 2011. Therefore, the candidate habitat (RWH01) is not considered significant wildlife habitat for Red-headed Woodpecker.	No

4.3 SUMMARY

This Natural Heritage Assessment was undertaken to identify natural features found in or within 120 m of the Project Location and evaluate their significance. Based on an Evaluation of Significance, significant natural features identified in or within 120 m of the Project Location are presented in **Table 4.7**.

Table 4.7: Natural Features Carried Forward to Evaluation of Significance

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
Woodlands				
W002	Woodland	WT – 3 AR – 9 UL – overlapping BO – 5	Yes	Yes
W003	Woodland	AR – 58	Yes	Yes
Seasonal Concentration Areas				
LBMS01	Landbird Migratory Stopover	WT – 3	Yes	Yes

Table 4.7: Natural Features Carried Forward to Evaluation of Significance

Feature ID	Feature Type	Distance to Project Infrastructure Within 120 m (m)	Significant? (Y/N)	Carried Forward to EIS (Y/N)
	Areas	AR – 9 UL – overlapping BO – 5		
Rare Vegetation Communities and Specialized Habitat for Wildlife				
SPA01	Seeps and Springs	WT – 3 AR – 9 UL – overlapping BO – 5	No	No
ABH01	Amphibian Breeding Habitat (Woodland)	AR – 58	No	No
ABH03	Amphibian Breeding Habitat (Woodland)	WT – 3 AR – 9 UL – overlapping BO – 5	No	No
Habitat for Species of Conservation Concern				
SCS01	Pignut Hickory	WT – 45 AR – 98 UL – 96 BO – 58	Yes	Yes
SCS03	Bald Eagle Winter Perching Habitat	>120 m from Project Location; habitat extent to be determined	Treated as Significant	Yes
RHW01	Red-headed Woodpecker	WT – 3 AR – 9 UL – overlapping BO – 5	No	No
Generalized Significant Wildlife Habitats				
Landbird Migratory Stopover Area (WO03), Woodland Area-Sensitive Bird Breeding Habitat (WO03), Woodland Raptor Nesting Habitat (WO03), Bat Maternity Colony (WO03), Red-headed Woodpecker Habitat (RHW02)		Not in or within 120 m of infrastructure identified in Appendix D of the NHA guide that will have an operational impact on the habitats. Therefore these habitats will be carried forward to the Environmental Impact Study where they will be treated as significant and general construction mitigation will be applied.	Treated as Significant	Yes

Legend: WT: Wind Turbine; UL: Underground Transmission Line; AR: Access Road, OL: Overhead Transmission Line, BO: Balance of Operations, BU: Building/Substation

The locations of the significant features are presented in **Figure 4, Appendix A**.

An Environmental Impact Study Report will be prepared to identify and assess any negative environmental effects and develop mitigation measures to avoid adverse effects on these features.

5.0 Environmental Impact Study

The primary mitigation measure employed to reduce impacts to natural features and functions was avoidance of natural features. Micro-siting decisions were made during the development of the Project layout and considered minimizing impacts to natural features, wildlife and wildlife habitat. The Project is sited predominately within actively cultivated agricultural land.

Underground cabling is proposed to pass under one significant woodland (WO02) and two wildlife habitats treated as significant: LBMS01 and SCS03, but to mitigate this overlap, the cabling will be directional drilled underneath to effectively avoid these features. The boundaries of the habitat for Bald Eagle (SCS03) have not yet been determined, and will be determined prior to construction. Prior to this determination of location, the habitat will be treated as significant and treated as though the Project overlaps with this habitat.

Parts of the 120 m Zone of Investigation include other significant woodlands and wildlife habitat. As noted in **Section 4.3**, significant natural features that occur in or within 120 m of the Project Location are identified in **Table 4.7**. As such, an EIS is required to assess potential negative environmental effects and identify mitigation measures designed to prevent or minimize potential negative effects.

As per O. Reg. 359/09 Project components are not permitted in a provincially-significant southern wetland. However, projects may be sited within 120 m of a provincially-significant southern wetland and in, or within 120 m of a significant woodland, significant wildlife habitat or Life Science ANSI or within 50 m of an Earth Science ANSI, if an Environmental Impact Study (EIS) is prepared that identifies and addresses any negative environmental effects on the feature and identifies mitigation measures.

Given the diversity of natural heritage features, some of the features qualify as significant under multiple designations. For example, a significant woodland often exhibits criteria for significant wildlife habitat. Where a feature is considered significant for multiple natural heritage designations, the impacts and mitigation as they relate to each function are discussed within the analysis of impacts to the feature in **Section 5.2**.

5.1 PROJECT FOOTPRINT OVERVIEW

The proposed Project Location is situated near the hamlet of Port Ryerse, within Norfolk County, Ontario.

Within the Project Location a 'constructible area' has been defined and includes the Project Location as well as additional land around the Project Location that allows for movement and workspace for construction purposes. The 120 m Zone of Investigation and the assessment of potential effects was applied to the Project Location that included the constructible area. All

construction activities including construction of temporary components will be limited to inside of the constructible area but the entire constructible area may not be used at each Project component. The constructible areas have been reduced in size in areas where constraints exist (e.g. natural features) and construction will be limited to the smaller area.

Three wind turbine models have been assessed as part of the REA process; ultimately only one turbine model will be selected:

- Siemens SWT 3.0 113 (these are 3 MW turbines that will be customized to 2.5 MW for the Project;
- ENERCON E-92 2.35 MW; and,
- ENERCON E-82 E2 2.3 MW.

Regardless of the turbine model selected, the Project will consist of 4 wind turbine generators, located in the same locations, for a total maximum installed nameplate capacity of up to 10 MW. In addition to the 4 wind turbine generators, the Project will include step-up transformers located adjacent to the base of each turbine (step up voltage from approximately 0.69 kV to 27.6 kV), a 27.6 kV underground collector system, fibre optic data lines, a distribution substation, a permanent parking lot (if required), a meteorological tower; and turbine access roads.

As three turbine models are currently been considered, a conservative approach has been followed to assess any potential Project impacts. The Siemens SWT 3.0 113 ultimately has a longer blade length (55 m), when compared to either ENERCON models, therefore the Siemens turbine is considered to be the theoretical “worst case scenario”. As the ENERCON models may have a taller hub height (108 m) than Siemens, both models have been mapped to confirm property line setbacks.

The constructible area at each turbine location is 65 m x 55 m and will be used as a construction staging area. Crane pads will be constructed at the same time as the access roads and will be adjacent to turbine locations (within the constructible area around each turbine). Crane paths for turbine erection will follow access roads; in the event that a crane path crosses fields cranes will follow collector line corridors and with a constructible area of 40 m x 22 m, which will be 0.5 m deep.

The roads will be 6 m wide (6 m wide within 100 m of the turbines) and their construction will reach a depth of 0.5 m consisting of 0.4 m of aggregate with 0.1 m of gravel on the surface.

The access roads are wider at turning areas. During construction portions of the road between Turbine # 2, 3, and 4 will be 11 metres wide to accommodate crane walks.

Temporary components during construction may include storage and staging areas at the turbine locations, crane pads, staging areas along access roads, delivery truck turnaround areas, and a central laydown area. It is anticipated that the substation location may be used as

a central laydown area prior to construction if needed. No operations and maintenance building or transmission line is anticipated to be required for the Project. No Project components are located within municipal road Rights of Way (ROWs).

The 27.6 kV underground collector lines will transport the electricity generated from each turbine to the distribution substation located on private property east of Port Ryerse Road. Directional bore techniques will be used where the underground collector lines cross watercourses. At the substation, a dip-pole connection will be made directly into the Hydro One Networks Inc. (HONI) distribution system. Underground collector lines will largely follow internal road routes between the turbines and the substation, at which metering, communications and control equipment will be located. The Project Location (including constructible area), and the associated 120 m Zone of Investigation, in relation to significant natural features are shown on **Figure 4, Appendix A**.

5.2 NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE CONSTRUCTION AND DECOMMISSIONING PHASES OF THE PROJECT

5.2.1 Significant Woodlands

Both of the woodlands (WO02 and WO03) met the criteria for significance based on criteria standards within the Natural Heritage Assessment Guide for Renewable Energy Projects. Potential negative impacts and proposed mitigation measure during the construction and decommissioning phases of the Project are detailed in **Table 9, Appendix B**.

The primary mitigation strategy was avoidance of the significant woodlands. The two significant woodlands located in or within 120 m of the Project Location are shown on **Figure 4, Appendix A**. The Project Location will avoid WO02 through the use of directional drilling underneath.

Woodland Feature 2 (WO02) is a 36 ha woodland that was determined to be significant based on four of the seven criteria: woodland size, proximity to other significant habitat, water protection, and woodland diversity. It contains wildlife habitat treated as significant for landbird migratory stopover area and Bald Eagle winter perching. This woodland is proposed to have an underground cabling directionally drilled under two thin sections. No vegetation removal is proposed for the construction of this component. Where directional drilling passes under WO02, entry/exit pits will be located at least 30 m from the natural feature.

Alteration or removal of vegetation for construction of Project components could have the potential to affect both flora and fauna through loss of species diversity, by reducing or fragmenting available habitat (especially for species with low mobility), the introduction or spread of invasive species, and the temporary disruption to movement of wildlife. Impacts such as soil erosion and compaction during construction are expected to be minimal given the small area and edge habitat. Potential impacts and mitigation requirements to significant woodlands

are described in **Table 9, Appendix B** as well as in the general construction mitigation recommendations in **Table 5.1** below.

5.2.2 Significant Wildlife Habitats

The following significant wildlife habitats were identified in or within 120 m of the Project Location (**Figure 4, Appendix A**):

- Migratory Landbird Stopover Area (LBMS01)
- Pignut Hickory Habitat (SCS01)
- Bald Eagle Winter Perching Habitat (SCS03*)

*This habitat has not been evaluated and is being treated as significant in this report. It will be evaluated prior to construction. If the feature is deemed significant the mitigation proposed in **Table 9, Appendix B** will be applied. However, if the feature is deemed not significant no mitigation will be applied for the feature.

Negative environmental effects caused by construction and decommissioning activities along with mitigation measures used to address impacts are detailed in **Table 9, Appendix B**.

5.2.2.1 Migratory Landbird Stopover Area

There is one significant wildlife habitat for a migratory landbird stopover and staging area: LBMS01 (**Figure 4, Appendix A**). LBMS01 is 36 ha in size, comprised of deciduous forest. It is located in the southern portion of the study area, and it is located along the shoreline. Directional drilling will be used to avoid this significant feature. No vegetation removal is proposed for the construction of this component. Project components located within 120 m of each feature are summarized in **Table 4.7**. No direct impacts to migratory landbird stopover areas are anticipated from construction of the Project, as no encroachment into, or removal of, this habitat type is proposed. Where directional drilling passes under LBMS01, entry/exit pits will be located at least 30 m from the natural feature.

Potential indirect impacts to migratory landbirds from the Project during construction include disturbance due to increased traffic, noise, or dust. The most adverse impacts associated with construction noise typically occur if critical life cycle activities are disrupted (i.e. nesting, mating). Because migrating landbirds in general are able to use a much wider range of habitat types during migration compared to the breeding season, it is expected that the effects of disturbance would be less significant during migration than during the breeding season.

Potential negative impacts and proposed mitigation measures during the construction and decommissioning phases of the Project are detailed in **Table 9, Appendix B**.

5.2.2.2 Bald Eagle Habitat

One feature is treated as significant wildlife habitat for Bald Eagles area: SCS03 (**Figure 4, Appendix A**). The extent of habitat for SCS03 is unknown at this time, but the adjacent woodland is comprised of deciduous forest. It is located in the eastern portion of the study area along the Lake Erie shoreline. This habitat will be studied during behavioural surveys in winter 2012. Methods for these surveys, approved by the MNR, are attached in **Appendix E**.

Bald Eagles could use habitat that extends into the Zone of Investigation; however, the tree used by the observed Bald Eagles in winter 2011 is further than 120 m from the Project Location. It is located approximately 229 m from a wind turbine.

Potential indirect impacts to Bald Eagles from the Project during construction include disturbance due to increased traffic, noise, or dust. The most adverse impacts associated with construction noise typically occur if critical life cycle activities are disrupted (i.e. nesting, mating). Because Bald Eagles in general are able to use a much wider range of habitat types during winter roosting compared to the breeding season, it is expected that the effects of disturbance would be less significant during winter roosting than during the breeding season.

Potential negative impacts and proposed mitigation measures during the construction and decommissioning phases of the Project are detailed in **Table 9, Appendix B**.

5.2.3 Generalized Significant Wildlife Habitats

In addition to the series of wildlife habitats identified above, a number of wildlife habitat types have also been identified that may be present within the Study Area, but are located in or within 120 m of Project components that do not have an operational impact on these habitats. These include Landbird Migratory Stopover Area (WO03), Woodland Area-Sensitive Bird Breeding Habitat (WO03), Woodland Raptor Nesting Habitat (WO03), and Bat Maternity Colony (WO03). In accordance with the Natural Heritage Assessment Guide (MNR 2011a), potential impacts to these habitats are typically associated with the temporary disturbance of construction activity and can be grouped together as generalized impacts and mitigation measures.

The full suite of wildlife habitats that require generalized consideration have been reviewed, and used to develop a comprehensive list of general construction mitigation measures that will be implemented during the construction and decommissioning phases (**Table 10, Appendix B**) of the Project.

5.3 OTHER GENERAL CONSTRUCTION MITIGATION

All general construction mitigation measures recommended for this Project are summarized in **Table 5.1**. The table includes the mitigation measure, the objective(s) and specific locations where each mitigation measure should be applied.

Table 5.1: Summary of Construction Phase Mitigation Measures Recommended

Potential Negative Environmental Effects	Mitigation Measure	Objective(s)	Location(s)
Vegetation removal	Any vegetation removal required along roadside collector lines should be minimized, and occur entirely within the road right-of-way.	Minimize vegetation removal and impacts on wildlife habitats	Underground Collector Lines
	Any accidentally damaged trees should be pruned through the implementation of proper arboricultural techniques	Protect tree species from permanent damage	Entire Project
Erosion and sedimentation	Develop and implement an erosion and sedimentation control plan.	Protect natural features and wildlife habitats, where appropriate	Entire Project
	Clearly delineate work area using silt fencing or similar barrier	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature or wildlife habitat: Significant woodlands and significant wildlife habitat*
	Maintain erosion control measures for the duration of construction or decommissioning activities.	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature or wildlife habitat: Significant woodlands and significant wildlife habitat*
	Suspend work if high runoff volume is noted or excessive sediment discharge occurs	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature or wildlife habitat: Significant woodlands and significant wildlife habitat*
	No vehicle traffic on exposed soils, and no heavy machinery traffic on slopes	Limit unnecessary risk of increased erosion, turbidity or sedimentation	Entire Project
	Re-vegetate temporary access roads or crane paths to pre-construction conditions as soon as possible.	Limit the potential for erosion or sedimentation due to exposed soil conditions	Entire Project
	Maintain existing vegetation buffers around water bodies	Minimize the potential for erosion, and protect wildlife habitat, within riparian areas	Entire Project
	Store any Stockpile material more than 30 m from a wetland, woodland, or water body	Limit the potential for increased erosion within 30 m of significance natural features	Entire Project
	Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as	Minimize the presence of exposed soil to reduce the	Horizontal Directional

Table 5.1: Summary of Construction Phase Mitigation Measures Recommended

Potential Negative Environmental Effects	Mitigation Measure	Objective(s)	Location(s)
	possible after construction	potential for erosion	Drilling
Soil or water contamination	Conduct all maintenance activities, vehicle refueling or washing, and chemical storage more than 30 m from any significant feature.	Minimize the risk of contamination or chemical spill around significant natural features	Entire Project
	Develop a spill response plan, train staff on appropriate procedures, and keep emergency spill kits on site.	Minimize potential long-term effects or significance contaminations in the event an accidental spill occurs	Entire Project
	Dispose of waste material using authorized and approved offsite vendors	Limit the potential for contamination of significant natural features	Entire Project
	Collect drill cuttings as they are generated and place in a soil bin or bag for off-site disposal	Limit the potential for soil or water contamination	Horizontal Directional Drilling
Groundwater, surface water, and soil moisture regime changes	Implement infiltration techniques to the maximum extent possible.	Minimize potential impacts to soil moisture regime and groundwater stores	Entire Project
	Design roads to promote infiltration.	Minimize potential impacts to soil moisture regime and groundwater stores	Entire Project
	Minimize grading activities to maintain existing drainage patterns, to the fullest extent possible.	Maintain existing surface water drainage patterns	Entire Project
	Control rate and timing of water pumping, and restrict taking of water during periods of extreme low flow.	Limit potential impacts on water temperature, surface water storage, and wildlife habitat	Entire Project
	Pump from deep wells to infiltration galleries adjacent to natural features.	Minimize impacts to ground water stores, or water bodies	Entire Project
	Control quantity and quality of stormwater discharge using best management practices.	Maintain water flow patterns similar to pre-construction conditions and avoid potential contamination of water sources	Entire Project
Disturbance to breeding birds	Avoid vegetation removal during the breeding bird season (May 1st-July 31st). If construction activities cannot be avoided during breeding season a qualified biologist will confirm no nests are present in areas proposed for vegetation removal.	Avoid impacts to locally breeding bird species or nesting success	Significant bird habitat*
Disturbance to natural vegetation, significant features, and wildlife habitats	Prohibit use of herbicides within significant features or wildlife habitats.	Avoid impacts to natural vegetation species, significant features, and wildlife habitats	Significant woodlands and significant wildlife habitat*

Table 5.1: Summary of Construction Phase Mitigation Measures Recommended

Potential Negative Environmental Effects	Mitigation Measure	Objective(s)	Location(s)
	Locate horizontal directional drill entry/exit pits at least 30 m from any significant natural feature	Minimize impacts on significant natural features, water bodies, and wildlife habitat	Horizontal Directional Drilling

** Only if these habitats evaluated as significant in this report or are determined to be significant through pre-construction surveys described in **Table 11, Appendix B***

5.4 NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE OPERATIONAL PHASE OF THE PROJECT

5.4.1 Significant Woodlands

The primary mitigation strategy was avoidance of the woodland features, and there is underground cabling proposed to go under Woodland 2. This Project component will receive minimal maintenance activities throughout the operational life of the Project. In addition, the factors making this woodland significant (woodland size, proximity to other significant habitats, water protection, and woodland diversity representation) are not impacted by the proposed development; therefore, there are no anticipated negative environmental effects during the operation phase of the wind Project.

5.4.2 Significant Wildlife Habitat

The primary mitigation strategy was avoidance of the significant wildlife habitat. Potential operational impacts to SWH and the required monitoring, mitigation, and contingency measures are described in **Table 11, Appendix B**.

Bald Eagle Winter Perching Habitat was not evaluated prior to the completion of this report. This habitat is required to be evaluated prior to construction. Should it be evaluated as significant, the monitoring, mitigation, and contingency measures described in **Table 11, Appendix B** will be applied. If the habitat is not significant, mitigation will not be required. Evaluation methods for this habitat are provided in **Appendix E**.

Landbird Migratory Stopover Area Habitat was evaluated as significant based on the fall survey results. Pre-construction surveys will continue, however, in spring 2013 to provide a complete baseline understanding of this habitat. Complete evaluation methods for this habitat are provided in **Appendix E**.

5.5 ENVIRONMENTAL EFFECTS MONITORING PLAN

The REA Regulation requires that applicants prepare an environmental effects monitoring plan as part of the Design and Operations Report to demonstrate how any negative environmental

effects of the Project will be mitigated, and to set out a program for ongoing monitoring of the effectiveness of mitigation measures. The environmental effects monitoring plan includes a description of:

- Performance objectives for mitigation of each negative environmental effect
- Mitigation measures planned to achieve performance objectives
- How the Project will be monitored to ensure that mitigation strategies are meeting performance objectives, and
- A contingency plan to be implemented should monitoring reveal that mitigation measures have failed to meet objectives.

Table 11, Appendix B provides information pertaining to this requirement, including the methods to be used, locations of monitoring, frequency of sample collection, how the results of the monitoring plan will be reported and contingency measures that will be undertaken.

5.6 SUMMARY OF IMPACTS AND MITIGATION

The Project includes the erection of four wind turbines and installation of supporting infrastructure, including access roads, electrical cabling, and a substation. A comprehensive review of background material in conjunction with site-specific investigations and Evaluation of Significance, resulted in identification of several significant, or presumed significant, natural features and wildlife habitats in or within 120 m of the Project Location.

This Environmental Impact Study includes recommendations for a series of monitoring commitments and mitigation measures to be implemented as part of this Project. These recommendations have been developed in consideration of the specific natural features and wildlife habitats that have been identified within the Study Area.

Once the recommended protection, mitigation and compensation measures are applied, the construction, operation and decommissioning of the Project is expected to result in no significant net negative effects on the natural heritage features in the Study Area and their associated ecological functions.

6.0 Closure

This Natural Heritage Assessment and Environmental Impact Study for the Boralex Port Ryerse Wind Power Project has been prepared in accordance with O.Reg 359/09, s. 24-28 and 37-38.

Once the identified protective, mitigation and compensation measures are applied to the environmental features discussed above, the construction and operation of the Project is expected to have no net negative effects on the significant features and functions identified through the Natural Heritage Assessment process. An environmental effects monitoring plan that includes a post-construction monitoring program will be developed to confirm the accuracy of predicted effects as well as to monitor the effects to other natural elements.

Stantec Consulting Ltd. prepared this Natural Heritage Assessment and Environmental Impact Study for Boralex for the Port Ryerse Wind Power Project. Boralex is committed to implementing the appropriate protection and mitigation measures as they apply to the construction and operation of the proposed Project.

Respectfully submitted,
STANTEC CONSULTING LTD



Katherine St. James
Intermediate Biologist



David Charlton
Senior Project Manager

7.0 Literature Cited

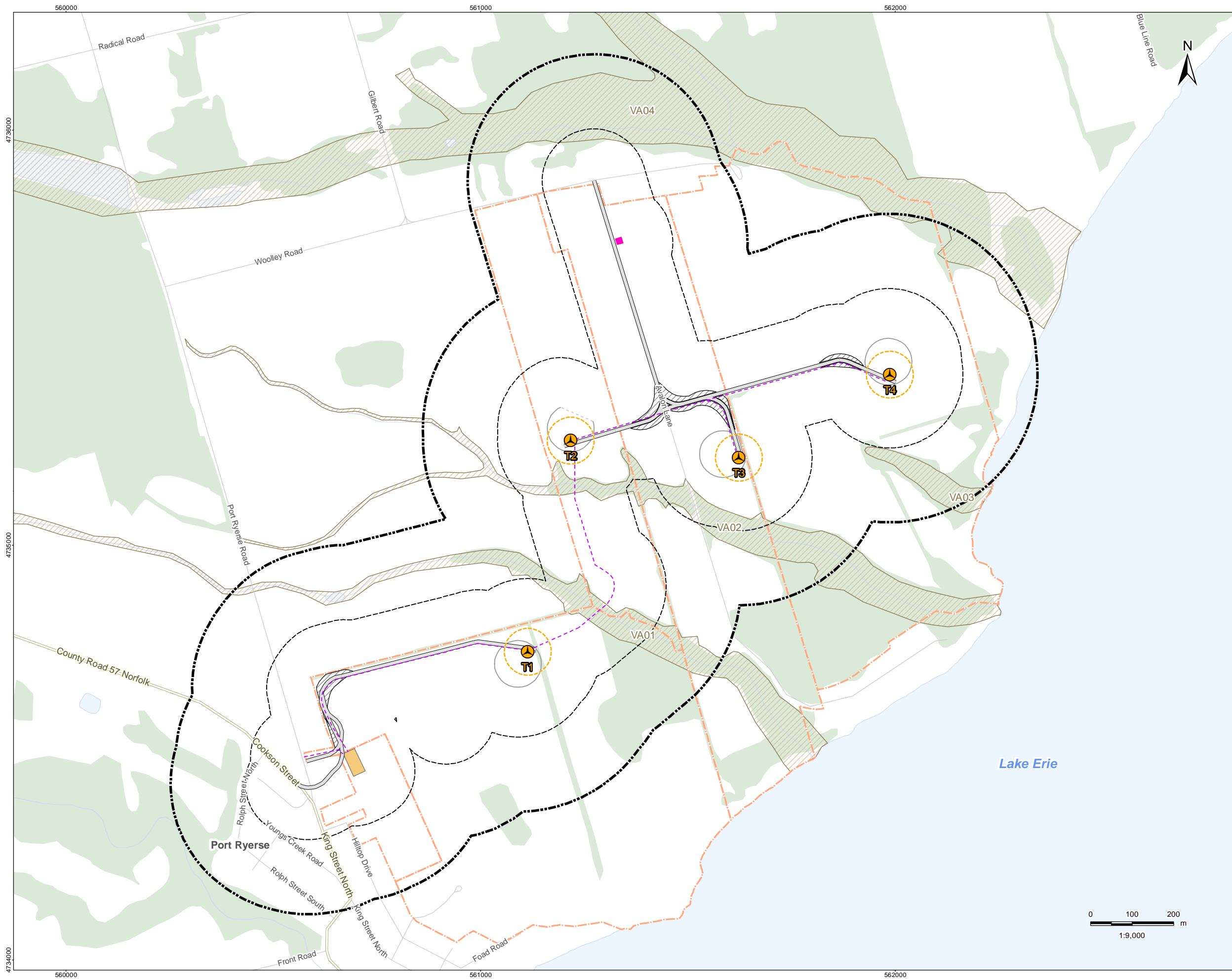
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Appendix A

Figures



Legend

Participating Properties Boundary

Zone of Investigation (120 m)

Study Area

Project Components

Proposed Turbine

Bladeswept Area / Rotor Diameter (113 m)

Proposed Access Road

Turning Radius

Proposed Collector Line

Defined

Approx

Substation

Proposed Permanent Site Parking Lot

Existing Features

Major Road

Local Road

Watercourse

Waterbody

Wooded Area

Valleyland

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N

2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

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Client/Project

Boralex/ UDI
Port Ryerse Wind Farm
Port Ryerse, Ontario

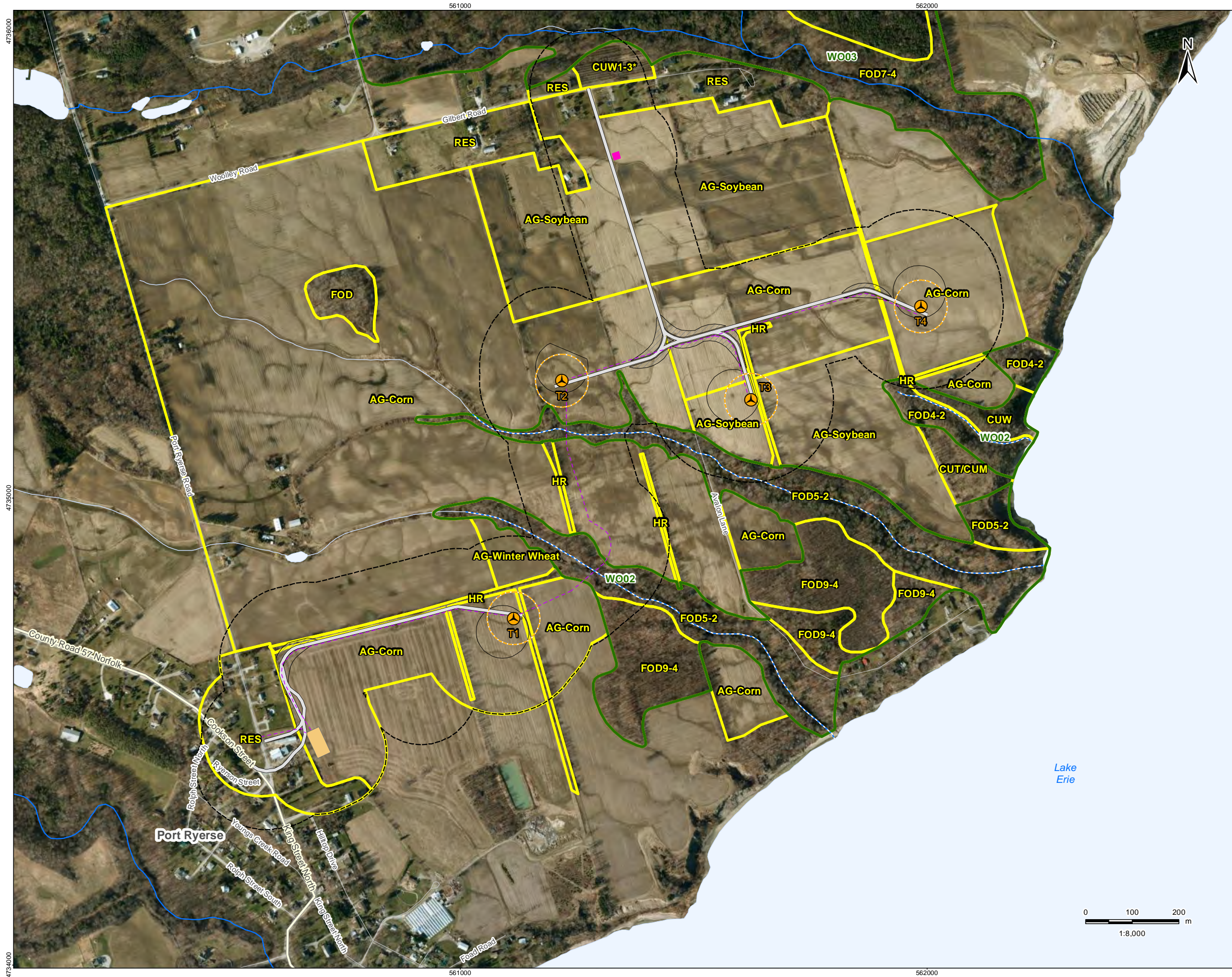
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1

Title

Project Boundary

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Revised: 2012-11-26 By: dharvey



Legend

Zone of Investigation (120 m)

Project Components

- Proposed Turbine
- Bladeswept Area / Rotor Diameter (113 m)
- Proposed Access Road
- Turning Radius
- Proposed Collector Line
- Component Laydown Area and Crane Pad
- Substation
- Proposed Permanent Site Parking Lot

Existing Features

- Major Road
- Local Road
- Watercourse
- Waterbody

Natural Features

- Intermittent Stream
- Permanent Stream
- Ecological Land Classification
- Significant Woodland

Ecological Land Classification:

Vegetation Community

- CUT / CUM - Cultural Thicket / Cultural Meadow
- CUW - Cultural Woodland
- CUW1-3* - Black Walnut Mineral Cultural Woodland
- FOD4-2 - Dry-Fresh Ash Deciduous Forest
- FOD5-2 - Dry-Fresh Sugar Maple - Beech, Deciduous Forest
- FOD7-4 - Fresh-Moist Black Walnut Lowland Deciduous Forest
- FOD9-4 - Fresh-Moist Shagbark Deciduous Forest

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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Figure No.

2

Title

**ELC Communities and
Natural Features**



Legend

Zone of Investigation (120 m)

Project Components

Proposed Turbine

Bladeswept Area / Rotor Diameter (113 m)

Proposed Access Road

Turning Radius

Proposed Collector Line

Component Laydown Area and Crane Pad

Substation

Proposed Permanent Site Parking Lot

Existing Features

Major Road

Local Road

Watercourse

Waterbody

Natural Features

Bald Eagle Candidate Winter Roost (SCS)

Pignut Hickory Location

Bald Eagle Winter Roost 400m Buffer

Candidate Pignut Hickory Habitat (SCS)

Candidate Amphibian Breeding Habitat (ABH)

Candidate Landbird Migratory Stopover Area (LBMS)

Candidate Woodland Raptor Nesting Habitat (WRNH)

Candidate Seeps and Springs Area (SPA)

Generalized Candidate SWH (GcSWH)

Red-Headed Woodpecker Habitat (RHW)

Intermittent Stream

Permanent Stream

Distances Between Features and Project Components On This Map Are Described In Detail In Table 3.9 In The Main Report

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N

2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

3. Orthographic Imagery Source: © First Base Solutions, 2011.
Imagery taken in Spring 2010.

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Port Ryerse, Ontario

Figure No.

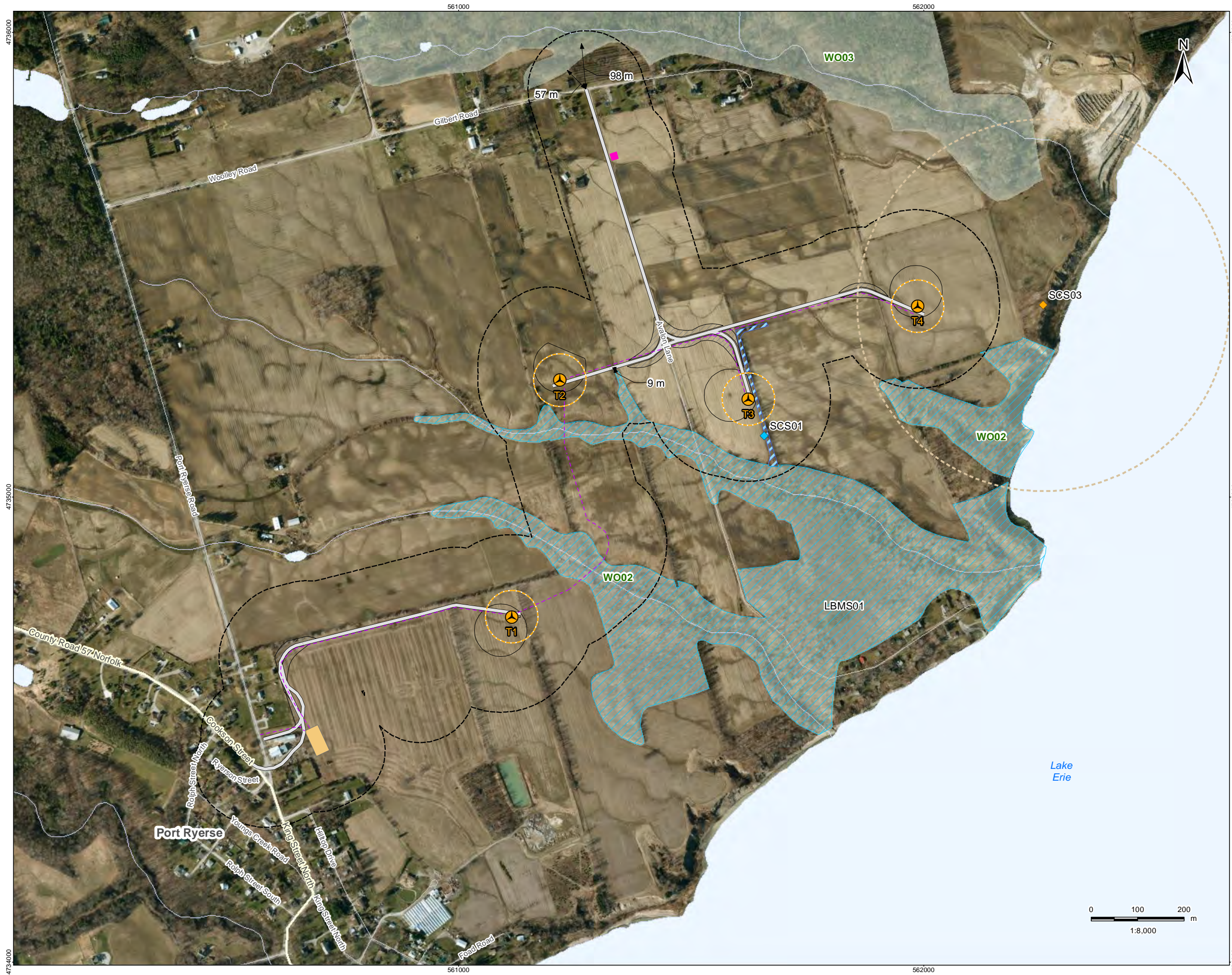
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Title

Candidate Significant Wildlife Habitat

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Revised: 2012-11-26 By: dharvey



Legend

Zone of Investigation (120 m)

Project Components

Proposed Turbine

Bladeswept Area / Rotor Diameter (113 m)

Proposed Access Road

Turning Radius

Proposed Collector Line

Component Laydown Area and Crane Pad

Substation

Proposed Permanent Site Parking Lot

Existing Features

Major Road

Local Road

Watercourse

Waterbody

Significant Woodland

Natural Features

Significant Bald Eagle Winter Roost

Pignut Hickory Location

Bald Eagle Winter Roost 400m Buffer

Significant Landbird Migratory Stopover Area (LBMS)

Significant Pignut Hickory Habitat (SCS)

Distances Between Features and Project Components On This Map Are Described In Detail In Table 3.9 In The Main Report

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N

2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

3. Orthographic Imagery Source: © First Base Solutions, 2011.
Imagery taken in Spring 2010.

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Port Ryerse, Ontario

Figure No.

4

Title

**Significant Natural Features
and Wildlife Habitat**

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Revised: 2012-11-26 By: dharvey

Appendix B

Tables

Table 1: Agencies Contacted

Source	Information Required/Used	Type of Record Obtained	Action Date
Canada Land Inventory	Source: http://geogratis.cgdi.gc.ca/CLI/frames.html	CLI mapping; Agricultural land types and deciduous/coniferous forest types. Project Location overlaps with deciduous forest in south end of Study Area (WO02).	Last accessed: March 2012
Environment Canada	Information was requested regarding the project's potential to impact migratory birds.		Contacted: December 4, 2011 No response
Fisheries and Oceans Canada GeoPortal	The Fisheries and Oceans Canada GeoPortal was utilized. Source: http://public.geoportal-geoportail.gc.ca/dfoGeoPortal	Fisheries records; Project Location overlaps with small unnamed tributaries in south end of Study Area (associated with VA01 and VA02)	Last accessed: March 2012
Long Point Regional Conservation Authority website and consultation	Consultation with Conservation Authority to confirm significant features. Sources: http://www.lprca.on.ca/ , <i>Ontario Regulation 178/06</i>	A map of Generic Regulation Limits; information regarding woodlands and wildlife habitat. Project Location overlaps with deciduous forest in south end of Study Area (WO02). No wetlands located in Study Area.	Consultation: November 7, 2011 Information gathering: December 14, 2011
Natural Heritage Information Centre, Ontario Ministry of Natural Resources (NHIC)	The NHIC website, established by the Ontario Ministry of Natural Resources Source: http://nhic.mnr.gov.on.ca/MNR/nhic/nhic_old.cfm	Listings and descriptions of known natural features and their locations within and around the Project Location. Project Location overlaps with deciduous forest in south end of Study Area (WO02).	Last accessed: May 2012
NRCAN Atlas of Canada	Source: http://atlas.nrcan.gc.ca	Topographical information on the Study Area. No wetlands located in Study Area. Project Location overlaps with deciduous forest in south end of Study Area (WO02).	Last accessed: March 2012
Norfolk County website	The <i>Official Plan</i> (2006) and Schedule "C" Natural Heritage Areas for the County.	Reference maps and documents pertaining to land-use, roads, wetlands, streams, wildlife habitats, ANSI and other features. No ANSIs or wetlands indicated in Study Area. Study Area is a	Last accessed: March 2012

Source	Information Required/Used	Type of Record Obtained	Action Date
		'Stopover Habitat Study Area' for migratory birds and butterflies.	
Southern Ontario Land Resource Information System (SOLRIS)	MNR SOLRIS Database was used to determine land classification in the area.	Land classification maps, including agricultural types.	Published: 2008
The Ministry of Natural Resources Land Information Ontario (LIO) website.	Land Information Ontario (LIO) manages geographic information that was used in maps. Source: http://www.mnr.gov.on.ca/en/Business/LIO/index.html	Woodlands in the Study Area. Project Location overlaps with deciduous forest in south end of Study Area (WO02). Neither woodland located in the study area is the largest in the municipality. No wetland features indicated in Study Area. Study area is a possible shorebird, landbird and waterfowl stopover area.	Last accessed: March 2012
ADDITIONAL SOURCES – used in Site Investigation and Evaluation of Significance			
Aerial Photography	Aerial photographs with contour lines obtained from First Base Solutions were extensively used to identify natural features and help determine potential habitat types in the vicinity of the wind farm site.	Aerial photographs, will be used in field surveys.	Photograph dated: Spring 2006 and 2010
Atlas of the Mammals of Ontario	Distribution maps and background information on mammals that may occur in the vicinity of the Project Location.	Distribution maps and background information on mammals	Published: 1994
Ontario Base Maps published by Ontario Government.	Published and maintained by the Ontario Government, these maps were accessed through GIS Software (Manifold) and used extensively to create all the maps shown through this report. These maps are regularly updated to ensure consistency and accuracy in reporting.	Base mapping. Distribution maps and background information on mammals	Published: 2008
Ontario Breeding Bird Atlas website	Provided large amount of information on the occurrence of breeding birds in Ontario	Distribution maps and background information on birds	Data downloaded: November 2011
Ontario Geological Survey (OGS)	Google Earth OGS layers used to determine geology of the Project Location. Source: http://www.mndmf.gov.on.ca/mines/ogs_earth_e.asp	Geology of Study Area (karst features and abandoned mines)	Last accessed: March 2012
M.K. Ince and Associates	Draft Port Ryerse Wind Farm Natural Heritage Records Review Report (June 22, 2012), Site Investigation Report (July 31, 2012), Evaluation of Significance Report (July 31, 2012) and Environmental Impact Study Report (July 31, 2012) prepared by M.K. Ince and Associates	Draft reports received	Received: September 10, 2012

Table 2: Potential Wildlife Occurring within the Project Boundary

Common Name	Scientific Name	S-Rank	G-Rank	COSSARO	COSEWIC
AMPHIBIANS					
Mudpuppy	<i>Necturus maculosus</i>	S4	G5	NAR	NAR
Red-spotted Newt	<i>Notophthalmus viridescens</i>	S5	G5T5		
Spotted Salamander	<i>Ambystoma maculatum</i>	S4	G5		
Four-toed Salamander	<i>Hemidactylium scutatum</i>	S4	G5	NAR	NAR
Northern Redback Salamander	<i>Plethodon cinereus</i>	S5	G5		
American Toad	<i>Anaxyrus americanus</i>	S5	G5		
Tetraploid Gray Treefrog	<i>Hyla versicolor</i>	S5	G5		
Western Chorus Frog (carolinian)	<i>Pseudacris triseriata</i>	S4	G5	NAR	NAR
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5		
Bullfrog	<i>Lithobates catesbeiana</i>	S4	G5		
Northern Green Frog	<i>Lithobates clamitans</i>	S5	G5		
Pickerel Frog	<i>Lithobates palustris</i>	S4	G5	NAR	NAR
Wood Frog	<i>Lithobates sylvatica</i>	S5	G5		
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	G5	NAR	NAR
REPTILES					
Snapping Turtle	<i>Chelydra serpentina</i>	S3	G5	SC	SC
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S5	G5T5		
Northern Map Turtle	<i>Graptemys geographica</i>	S3	G5	SC	SC
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5		
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	S3	G5	SC	SC
Northern Watersnake	<i>Nerodia sipedon sipedon</i>	S5	G5T5	NAR	NAR
Redbelly Snake	<i>Storeria occipitomaculata</i>	S5	G5		
Brown Snake	<i>Storeria dekayi</i>	S5	G5		NAR
Smooth Greensnake	<i>Opheodrys vernalis</i>	S4	G5		
Ringneck Snake	<i>Diadophis punctatus</i>	S4	G5		
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S3	G5	SC	SC
BIRDS					
Canada Goose	<i>Branta canadensis</i>	S5	G5		
Mute Swan	<i>Cygnus olor</i>	SNA	G5		
Wood Duck	<i>Aix sponsa</i>	S5	G5		
American Black Duck	<i>Anas rubripes</i>	S4	G5		
Mallard	<i>Anas platyrhynchos</i>	S5	G5		
Northern Pintail	<i>Anas acuta</i>	S5	G5		
Ruffed Grouse	<i>Bonasa umbellus</i>	S5	G5		
Wild Turkey	<i>Meleagris gallopavo</i>	S5	G5		
American Bittern	<i>Botaurus lentiginosus</i>	S4B	G4		
Great Blue Heron	<i>Ardea herodias</i>	S5	G5		
Turkey Vulture	<i>Cathartes aura</i>	S5B	G5		
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	G5	NAR	NAR
American Kestrel	<i>Falco sparverius</i>	S5B	G5		
Virginia Rail	<i>Rallus limicola</i>	S5B	G5		
Killdeer	<i>Charadrius vociferus</i>	S5B, S5N	G5		
Spotted Sandpiper	<i>Actitis macularia</i>	S5	G5		
American Woodcock	<i>Scolopax minor</i>	S4B	G5		
Rock Pigeon	<i>Columba livia</i>	SNA	G5		
Mourning Dove	<i>Zenaida macroura</i>	S5	G5		
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	S4B	G5		
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	S5B	G5		
Eastern Screech-Owl	<i>Megascops asio</i>	S5	G5	NAR	NAR

Table 2: Potential Wildlife Occurring within the Project Boundary

Common Name	Scientific Name	S-Rank	G-Rank	COSSARO	COSEWIC
Great Horned Owl	<i>Bubo virginianus</i>	S5	G5		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5B	G5		
Belted Kingfisher	<i>Ceryle alcyon</i>	S4B	G5		
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	G5	SC	THR
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	S4	G5		
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B	G5		
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5		
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5		
Northern Flicker	<i>Colaptes auratus</i>	S4B	G5		
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	G5		
Willow Flycatcher	<i>Empidonax traillii</i>	S5B	G5		
Least Flycatcher	<i>Empidonax minimus</i>	S4B	G5		
Eastern Phoebe	<i>Sayornis phoebe</i>	S5B	G5		
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4B	G5		
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S4B	G5		
Warbling Vireo	<i>Vireo gilvus</i>	S5B	G5		
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5		
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5		
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5		
Horned Lark	<i>Eremophila alpestris</i>	S5B	G5		
Purple Martin	<i>Progne subis</i>	S4B	G5		
Tree Swallow	<i>Tachycineta bicolor</i>	S4B	G5		
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	S4B	G5		
Bank Swallow	<i>Riparia riparia</i>	S4B	G5		
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	S4B	G5		
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5		
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S5	G5		
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5		
House Wren	<i>Troglodytes aedon</i>	S5B	G5		
Marsh Wren	<i>Cistothorus palustris</i>	S4B	G5		
Carolina Wren	<i>Thryothorus ludovicianus</i>	S4	G5		
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	S4B	G5		
Eastern Bluebird	<i>Sialia sialis</i>	S5B	G5	NAR	NAR
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	G5		
American Robin	<i>Turdus migratorius</i>	S5B	G5		
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5		
Northern Mockingbird	<i>Mimus polyglottos</i>	S4	G5		
Brown Thrasher	<i>Toxostoma rufum</i>	S4B	G5		
European Starling	<i>Sturnus vulgaris</i>	SNA	G5		
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5		
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5		
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	S4B	G5		
Black-and-white	<i>Mniotilta varia</i>	S5B	G5		

Table 2: Potential Wildlife Occurring within the Project Boundary

Common Name	Scientific Name	S-Rank	G-Rank	COSSARO	COSEWIC
Warbler					
Mourning Warbler	<i>Geothlypis philadelphia</i>	S4B	G5		
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5		
American Redstart	<i>Setophaga ruticilla</i>	S5B	G5		
Yellow Warbler	<i>Setophaga petechia</i>	S5B	G5		
Pine Warbler	<i>Setophaga pinus</i>	S5B	G5		
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	S4B	G5		
Chipping Sparrow	<i>Spizella passerina</i>	S5B	G5		
Clay-colored Sparrow	<i>Spizella pallida</i>	S4B	G5		
Field Sparrow	<i>Spizella pusilla</i>	S4B	G5		
Vesper Sparrow	<i>Poocetes gramineus</i>	S4B	G5		
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5		
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5		
Swamp Sparrow	<i>Melospiza georgiana</i>	S5B	G5		
Scarlet Tanager	<i>Piranga olivacea</i>	S4B	G5		
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5		
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5		
Indigo Bunting	<i>Passerina cyanea</i>	S4B	G5		
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5	G5		
Common Grackle	<i>Quiscalus quiscula</i>	S5B	G5		
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5		
Orchard Oriole	<i>Icterus spurius</i>	S4B	G5		
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5		
House Finch	<i>Haemorhous mexicanus</i>	SNA	G5		
House Sparrow	<i>Passer domesticus</i>	SNA	G5		
MAMMALS					
Virginia Opossum	<i>Didelphis virginiana</i>	S4	G5		
Masked Shrew	<i>Sorex cinereus</i>	S5	G5		
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	S5	G5		
Hairy-tailed Mole	<i>Parascalops breweri</i>	S4	G5		
Star-nosed Mole	<i>Condylura cristata</i>	S5	G5		
Small-footed Bat	<i>Myotis leibii</i>	S2S3	G3		
Little Brown Bat	<i>Myotis lucifugus</i>	S5	G5		END-NS
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	S3?	G4		END-NS
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	S4	G5		
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	S3?	G5		END-NS
Red Bat	<i>Lasiurus borealis</i>	S4	G5		
Big Brown Bat	<i>Eptesicus fuscus</i>	S5	G5		
Hoary Bat	<i>Lasiurus cinereus</i>	S4	G5		
Eastern Cottontail	<i>Sylvilagus floridanus</i>	S5	G5		
European Hare	<i>Lepus europaeus</i>	SNA	G5		
Eastern Chipmunk	<i>Tamias striatus</i>	S5	G5		
Woodchuck	<i>Marmota monax</i>	S5	G5		
Grey Squirrel	<i>Sciurus carolinensis</i>	S5	G5		
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5		
Southern Flying Squirrel	<i>Glaucomys volans</i>	S4	G5		NAR
Beaver	<i>Castor canadensis</i>	S5	G5		
White-footed Mouse	<i>Peromyscus leucopus</i>	S5	G5		

Table 2: Potential Wildlife Occurring within the Project Boundary

Common Name	Scientific Name	S-Rank	G-Rank	COSSARO	COSEWIC
Deer Mouse	<i>Peromyscus maniculatus</i>	S5	G5		
Muskrat	<i>Ondatra zibethicus</i>	S5	G5		
Meadow Vole	<i>Microtus pennsylvanicus</i>	S5	G5		
Woodland Vole	<i>Microtus pinetorum</i>	S3?	G5	SC	SC
Norway Rat	<i>Rattus norvegicus</i>	SNA	G5		
Meadow Jumping Mouse	<i>Zapus hudsonicus</i>	S5	G5		
Coyote	<i>Canis latrans</i>	S5	G5		
Red Fox	<i>Vulpes vulpes</i>	S5	G5		
Raccoon	<i>Procyon lotor</i>	S5	G5		
Ermine	<i>Mustela erminea</i>	S5	G5		
Long-tailed Weasel	<i>Mustela frenata</i>	S4	G5		
Mink	<i>Mustela vison</i>	S4	G5		
Striped Skunk	<i>Mephitis mephitis</i>	S5	G5		
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5		

*Designated PIF species

COSSARO – Committee on the Status of Species at Risk in Ontario

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

Status:

S1 – Critically Imperiled

S2 – Imperiled

S3 – Vulnerable

S4 – Apparently Secure

S5 – Secure

SNA – Not applicable

G5 – Very common globally

? – Rank uncertain

END – Endangered

THR – Threatened

SC – Special Concern

Table 3: Potential Species of Conservation Concern occurring within the Project Boundary

Common Name	Scientific Name	S-Rank*	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat
VEGETATION						
Pignut Hickory	<i>Carya glabra</i>	S3			NHIC	Flowering spring. Well-drained sandy soils, rolling hills and slopes, dry rocky soils, or thin soils on edge of granite outcrops (Stone, 1997)
Puttyroot	<i>Aplectrum hyemale</i>	S2			NHIC	Occurs in moist to swampy deciduous forests; flowers in late spring (Sheviak and Catling, 2002).
Green Dragon	<i>Arisaema dracontium</i>	S3	SC	SC	NHIC	Flowering late spring; mesic to wet deciduous woods, thickets, and bottomlands (Thompson, 2000)
Yellow Bartonian	<i>Bartonia virginica</i>	S2			NHIC	Occurs in wet meadows and sphagnum bogs (Gleason and Cronquist, 1991).
Rugulose Grapefern	<i>Botrychium rugulosum</i>	S2			NHIC	Woodlands and edges, grassy open areas, often with the similar B. dissectum and/or B. multifidum. Largely restricted to the Great Lakes region. (Oldham and Brinker, 2009)
Autumn Coral-root	<i>Corallorhiza odontorhiza</i>	S2			NHIC	Dry, sandy woods, including old pine plantations. Becoming more common in the northern part of its range (Oldham and Brinker, 2009).
Yellow Corydalis	<i>Corydalis flavula</i>	S2			NHIC	Found in moist, loose soil on forested rock outcrops, slopes and bottomlands (Stern, 2003)
Annual Yellow Flatsedge	<i>Cyperus flavescens</i>	S2			NHIC	Found in southwestern Ontario sites in moist, often sandy sites (Oldham and Brinker, 2009).
Ram's-head Lady's-slipper	<i>Cypripedium arietinum</i>	S3			NHIC	Usually occurs on acidic soils in coniferous and mixed forests, coniferous fens, and beach thickets (Gleason and Cronquist, 1991; Sheviak, 2002).

Table 3: Potential Species of Conservation Concern occurring within the Project Boundary

Common Name	Scientific Name	S-Rank*	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat
Hairy Hawkweed	<i>Hieracium longipilum</i>	SX			NHIC	Dry sandy woods and prairies. Last recorded in Ontario in 1918. (Oldham and Brinker, 2009).
Yellow Stargrass	<i>Hypoxis hirsuta</i>	S3			NHIC	Sandy open ground and forests, as well as fens and mesic meadows (Reznicek et al., 2011)
Sharp-fruited Rush	<i>Juncus acuminatus</i>	S3			NHIC	Wet soil in lowland forests, meadows, and shorelines (Gleason and Cronquist, 1991).
Grass-leaved Rush	<i>Juncus marginatus</i>	S3			NHIC	Open sandy ground, prairies (Oldham and Brinker, 2009).
Hairy Green Sedge	<i>Carex hirsutella</i>	S3			NHIC	Fruiting late spring–early summer. Meadows, dry to mesic woods, neutral to basic soils. More frequent in open, non-forested habitats (Ball and Reznicek, 2002).
Sundial Lupine	<i>Lupinus perennis</i>	S3			NHIC	Dry, open forests and clearings (Gleason and Cronquist, 1991).
Biennial Gaura	<i>Oenothera gaura</i>	S3			NHIC	River banks, roadsides, fields, vacant lots (Reznicek, et.al. 2011).
Slender Paspalum	<i>Paspalum setaceum</i>	S2			NHIC	Grows in sandy open ground, fields and oak woodlands (Voss, 1972).
Halberd-leaved Tearthumb	<i>Persicaria arifolia</i>	S3			NHIC	Occurs in swamps and wet ground along streams and lakes (Reznicek et al., 2011)
Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	S3	SC	SC	NHIC	Occurs in moist areas of rich deciduous forests such as the base of slopes and along seeps and streams (Reznicek et al. 2011).
Moss Phlox	<i>Phlox subulata</i>	S1			NHIC	Often a garden escapee; occurs in sandy and gravelly soil or rock-ledges in clearings, shores, banks, and roadsides (Reznicek et al., 2011; Gleason and Cronquist, 1991).

Table 3: Potential Species of Conservation Concern occurring within the Project Boundary

Common Name	Scientific Name	S-Rank*	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat
Slender Knotweed	<i>Polygonum tenue</i>	S2			NHIC	Dry, sandy open prairie, savanna, and woodland (Oldham and Brinker, 2009).
Dwarf Chinquapin Oak	<i>Quercus prinoides</i>	S3			NHIC	Usually on deep sand or dry shale, less often on calcareous soil; found at the edges of forests, in pine barrens, prairies, and exposed ridges (Nixon, 1997).
Shiny Wedge Grass	<i>Sphenopholis nitida</i>	S1			NHIC	Grows on clay and silt slopes and banks in deciduous or coniferous forests (Daniel, 2007).
Yellow Ladies'-tresses	<i>Spiranthes ochroleuca</i>	S2			NHIC	Dry, open sites, usually on acidic sandy soil (Oldham and Brinker, 2009).
Palmate-leaved Violet	<i>Viola palmata</i>	S2S3			NHIC	Found in dry forests with oak, hickory, beech and/or maple, as well as thickets (Reznicek et al., 2011).
INSECTS						
Painted Skimmer	<i>Libellula semifasciata</i>	S2				Found in marshy bays, ponds and streams (Caitling and Brownwell, 2000).
Cyrano Darner	<i>Nasiaeschna pentacantha</i>	S3				The Cyrano Darner's primary habitat is slow streams and lakes, but the adults are also known to forage in and around forests, where they are infrequently observed (Jones et al., 2008).
Mottled Darner	<i>Aeshna clepsydra</i>	S3				Can be found near shallow ponds, bays, and marshes at the edges of lakes; will gather above hilltops in large feeding swarms of hundreds of adults (Caitling and Brownell, 2000)
Green-striped Darner	<i>Aeshna verticalis</i>	S3				Marsh-bordered lakes and spring ponds (Caitling and Brownell, 2000).

Table 3: Potential Species of Conservation Concern occurring within the Project Boundary

Common Name	Scientific Name	S-Rank*	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat
Lilypad Clubtail	<i>Arigomphus furcifer</i>	S3				In Ontario, the Lilypad clubtail is uncommonly found south of the Canadian Shield. It is typically found in marshy ponds, lakes and sluggish streams with mucky bottoms and plentiful floating vegetation (Jones et al., 2008).
Clamp-tipped Emerald	<i>Somatochlora tenebrosa</i>	S2S3				Clamp-tipped Emerald prefers shady forest streams with intermittent rapids and pools. Flight periods occur in early July to late August, sometimes into September (Jones et al., 2008).
Tulip Tree Silk Moth	<i>Callosamia angulifera</i>	S1				Deciduous woodlands with tulip trees present as a larval food source (Opler, et.al. 2012).
REPTILES						
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	OHSA	Ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, aquatic vegetation, and soft bottoms. Females nest in sand or gravel banks at waterway edges in late May or early June (COSEWIC, 2008).
Northern Map Turtle	<i>Graptemys geographica</i>	S3	SC	SC	OHSA	Highly aquatic and inhabit slow moving, large rivers and lakes with soft bottoms and abundant aquatic vegetation. Basking sites include rocks and deadheads adjacent to deep water (COSEWIC 2002) while overwintering occurs at the bottoms of lakes and rivers (MacCulloch, 2002). Females leave the water in June to nest (MacCulloch, 2002).

Table 3: Potential Species of Conservation Concern occurring within the Project Boundary

Common Name	Scientific Name	S-Rank*	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	S3	SC	SC	OHSA	Usually found close to water and is particularly characteristic of wetlands that are associated with large wooded areas (Lamond, 1994).
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S3	SC	SC	OHSA	Eastern milksnake favor open woodlands, fields and farm buildings and are commonly associated with rural areas (Lamond, 1994).
BIRDS						
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	SC	THR	OBBA	Occupies a wide range of habitats, but most are characterized by open areas for feeding; snags for roosting, and a secure food supply. This species requires multiple snags for nesting, roosting, and foraging. Some of the habitats used are: open deciduous and riparian woodlands, orchards, parks, agricultural lands, savanna-like grasslands, beaver ponds with snags, forest edges, burned forests, and flooded bottomland forests. Habitats are similar in both breeding and wintering range, but winter distribution most determined by presence of food. Have been known to move north in winter if mast is heavy (N.A.S., 2012).
MAMMALS						
Small-footed Bat	<i>Myotis leibii</i>	S2S3			AMO	Inhabits deciduous and coniferous forests, roosts in crevices or under bark, and hibernates in caves and mines (Reid, 2006).

Table 3: Potential Species of Conservation Concern occurring within the Project Boundary

Common Name	Scientific Name	S-Rank*	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	S3?		END	AMO	Typically forages for aerial insects in the forest understory. Maternity roosts are located under bark or in buildings with young born in June and July while hibernating colonies typically reside in cave crevices (Reid, 2006).
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	S3?		END	AMO	Prefers partly open habitat such as fields with large trees or woodland edges while avoiding both denser and more open areas. It likely roosts in leaves, caves or buildings in the summer, and hibernates in caves and mines where the humidity is high. Maternity colonies are usually found either in tree cavities or man-made structures, but in at least parts of their range they have also been recorded utilizing live and dead foliage as well as squirrel nests. They generally forage at canopy height over open water (NatureServe 2011).
Woodland Vole	<i>Microtus pinetorum</i>	S3?	SC	SC	AMO	Inhabit deciduous forests with a dense layer of leaf litter, woodland or orchard grassy patches, and areas of dense brush. These voles are primarily subterranean, spending the majority of their time underground in burrows that are made in shallow soil or under leaf litter (Reid, 2006).

COSSARO – Committee on the Status of Species at Risk in Ontario

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

* Note: S-ranks provided by NHIC records, dated 2012

Source:

EC – Environment Canada/Canadian Wildlife Service Species At Risk Website

NHIC – Natural Heritage Information Database

OBBA – Ontario Breeding Bird Atlas
OHSA – Ontario Herpetofaunal Summary Atlas
AMO – Atlas of the Mammals of Ontario
DFO – direct correspondence with DFO
MNR – direct correspondence with MNR
Stantec – observed in the Study Area during site investigations

Status:

S1 – Critically Imperiled
S2 – Imperiled
S3 – Vulnerable
S#B- Breeding status rank
? – Rank uncertain
SH – Historic record
SX - Extirpated
END – Endangered
THR - Threatened
SC – Special Concern

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Table 4: Natural Feature Site Investigations Survey Dates

Date	Times	Person Hours	Personnel	Purpose	Weather
2011-05-11	--	--	Yves Scholten (MKI)	Site reconnaissance.	Temp: 19°C
2012-06-12	08:00 - 17:30	19	Erin Jaggard & Dave Jolly (MKI)	Ecological Land Classification. Surveys for woodlands and wetlands. Special concern and rare wildlife species searches; surveys for rare vegetation communities.	Temp: 21-25°C; Wind: 0-2; CC: 2-10/10; Light drizzle to moderate rain, thundershowers late in afternoon
2012-09-19	12:00 - 5:00	5	Don Graham (Stantec)	ELC and Wildlife Habitat Assessment	17°C; Wind 5; CC 50%; no precipitation; heavy precipitation in the last 24 hrs
2012-09-20	12:00 - 5:00	5	Don Graham (Stantec)	ELC and Wildlife Habitat Assessment	18°C; Wind 5; CC 50%; no precipitation; precipitation in the last 24 hrs
2012-09-24	12:00 - 5:00	5	Matthew Ross (Stantec)	ELC and Wildlife Habitat Assessment	15°C; Wind 5; CC 20%; no precipitation; no precipitation in the last 24 hrs

Table 5: Evaluation of Significance Survey Dates

Date	Times	Person Hours	Personnel	Purpose	Weather
2011-05-11	--	--	Rob Tymstra (MKI)	Woodland raptor nesting habitat surveys. This site visit was paired with surveys for evaluation of significance which can be found in the Natural Heritage Evaluation of Significance Report.	Temp: 19°C
2011-09-14	09:00 - 20:00	11	Yves Scholten (MKI)	Ground truth area to determine actual presence of natural features and record some of their characteristics.	Temp: 14°C; Wind: 2 W; CC: 0/10; clear
2011-09-15	08:30 - 13:30	5	Yves Scholten (MKI)	Search for candidate significant wildlife habitat. Snake hibernacula surveys; surveys for suitable candidate butterfly migratory stopover areas; surveys for rare vegetation communities; turtle habitat surveys. This site visit was paired with surveys for evaluation of significance which can be found in the Natural Heritage Evaluation of Significance Report.	Temp: 9°C; Wind: 2 SW; CC: 3/10; no precipitation
2011-11-16	08:30-19:30	11	Yves Scholten (MKI)	General late fall site investigation surveys; surveys for rare species. This site visit was paired with surveys for evaluation of significance which can be found in the Natural Heritage Evaluation of Significance Report.	CC10, Air 11°C, wind1, ppt none.
2012-01-30	10:15 - 16:00	5.75	Rick Ludkin (MKI)	Winter bird surveys (habitat for special concern and rare wildlife species).	Temp: -3 to 0°C; Wind: 1-2, 3-4 (after 14:00); CC: 0/10 to 10/10; snow started at 14:00, very heavy snow at 15:40 (visibility reduced to ~200m)
2012-02-13	10:25 - 18:15	7.8	Rick Ludkin (MKI)	Winter bird surveys (habitat for special concern and rare wildlife species).	Temp: -1 - 1°C; Wind: 3; CC: 0/10 to 1/10; no precipitation
2012-02-26	08:30 - 18:15	9.75	Rick Ludkin (MKI)	Winter bird surveys (habitat for special concern and rare wildlife species).	Temp: -3 - 0°C; Wind: 0 - 3; CC: 0/10 to 5/10; no precipitation
2012-03-28	10:45 - 21:30	10.75	Yves Scholten (MKI)	Search for candidate significant wildlife habitat. Bat maternity roost survey. Turtle wintering habitat surveys; spring ephemerals (rare species surveys). This site visit was paired with surveys for evaluation of significance which can be	Temp: 17 - 8°C; Wind: 3-4; CC: 4/10 to 10/10; no precipitation

Table 5: Evaluation of Significance Survey Dates

Date	Times	Person Hours	Personnel	Purpose	Weather
				found in the Natural Heritage Evaluation of Significance Report.	
2012-05-11	08:00 - 17:30	9.50	Yves Scholten (MKI)	Search for candidate significant wildlife habitat. Botanical inventory survey (rare species surveys); snake hibernacula surveys; surveys for rare vegetation communities; turtle habitat surveys. Search for candidate significant wildlife habitat. This site visit was paired with surveys for evaluation of significance which can be found in the Natural Heritage Evaluation of Significance Report.	Temp: 12-23°C; Wind: 1-2; CC: 1/10 to 3/10; no precipitation
2012-05-18	09:00 - 16:00	7	Yves Scholten (MKI)	Botanical inventory survey (rare species surveys); surveys for rare vegetation communities; turtle habitat surveys. Search for candidate significant wildlife habitat. This site visit was paired with surveys for evaluation of significance which can be found in the Natural Heritage Evaluation of Significance Report.	Temp: 14°C; Wind: 1; CC: 2/10; no precipitation
2012-06-02	07:30 - 9:20	1.8	Rob Tymstra (MKI)	Rare bird species surveys (habitat for special concern and rare wildlife species).	Temp: 13-15°C; Wind: 2 SW; CC: 6/10 to 10/10; no precipitation
2012-06-06	12:30 - 20:30	8	Joel Jameson (MKI)	Bat maternity roost survey.	Temp: 15-20°C; Wind: 3-4; CC: 7/10 to 10/10; no precipitation in morning; thunder and rain at 13:30
2012-06-07	08:00 - 13:00	5	Joel Jameson (MKI)	Bat maternity roost survey.	Temp: 15-25°C; Wind: 2-3; CC: 0/10; no precipitation
2012-06-12	05:15 – 08:20	3	Rob Tymstra (MKI)	Rare bird species surveys (habitat for special concern and rare wildlife species).	Temp: 22-24°C; Wind: 1-2; CC: 10/10; no precipitation; rain in the last 24 hours
2012-06-24	05:20 – 08:35	3.25	Rob Tymstra (MKI)	Rare bird species surveys (habitat for special concern and rare wildlife species).	Temp: 16-21°C; Wind: 0-1; CC: 1/10 to 7/10; no precipitation
22-08-12	7:49-8:50, 9:00-10:22	2hr 23min	Kathryn Walpole (Stantec)	Migratory bird transect survey	19°C, with a wind of 0, 40% cloud cover, no precipitation.
23-08-12	7:10-9:23, 9:36-11:00	3hr 37min	Kathryn Walpole (Stantec)	Migratory bird transect survey	17°C with a wind of 0, 0% cloud cover, no precipitation.

Table 5: Evaluation of Significance Survey Dates

Date	Times	Person Hours	Personnel	Purpose	Weather
30-08-12	6:36-7:15, 7:24- 8:29,8:55- 9:29, 9:50- 10:37	4hr 5min	Brandon Holden (Stantec)	Migratory bird transect survey	19-24°C with a wind of 2, 25% cloud cover, no precipitation.
31-08-12	6:41-7:03, 7:33-8:02, 8:17-9:15, 9:36-10:30	2hr 50min	Brandon Holden (Stantec)	Migratory bird transect survey	18-24°C with a wind of 1-2, 20-30% cloud cover, no precipitation.
5-09-12	6:30-6:54, 7:29-7:54, 8:28-9:26, 9:48-10:37	2hr 36min	Brandon Holden (Stantec)	Migratory bird transect survey	20-25°C with a wind of 0-1, 5% cloud cover, fog, no precipitation, some rain within past 24hrs.
6-09-12	6:46-7:05, 7:39-8:12, 8:29-9:32, 9:48-10:41	2hr 48min	Brandon Holden (Stantec)	Migratory bird transect survey	19-26°C with a wind of 2-3, 30-60% cloud cover, fog, no precipitation.
12-09-12	6:59-7:13, 7:44-8:12, 8:37-9:31, 9:45-10:39	2hr 30min	Brandon Holden (Stantec)	Migratory bird transect survey	17-24°C with a wind of 3-4, 0% cloud cover, no precipitation.
13-09-12	7:00-7:17, 7:40-8:05, 8:27-9:20, 9:45-10:40	2hr 30min	Brandon Holden (Stantec)	Migratory bird transect survey	22-27°C with a wind of 4-5, 30% cloud cover, no precipitation.
19-09-12	7:02-7:47, 7:56-8:57, 9:11-9:47, 10:20-10:52	2hr 58min	Don Graham (Stantec)	Migratory bird transect survey	12°C with a wind of 2, 0% cloud cover, no precipitation, some rain in previous 24hrs.
20-09-12	7:10-7:56, 8:05-8:57, 9:06-9:43, 10:05-10:56	3hr 6min	Don Graham (Stantec)	Migratory bird transect survey	15°C, with a wind of 4, 80% cloud cover, no precipitation.
24-09-12	7:48-8:13, 8:34-8:54, 8:56- 9:06, 9:39-9:58	1hr 14min	Matthew Ross (Stantec)	Migratory bird transect survey	4-8°C, with a wind of 3-5, 15% cloud cover, no precipitation, some rain in previous 24hrs.
25-09-12	7:41-8:07, 8:15-8:30, 8:38-9:12, 9:37-9:57	1hr, 35min	Matthew Ross (Stantec)	Migratory bird transect survey	14°C, with a wind of 5-6, 10% cloud cover, no precipitation.
1-10-12	7:15-7:28, 8:03-8:36, 9:06-10:00, 10:20-10:59	2hr 19min	Brandon Holden (Stantec)	Migratory bird transect survey	12-16°C, with a wind of 2-3, 70-90% cloud cover, no precipitation.
3-10-12	7:15-7:32, 8:00-8:30, 9:00-9:40, 10:20-11:00	2hr 7min	Brandon Holden (Stantec)	Migratory bird transect survey	wind of 2-3, variable cloud cover, no precipitation (temperature was not recorded)
8-10-12	7:20-7:52, 8:37-9:14, 9:39-10:40, 11:01-11:40	1hr 59min	Brandon Holden (Stantec)	Migratory bird transect survey	6-9°C, with a wind of 4, 80-100% cloud cover, no precipitation, some rain within previous 24hrs.
9-10-12	7:29-7:50, 8:31-9:08, 9:38-10:30,	2hr 43min	Brandon Holden (Stantec)	Migratory bird transect survey	9-13°C with a wind of 4-5, 40-80% cloud cover and no precipitation.

Table 5: Evaluation of Significance Survey Dates

Date	Times	Person Hours	Personnel	Purpose	Weather
	10:52-11:19				
15-10-12	7:27-7:44, 8:26-8:54, 9:25-10:28, 10:39-11:22	2hrs 31min	Brandon Holden (Stantec)	Migratory bird transect survey	10°C with a wind of 3-4, 40-80% cloud cover, no precipitation, precipitation within previous 24hrs.
16-10-12	7:30-7:50, 8:24-9:05, 9:29-10:30, 10:51-11:26	2hrs 37min	Brandon Holden (Stantec)	Migratory bird transect survey	6-11°C with a wind of 2, 10-30% cloud cover and no precipitation.
22-10-12	7:50-8:09, 8:37-9:08, 9:37-10:21, 10:45-11:15	2hr 4min	Brandon Holden (Stantec)	Migratory bird transect survey	5-13°C with a wind of 3-5, 30-70% cloud cover and no precipitation.
24-10-12	7:37-7:55, 8:20-8:43, 9:00-10:10, 10:33-11:05	2hr 22min	Brandon Holden (Stantec)	Migratory bird transect survey	10-14°C with a wind of 3-4, 60% cloud cover, no precipitation, some precipitation within previous 24hrs.

Table 6: Site Investigation Results: Woodlands

	Feature Size (ha)	Figure #	Composition	Attributes	Function	Significance
WO02	34	2	<p>FOD9-4</p> <p>Fresh-moist Shagbark Hickory Deciduous Forest</p> <p>FOD 5-2</p> <p>Dry – Fresh Sugar Maple Beech Deciduous Forest</p> <p>FOD 4-2</p> <p>Dry – Fresh White Ash Deciduous Forest</p>	<p>Interior habitat: 0 ha</p> <p>Feature WO02 and Woodland ELC community FOD 9-4 are within 120 m of Project Location.</p> <p>Upland deciduous forest on mineral soil [deep (>120cm) very fine sand with a drainage class of 3 (well), and a moisture regime of 2 (fresh)] composed of common native species.</p> <p>Woodland surrounded by agricultural fields, valleylands and residences/cottages. Community has been selectively logged and remaining trees are mostly less than 25 cm dbh. An extensive trail network is also present.</p> <p>No wetland communities are present within the woodland.</p> <p>FOD9-4 Shagbark hickory dominates the canopy of this community , closely followed in abundance by red maple with smaller numbers of white ash and American beech. Eastern hemlock, hop-hornbeam, black walnut and yellow birch are common associates within the understory. Ground cover species include woodland species such as lady fern, blue-stemmed goldenrod and common speedwell and species frequently found in fields and disturbed areas such as field strawberry, Canada blackberry, wild carrot and common milkweed.</p> <p>FOD5-2 - the canopy of this community is dominated by sugar maple followed by American beech, white ash and red oak. The understory also contained these species as well as frequent eastern hemlock. The shrub layer was dominated by American beech saplings followed by maple-</p>	<p>Candidate Significant Woodland</p> <p>Wildlife habitat, candidate land bird migratory stopover habitat, candidate raptor nesting habitat, candidate amphibian breeding habitat.</p> <p>Water protection; soil erosion reduction; nutrient cycling; hydrological cycling; flood and erosion protection; clean air and the long-term storage of carbon.</p>	Unknown, requires Evaluation of Significance

Table 6: Site Investigation Results: Woodlands

	Feature Size (ha)	Figure #	Composition	Attributes	Function	Significance
				<p>leaved viburnum, alternate-leaved dogwood and eastern hemlock saplings. Ground cover was strongly dominated by blue-stemmed goldenrod with large-leaved aster, Canada mayflower and coltsfoot also common.</p> <p>FOD 4-2 this community includes a high proportion of non-native species. White ash dominates the canopy followed by large-toothed aspen, red oak and black locust. Hop-hornbeam dominates the understorey. Shrub layer vegetation is co-dominated by saplings of white ash and hop hornbeam followed by multi-flora rose and chokecherry. Ground cover is dense and dominated by wood avens, Canada goldenrod, dame's rocket and zig-zag goldenrod. Non-native species commonly present include black locust, Carolina poplar, multi-flora rose, wood avens, and dame's rocket.</p> <p>No other vegetation communities present within feature WO02.</p>		
WO03	235	2	FOD7-4 (Black Walnut Lowland Deciduous Forest)	<p>Interior habitat: >4 ha</p> <p>Woodland ELC community within 120 m of Project Location is dominated by Black Walnut and Black Locust.</p> <p>Woodland as whole is a large fragmented feature with rural residences inside and along the edges and crossed by roads. Areas of deciduous, coniferous and mixed forest.</p>	<p>Candidate Significant Woodland</p> <p>Wildlife habitat, candidate amphibian breeding habitat, Generalized Candidate SWH.</p> <p>Water protection; soil erosion reduction; nutrient cycling; hydrological cycling; flood and erosion protection; clean air and the long-term storage of carbon.</p>	Unknown, requires Evaluation of Significance

Table 7: Description and Characterizations of Candidate Significant Wildlife Habitat found within 120 m of the Port Ryerse Wind Project

Feature ID	Size (ha)	Type	Composition	Attributes	Function	Figure #	Significance
Seasonal Concentration Areas							
LBMS01	36	Landbird Migratory Stopover Areas	FOD9-4 FOD 5-2 FOD 4-2	Fresh-moist Shagbark Hickory Deciduous Forest Dry – Fresh Sugar Maple Beech Deciduous Forest Dry – Fresh White Ash Deciduous Forest	This woodland (W002) located close to Lake Erie may provide resting and foraging habitat for migrating landbirds.	3	Unknown, requires Evaluation of Significance
Rare Vegetation Communities and Specialized Habitat for Wildlife							
SPA01	36	Seeps and Springs	FOD9-4 FOD 5-2 FOD 4-2	Fresh-moist Shagbark Hickory Deciduous Forest Dry – Fresh Sugar Maple Beech Deciduous Forest Dry – Fresh White Ash Deciduous Forest	This woodland (W002) may provide habitat for Wild Turkey, Ruffed Grouse, White-tailed Deer, or salamander species.	3	Unknown, requires Evaluation of Significance
ABH01	36	Amphibian Breeding Habitat (Woodland)	FOD7-4	Black Walnut Lowland Deciduous Forest	These vernal pools within 120m of a woodland may be used by several species of frogs and/or salamanders for breeding, including western chorus frog.	3	Unknown, requires Evaluation of Significance
ABH03	57	Amphibian Breeding Habitat (Woodland)	FOD9-4 FOD 5-2 FOD 4-2	Fresh-moist Shagbark Hickory Deciduous Forest Dry – Fresh Sugar Maple Beech Deciduous Forest Dry – Fresh White Ash Deciduous Forest	These vernal pools within 120m of a woodland may be used by several species of frogs and/or salamanders for breeding, including western chorus frog.	3	Unknown, requires Evaluation of Significance
Habitat for Species of Conservation Concern							
SCS01	Hedgerow	Pignut Hickory	Fencerow	A fencerow, single tree width.	This feature may provide habitat for Pignut Hickory.	3	Unknown, requires Evaluation of Significance
SCS03	36	Bald Eagle Winter Perching Habitat	FOD 4-2	Dry – Fresh White Ash Deciduous Forest	This feature may provide habitat for wintering Bald Eagles.	3	Unknown, requires Evaluation of Significance
RWH01	36	Red-headed Woodpecker	FOD9-4 FOD 5-2 FOD 4-2	Fresh-moist Shagbark Hickory Deciduous Forest Dry – Fresh Sugar Maple Beech Deciduous Forest Dry – Fresh White Ash Deciduous Forest	This feature may provide habitat for Red-headed Woodpecker.	3	Unknown, requires Evaluation of Significance
RHW02	57	Red-headed Woodpecker	FOD7-4	Black Walnut Lowland Deciduous Forest	This feature may provide habitat for Red-headed Woodpecker.	3	Unknown, requires Evaluation of Significance

Table 8 - Evaluation of Significance – Woodlands

Woodland #	Size (>4 ha)	Woodland Interior	Proximity to Other Significant Woodlands or Habitats	Linkages	Water Protection	Woodland Diversity Representation	Uncommon Characteristics	Significant Woodland
2	Yes (> 4ha)	No (does not contain interior habitat)	Yes (contains significant landbird migratory stopover habitat)	No (no other features within 120 m)	Yes (contains streams)	Yes (dominated by native black walnut)	No (no rare vegetation community types)	Yes (meets 4 criteria)
3	Yes (> 4ha)	Yes (contains 12 ha of interior habitat)	Yes (contains significant valleyland VA04)	No (no other features within 120 m)	Yes (contains streams)	Yes (dominated by native sugar maple and shagbark hickory)	No (no rare vegetation community types)	Yes (meets 5 criteria)

Table 9: Summary of the negative environmental effects of the project during the construction and decommissioning phases

Feature ID and Distances to Project Components within 120 m (m)	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Construction Monitoring Plan		Contingency Measure
				Monitoring Locations	Frequency of Monitoring	
Significant Woodlands: W002 WT – 3 AR – 9 UL – overlapping BO – 5 W003 AR – 58	Accidental damage to critical root zones AND Accidental loss of trees or damage to limbs	Prevent damage to the critical root zones AND Prevent accidental loss of trees or damage to limbs	Clearly delineate work area using a barrier such as a silt fence to avoid accidental encroachment on the feature that would lead to damage of trees and root zones. Workers will be advised not to trespass beyond the boundary of the marked area	Check silt fencing along the periphery of significant woodlands	Daily when construction activities occur within the immediate vicinity of significant woodlands and when inclement weather is anticipated (i.e. rain events)	Any tree limbs or root zones that are accidentally damaged by construction activities will be pruned using proper arboricultural techniques
			Erect silt fencing to prevent sedimentation within critical root zones Implement a sedimentation and erosion control plan Any issues should be resolved in a timely fashion	Check silt fencing along the periphery of feature significant woodlands to make sure it is fully functional	Daily when construction activities occur within the immediate vicinity of significant woodlands and when inclement weather is anticipated (i.e. rain events)	Any build up of sediment beyond the silt fence will be cleaned up and removed to avoid risk of further spread of sediment.
			Stockpile materials >30m from woodland edge. Where this is not possible stockpiles will be covered when not in use, especially during rain events or high wind events.	All stockpiles within 30m of significant woodlands (if applicable)	All covers on stockpiles to be put in place and checked when inclement weather events anticipated (i.e. high winds, rain events)	Sediment will be removed if it is found to accumulate within the root zones of significant woodlands
			Re-vegetate disturbed areas with fast growing native species as soon as construction activity within the disturbed areas is complete.	Check that seed grows in areas of disturbance within one growing season	Once after seeding area	Replant areas where seed does not grow to ensure vegetation establishes within the growing season
			All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from significant woodlands	Not required	Not required	Keep emergency spill kits on site Implement MOE spill action plan if necessary Dispose of waste material through authorized and approved offsite vendors
			Implement infiltration (i.e. minimize paved surfaces and design roads to promote infiltration) techniques to the maximum extent possible to avoid changes in soil moisture and compaction	Not required	Not required	Not required
			Locate horizontal directional drill entry/exit pits at least 30m from any significant natural feature	Check distance to natural features to location of entry pits	Once at time of drilling	Move entry pit to 30 m prior to drilling under feature
			Collect drill cuttings as they are generated and place in a soil bin or bag for off-site disposal	Not required	Not required	Not required
			Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction	Check that seed grows in areas of disturbance within one growing season	Once after seeding area	Replant areas where seed does not grow to ensure vegetation establishes within the growing season
			Avoid where possible construction within 120m of significant migratory landbird stopover habitat from April-May and August-October. Construction to be completed outside of the Bald Eagle wintering timeframe of mid-November to late February within 400 m of the delineated Bald Eagle habitat.	Not required	Not required	Not required

Table 9: Summary of the negative environmental effects of the project during the construction and decommissioning phases

Feature ID and Distances to Project Components within 120 m (m)	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Construction Monitoring Plan		Contingency Measure
				Monitoring Locations	Frequency of Monitoring	
BO – 5 SCS01 WT – 45 AR – 98 UL – 96 BO – 58 SCS03** >120 m from Project Location; habitat extent to be determined			Implement standard construction site best management practices to prevent fugitive dust generation and off site transport across the project location	Visual monitoring of visible dust plumes during construction throughout construction site	Ongoing	Not required
			Re-vegetate disturbed areas with fast growing native species as soon as construction activity within the disturbed areas is complete.	Check that seed grows in areas of disturbance within one growing season	Once after seeding area	Replant areas where seed does not grow to ensure vegetation establishes within the growing season

** Pre-construction survey required to verify significance of this feature. If significant the following mitigation measures, monitoring plan and contingency measures will be implemented

Legend: WT: Wind Turbine; UL: Underground Transmission Line; AR: Access Road, OL: Overhead Transmission Line, BO: Balance of Operations, BU: Building/Substation

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
Wind Turbine Erection	Clearing, grubbing, grading, and topsoil removal	<ul style="list-style-type: none"> Increased erosion and sedimentation into woodlands and other natural features, Soil compaction 	<ul style="list-style-type: none"> Develop and implement an erosion and sediment control plan, Utilize erosion blankets, silt fencing, straw bales, etc for construction activities within 30m of a natural feature Maintain erosion control measures for the duration of construction or decommissioning activities, Suspend work if high runoff volume is noted or excessive sediment discharge occurs, Any stockpiled material will be stored more than 30m from a woodland or water body, No vehicle traffic on exposed soils, and no heavy machinery traffic on sensitive slopes 	<ul style="list-style-type: none"> Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, Maintain vegetated buffers, particularly within riparian zones, Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity	<ul style="list-style-type: none"> Disturbance and/or mortality to local wildlife 	<ul style="list-style-type: none"> Clearly post construction speed limits Timing Windows Silt fences also serve to restrict access by construction workers to habitats 	<ul style="list-style-type: none"> Limit potential wildlife road mortalities Reduce human habitat disturbance
	Accidental damage to vegetation	<ul style="list-style-type: none"> Damage or removal of vegetation adjacent to the project location 	<ul style="list-style-type: none"> Where construction activity occurs within 30m of a naturally vegetated feature (ie a significant woodland), the construction area should be clearly delineated with protective fencing, such as silt fencing, Damaged trees should be pruned through implementation of proper arboricultural techniques 	<ul style="list-style-type: none"> Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (ie oil, gasoline, grease, etc)	<ul style="list-style-type: none"> Soil or water contamination 	<ul style="list-style-type: none"> Implement best management practices, Develop a spill response plan and train staff on appropriate procedures, Keep emergency spill kits on site, Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, Dispose of waste material through authorized and approved offsite vendors 	<ul style="list-style-type: none"> Minimize impacts to natural features and wildlife habitats, Avoid contamination of natural Heritage features
	Dewatering activities (if	<ul style="list-style-type: none"> Reduced stream flow rate, 	<ul style="list-style-type: none"> Control rate and timing of water pumping, 	<ul style="list-style-type: none"> Maintain ground and

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
	necessary)	<ul style="list-style-type: none"> Increased water temperature 	<ul style="list-style-type: none"> Pump from deep wells to infiltration galleries adjacent to water bodies or use off-site water, Do not take water during periods of extreme low flow 	surface water conditions with those near pre-construction conditions
	Installation of impervious surfaces	<ul style="list-style-type: none"> Increase surface run-off, Changes in surface water drainage 	<ul style="list-style-type: none"> Minimize impervious surfaces, use gravel pads Maintain vegetative buffers around water bodies, Control quantity and quality of stormwater discharge using best management practices, Minimize grading activities to maintain existing drainage patterns as much as possible 	<ul style="list-style-type: none"> Limit disturbances to surface water drainage patterns
Temporary Access Roads, Crane Paths, and Turnaround Areas	Clearing, grubbing, grading, and topsoil removal	<ul style="list-style-type: none"> Removal of active nests Increased erosion and sedimentation into woodlands and other natural features, Soil compaction 	<ul style="list-style-type: none"> Conduct nest searches if vegetation removal will occur during the breeding bird season (May 1- July 31 Develop and implement an erosion and sediment control plan, Utilize erosion blankets, silt fencing, straw bales, etc for construction activities within 30m of natural heritage features, Maintain erosion control measures for the duration of construction or decommissioning activities, Any stockpiled material will be stored more than 30m from a woodland or water body, No vehicle traffic on exposed soils, or heavy machinery traffic on sensitive slopes, Re-vegetate temporary roads to pre-construction conditions as soon as possible after construction activities are complete 	<ul style="list-style-type: none"> Avoid disturbance of active nests Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, Maintain vegetated buffers, particularly within riparian zones, Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity	<ul style="list-style-type: none"> Disturbance and/or mortality to local wildlife 	<ul style="list-style-type: none"> Avoid construction or decommissioning activities during sensitive time periods (ie breeding bird season), wherever possible,) Construction and decommissioning activities within 30m of woodlands should occur during daylight hours, wherever possible, Clearly post construction speed limits 	<ul style="list-style-type: none"> Minimize human intrusion into wildlife habitats

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
	Accidental damage to vegetation	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (ie oil, gasoline, diesel fuel, grease, etc)	<ul style="list-style-type: none"> • Soil or water contamination 	<ul style="list-style-type: none"> • Implement best management practices, • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Dispose of waste material through authorized and approved offsite vendors 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of features
	Installation of impervious surfaces	<ul style="list-style-type: none"> • Increase surface run-off, • Changes in surface water drainage 	<ul style="list-style-type: none"> • Minimize impervious surfaces, use gravel pads • Maintain vegetative buffers around water bodies, • Control quantity and quality of stormwater discharge using best management practices, • Minimize grading activities to maintain existing drainage patterns as much as possible 	<ul style="list-style-type: none"> • Limit disturbances to surface water drainage patterns
Permanent Access Roads	Clearing, grubbing, grading, and topsoil removal	<ul style="list-style-type: none"> • Removal of active nests • Increased erosion and sedimentation into woodlands and other natural features, • Soil compaction 	<ul style="list-style-type: none"> • Conduct nest searches if vegetation removal will occur during the breeding bird season (May 1- July 31) • Develop and implement an erosion and sediment control plan, • Utilize erosion blankets, silt fencing, straw bales, etc for construction activities within 30m of a woodland, or water body, • Maintain erosion control measures for the duration of construction or decommissioning activities, • Any stockpiled material will be stored more than 30m from a woodland, or water body, • No vehicle traffic on exposed soils, and no heavy 	<ul style="list-style-type: none"> • Avoid disturbance of active nests • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
			machinery traffic on sensitive slopes	
	Noise/human activity	<ul style="list-style-type: none"> Disturbance and/or mortality to local wildlife 	<ul style="list-style-type: none"> Avoid construction or decommissioning activities during sensitive time periods (ie breeding bird season), wherever possible, Construction and decommissioning activities within 30m of woodlands should occur during daylight hours, wherever possible, Clearly post construction speed limits 	<ul style="list-style-type: none"> Limit human disturbance of wildlife
	Accidental damage to vegetation	<ul style="list-style-type: none"> Damage or removal of vegetation adjacent to the project location 	<ul style="list-style-type: none"> Where construction activity occurs within 30m of a naturally vegetated feature (ie significant woodland), the construction area should be clearly delineated with protective fencing, such as silt fencing, Damaged trees should be pruned through implementation of proper arboricultural techniques 	<ul style="list-style-type: none"> Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (ie oil, gasoline, grease, etc)	<ul style="list-style-type: none"> Soil or water contamination 	<ul style="list-style-type: none"> Implement best management practices, Develop a spill response plan and train staff on appropriate procedures, Keep emergency spill kits on site, Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, Dispose of waste material through authorized and approved offsite vendors 	<ul style="list-style-type: none"> Minimize impacts to natural features and wildlife habitats, Avoid contamination of features
	Installation of impervious surfaces	<ul style="list-style-type: none"> Increase surface run-off, Changes in surface water drainage 	<ul style="list-style-type: none"> Minimize impervious surfaces, use gravel pads Maintain vegetative buffers around water bodies, Control quantity and quality of stormwater discharge using best management practices, Minimize grading activities to maintain existing drainage patterns as much as possible 	<ul style="list-style-type: none"> Limit disturbances to surface water drainage patterns
Underground Cabling	Clearing, grubbing, grading, and topsoil removal	<ul style="list-style-type: none"> Removal of active nests Increased erosion and sedimentation into woodlands, and other natural features 	<ul style="list-style-type: none"> Conduct nest searches if vegetation removal will occur during the breeding bird season (May 1- July 31) Develop and implement an erosion and sediment control plan, 	<ul style="list-style-type: none"> Avoid disturbance of active nests Minimize direct impacts on vegetation communities and protect rare/sensitive habitats,

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
			<ul style="list-style-type: none"> • Locate all entry and exit pits at least 30m from natural features (ie woodlands) or water bodies, • Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal, • Any stockpiled material will be stored more than 30m from a woodland, or water body • Horizontal directional drill entry/exit pits should be located at least 30m from any significant natural feature • Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction 	<ul style="list-style-type: none"> • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features • Minimize the presence of exposed soil to reduce the potential for erosion
	Noise/human activity	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife 	<ul style="list-style-type: none"> • Avoid construction or decommissioning activities during sensitive time periods (ie breeding bird season), wherever possible, • Construction and decommissioning activities within 30m of features should occur during daylight hours, wherever possible, • Restore and re-vegetate entry and exit pits to pre-construction conditions as soon as possible after construction 	<ul style="list-style-type: none"> • Limit human disturbance of wildlife Limit human disturbance of wildlife
	Accidental damage to vegetation	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature (ie significant woodland), the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (ie oil, gasoline, grease, etc)	<ul style="list-style-type: none"> • Soil or water contamination 	<ul style="list-style-type: none"> • Implement best management practices, • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of features

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
			<ul style="list-style-type: none"> • Ensure drill depth is at an appropriate level below the watercourse to prevent 'frac-out', • Drill entry and exit pits should be at least 30m from natural features (ie significant woodland) or water bodies, • Dispose of waste material through authorized and approved offsite vendors • Collect horizontal directional drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal 	
Construction of Substation	Clearing, grubbing, grading, and topsoil removal	<ul style="list-style-type: none"> • Increased erosion and sedimentation into woodlands and other natural features, • Soil compaction 	<ul style="list-style-type: none"> • Develop and implement an erosion and sediment control plan, • Utilize erosion blankets, silt fencing, straw bales, etc for construction activities within 30m of a woodland or water body, • Maintain erosion control measures for the duration of construction or decommissioning activities, • Suspend work if high runoff volume is noted or excessive sediment discharge occurs, • Any stockpiled material will be stored more than 30m from a natural feature , • No vehicle traffic on exposed soils, and no heavy machinery traffic on sensitive slopes 	<ul style="list-style-type: none"> • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife 	<ul style="list-style-type: none"> • Avoid construction or decommissioning activities during sensitive time periods (ie breeding bird season), wherever possible, • Construction and decommissioning activities within 30m of woodlands should occur during daylight hours, wherever possible, • Clearly post construction speed limits 	<ul style="list-style-type: none"> • Limit human disturbance of wildlife
	Accidental damage to vegetation	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation

Table10: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
			implementation of proper arboricultural techniques	
	Chemical spills or accidental fluid release (ie oil, gasoline, grease, etc)	<ul style="list-style-type: none"> • Soil or water contamination 	<ul style="list-style-type: none"> • Implement best management practices, • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Dispose of waste material by authorized and approved offsite vendors 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of features

Table 11: Summary of the Environmental Effects Monitoring Plan for significant/provincially significant natural features

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
Disturbance Monitoring for Vegetation								
Disturbance to Pignut Hickory Habitat	<p>Post-construction Disturbance Monitoring Program</p> <p>The overall health of any pignut hickory trees monitored and compared to pre-construction conditions.</p> <p>In addition to monitoring of stress and disturbance levels, the species observed should be recorded and compared to pre-construction conditions.</p>	<p>MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to pignut hickory and pignut hickory habitat is occurring, and whether such effect is attributed to the access roads and not external factors. These discussions will determine whether contingency measures will be undertaken.</p>	<p>Botanical survey</p> <p>Initial health assessment to determine if tree(s) are retainable</p> <p>Post-construction health assessment to monitor any changes overall tree condition</p> <p>All health assessments will be conducted by a certified arborist</p> <p>Methods are outlined in detail in this Environmental Effects Monitoring Plan.</p>	<p>Feature SCS01, if determined to be significant as a result of habitat use studies; presence of pignut hickory trees.</p>	<p>Initial botanical survey and health assessment to determine if any pignut hickory identified in the Study Area to take place in late spring, summer or early fall.</p> <p>Monitoring retainable status and overall health assessment for one year post-construction.</p>	<p>Abundance and overall health status of pignut hickory (S3 species) within 120 m of project location will be monitored for any changes in health.</p>	<p>Report will be submitted to MNR with the following anticipated date: February 2015</p>	<p>Where post-construction monitoring identifies ecologically significant pignut hickory habitat, the proponent, MNR and other relevant agencies will determine if and when additional monitoring and/or mitigation is required and work together to develop a contingency plan. The best available science and information should be considered when determining appropriate mitigation.</p>
Disturbance Monitoring for Birds								
Landbird Migratory Stopover Area	<p>Situating wind turbines outside of migrant habitat.</p> <p>Post-construction Disturbance Monitoring Program (described under 'Monitoring Plan' column to the right)</p> <p>The migrant density landbird migrants (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions.</p> <p>In addition to density, the area-sensitive species observed should be monitored and compared to pre-construction conditions. The draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012) specifies migratory songbirds and migrant raptor species be monitored.</p>	<p>Continued use of the habitat by the species that currently inhabit the feature.</p> <p>MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant annual bird mortality or significant bird mortality events or disturbance/avoidance effect to migrant birds is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.</p>	<p>Studies completed during fall migration period (August-October). Evaluation methods followed “Bird and Bird Habitats: Guidelines for Wind Power Projects” for woodland migratory bird stopover areas</p> <p>A combination of standardized walking transects established within and along the edge of candidate habitat, were conducted in the early morning hours.</p> <p>A commitment has been made to complete pre-construction surveys of habitat use during the spring migration season as well to provide full baseline information</p> <p>Methods are outlined in detail in this Environmental Effects Monitoring Plan.</p>	<p>In feature LBMS01</p>	<p>Ten weeks during the migration season (March-May and August to October), with 2 surveys per week, with at least 1 day between surveys, annually for three years.</p>	<p>Landbird migratory stopover areas can reflect relative importance of the site, with presence of species of conservation concern. Other factors of importance include species diversity, abundance, size of site and habitat diversity.</p>	<p>Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017</p>	<p>Should performance objectives not be met:</p> <ul style="list-style-type: none">Compare declines to population trends noted through province or continent-wide breeding bird surveysdevelop additional studies to determine extent of disturbance effect <p>MNR will be consulted on contingency measures which may include:</p> <ul style="list-style-type: none">For turbines located outside of 120 m of bird SWH, 2 years of subsequent scoped mortality monitoring is required where a significant annual mortality threshold has been exceeded.For turbines located within 120 m of bird SWH, immediate post-construction mitigation (including operation mitigation) and 3 years of effectiveness monitoring may be required.
Bald Eagle Winter Perching Habitat*	<p>Situating wind turbines outside of Bald Eagle habitat.</p> <p>Post-construction Disturbance Monitoring Program.</p>	<p>If pre-construction surveys indicate that this habitat is significant, the MNR will be contacted to discuss mitigation and contingency measures. Significant Bald Eagle</p>	<p>Study area will be surveyed through driving surveys, targeting areas suitable for Bald Eagle perching.</p>	<p>In feature SCS03*</p>	<p>Three surveys during the winter (December – February), each survey 3 weeks apart.</p>	<p>Bald Eagle winter feeding and roosting areas reflect relative importance of the site. This is based off of</p>	<p>Pre-construction: A report will be submitted to the MNR providing the results of pre-</p>	<p>Upon submission of annual post-construction monitoring reports to MNR, it will be determined in consultation with MNR whether contingency measures are required</p>

Table 11: Summary of the Environmental Effects Monitoring Plan for significant/provincially significant natural features

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
	Bald Eagle occurrences (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions.	<p>Winter Perching Habitat would require the continued use of the habitat by the species that currently inhabit the feature.</p> <p>MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to Bald Eagle is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.</p>	<p>Surveys will consist of monitoring candidate trees for Bald Eagle perching. Monitoring will occur between 11am and 2pm from a clear vantage point in the vehicle.</p> <p>Surveys to take place during the winter of 2012/2013, starting mid-December.</p>		Survey on a clear sunny day for maximum visibility.	abundance, size, habitat quality, level of disturbance, and location (if present) of roost.	<p>construction surveys, and the evaluation of significance of this feature (February 2013).</p> <p>If significant, post-construction reports will be provided: Annual Reports will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017</p>	and the contingency measures to be undertaken.

* If habitat is deemed significant as a result of habitat use studies, mitigation proposed in EEMP will be applied. However, if the feature is deemed not significant, no mitigation will be applied for that feature.

Appendix C

Field Notes

Amphibian Breeding Habitat Survey Results (MKI)

ID	Feature Relative to Project Location	Survey Station	Dates Evaluated	Species Totals (within 100 m of survey station)	Carry Forward to EIS?
ABH01(c)	Within 120 m from project road (Avalon Ln)	1	2012-03-28 2012-04-12 2012-05-03 2012-05-30 2012-06-13	No calls No calls No calls No calls No calls	NO
ABH03(c)	e	3	2012-04-12 2012-05-03 2012-05-30 2012-06-13	No calls No calls No calls Green frog (1); Gray treefrog (2)	NO
		4	2012-04-12 2012-05-03 2012-05-30 2012-06-13	No calls No calls No calls No calls	
		5	2012-03-28 2012-04-12 2012-05-03 2012-05-20 2012-06-13	No calls No calls No calls No calls No calls	
		6	2012-04-12 2012-05-03 2012-05-30 2012-06-13	No calls No calls No calls Green frog (1)	
		7	2012-05-02 2012-05-20 2012-06-13	Spring peeper(3); American Toad (2) No calls No calls	

Port Ryerse



Background Data Sources: Ontario Base Mapping and Land Information Ontario, Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011. Projection: NAD 83 UTM Zone 17. All maps and documents provided by M.K. Ince and Associates, Ltd. are subject to our agreement of limitations and qualifications.

UDI Port Ryerse Wind Farm

UDI Renewables Corp.
Port Ryerse, Ontario

Landbird Migratory Stopover Areas Proposed Survey Transects

Layout: 1901.A2011-11-29.B22-2300.H108.A.V6

- Proposed Survey Transects
- Candidate Landbird Migratory Stopover Area
- Proposed Turbine
- Permanent Site Parking Lot
- Project Electrical Line
- Project Road
- Turning Radius
- Substation Area
- Component Laydown Area and Crane Pad
- Bladeswest Area
- 120 m Project Location Buffer
- Participating Properties Boundary
- Building
- Road
- 5 m Contour Line
- Intermittent Stream
- Watercourse
- Waterbody
- # Transect Segment

Date: July 30, 2012

Author: RV Confirmed: Draft

Drawing Number: UDI-PR-LBMS-ST-2012-07-30

0 400 m N

1 : 10 000 at 8.5"x11"

M.K. INCE AND ASSOCIATES LTD.
Renewable Energy & Environmental Consulting



Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Stantec

Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryerse W.F.

Date: Aug 22, 2012

Field Personnel: Kathryn Walpole

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	19	Ø	40 %	Ø	Ø

Start Time: 07:49

End Time: 08:50

Start Point UTM: 0561605 4734827

End Point UTM: 0561791 4734689

Habitat: mixed decid/cons

Transect: #2

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
CAWR	P/Mo	W	4	One segment
LEFL	P		3	
EAWP (E. W. W. W.)	F	W	4	
BLJY	F		11	
REVI	F S	W	5	
CEWA	F	W	23	
AMGO	F	W	12	
BAOR	F	W	5	
RWBB	M FI	W	6	
TRSW	FI, Fo	W	9	
MADO	P, S	W	8	
WITU	Fo	W	6	
GLOW	P	W	1	
POWO	Fo	W	2	
WIBNU	Fo	W	5	
RBGR	Fo	W	1	
NOFL	Fo FI	W	4	
AMCR	FI	W	7	
GCEL	Fo	W	2	
NOCA	Fo, S	W	4	

Pg. 1 of 3

Quality Control: This form is complete ☐ & legible ☐.

Signature: Kathryn Walpole

Signature: _____

(Field Personnel)

(Project Manager)

GRTR, White-tailed deer,

REV: 2011-05-03 / FORM 01



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Stantec

Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryerse W.F.

Date: Aug 22 2012

Field Personnel: Kathryn Walpole

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	<u>21</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>

Start Time: 09:00

End Time: 10:22

Start Point UTM: 0561525 4734777

End Point UTM: 0561534 4734568

(177) Habitat: Mixed decid./Conif.

Transect: # 1

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
WIFL	Fo	W	1	2
BLJY	Fo	W	11	1, 2
BCCM	Fo	W	11	1, 2
BAOR	Fo	W	11	1, 2
DOWO	Fo	W	1	2
BARJ	Fo, FI	W	11	1
AMCR	Fo, FI	W	11	1, 2
REVI	Fo	W	1	1, 2
EA WP	Fo	W	1	1
GRCA	Fo	W	1	1
- Pretty quiet overall.				

Pg. 3 of 3

Signature:

K Walpole
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryerse W.F.

Date: Aug-23-2012

Field Personnel: Kathryn Wolpe

Weather Conditions:

TEMP (°C):

17

WIND:

0

CLOUD:

0

PPT:

0

PPT (in last 24 hrs):

0

Start Time: 07:10

End Time: 09:23

Start Point UTM: 17T 0561357 4735225

End Point UTM: 17T 0562002 4734808

Habitat: Ravine - Mixed hardwood

Transect: #3

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
BCHM	Fo	W	☒☒ 19	1, 2, 3
AMRO	Fo, P	W	☒' 11	1, 2, 3
AMCR	Fo, P	W	☒: 12	1, 2, 3
RWBB	P	W	☒ 10	1
CEWA	Fo, P	W	☒☒:: 23	1, 2, 3
BAOR	Fl, Fo	W	☒ 9	1, 2
MCDO	P, Fo	W	☒:: 13	1, 2, 3
GCFL	P, Fo	W	:: 3	2
COLA	Fo	W	• 1	3
WITU	Fo	W	☒ 9	1, 2, 3
CAWR	S	W	:: 4	1
BRTH	S, Fo	W	• 1	1
PIWO	S	W	• 1	2
REVI	Fo	W	☒ 8	1, 2, 3
AMGO	S, Fo, Fl	W	6	2
AMFL	Fo	W	:: 3	2, 3
COYE	Fo	W	• 1	1
TRSW	Fo, Fl	W	:: 3	2
NorA	Fo	W	:: 4	1, 2, 3
RBGR	Fo	W	• 1	3

Pg. 1 of 1

Signature: [Signature]

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryerse W.F.

Date: Aug 23 2012

Field Personnel: Kathryn Walpole

Weather Conditions:	TEMP (°C): <u>17-22</u>	WIND: <u>2</u>	CLOUD: <u>30%</u>	PPT: <u>0</u>	PPT (in last 24 hrs): <u>0</u>
---------------------	----------------------------	-------------------	----------------------	------------------	-----------------------------------

Start Time: 09:36

End Time: 11:00

Start Point UTM: 17T 0562198 4735335

End Point UTM: 17T 0561963 4735239

Habitat: Mixed decid. conif.

Transect: #4

Feature #: _____

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
REVI	FO, S	W	2	1, 2
RTHU	FO	W	1	2
NOCA	FO, S	W	3	1, 2
LEFL	FO, P	W	1	1
BLSY	FO, FI	W	7	1, 2
WBNU	FO	W	2	2
MODS	FO, P	W	10	1, 2
GRCA	FO, P	W	1	1
MALL	FL	FO	2	2
SPSA	FO	Shoreline	1	2
DCCO	FI	FO	1	2
WITU	FO	W	8	1, 2
HAWO	FO, P	W	1	1
NOCA	P, FO	W	2	1, 2
WIFL	FO, S	W	1	2
CAWR	FO, S	W	1	2
AMRO	P, FO	W	4	1, 2
SOSP	P	W	1	2
AMGO	FI, FO	W	12	1, 2
CEWA	FO, P	W	16	1, 2

Pg. 3 of 4

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Field Personnel)

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

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1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

~~304~~ species, 228 individuals
43

Migratory Bird Survey Observation Form

Project Number:

1609 60788

Project Name:

Port Ryerson

Date:

Aug 30 12

Field Personnel:

R. Holan

Weather Conditions:

TEMP (°C):

19°C-24°C

WIND:

2

CLOUD:

25

PPT:

/

PPT (in last 24 hrs):

/

Start Time:

0636

End Time:

0715

Start Point UTM:

17T 0561233

4734522

End Point UTM:

17T 0561504

4734576

Habitat:

Woods

Transect:

#1

Feature #:

1

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
AMCR	FO/PE	W	11	2
AMGO	FO/PE	W	11	1
GRCA	FO/PE	W	1	1
WTSP	FO/PE	W	1	1
NOCK	FO/PE	W	11	1
BLPW	FO/PE	W	1	1
AMRG	11 11	W	11	1
EUST	11 11	W	1	1
TUVU	FL	FO	1	1
NOCA	FO/PE	W	11	1
CEDW	FO/PE	W	11	1
Warbler sp	FL	FO	11	1
PUMA	FL	FO	11	1
BARY	FL	FO	11	1
TRES	FL	FO	11	1
BORSO	FL	FO	11	1
CAVA	FO/PE	W	1	1
BTBU	FO/PE	W	1	1
AMRE	FO/PE	W	1	1
BLSA	FO/PE	W	11	1

Pg. 1 of 4

Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number:

778

Project Name:

P. Ryser

Date:

Aug 30, 12

Field Personnel:

DH

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

Start Time:

0724

End Time:

0829

Start Point UTM:

17T 0561K1 4735122

End Point UTM:

17T 0562000 4734745

Habitat:

Woods.

Transect:

I3

Feature #:

FR

Species	Behaviour (foraging, mobbing, perched, migration, flying) F	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
GRCA	FR / PE	W	11	3
NOCA	FR / PE	W	11	3
AMGO	FR / PE	W	11	3
KUCB	FM	FO	11	3
KBWD	FR / PE	W	1	3
BOBO	FM	FO	15, 19	3
COGR	FR / PE	W	11	3
AMCN	FR / PE	W	11	3
RTHU	FL	W	1	3
WITU	FR	W	11	3
MODD	FL	W	11	3
BAEA	FL	FO	1 - Ad	3
HOPI	FO / PE	W	11	3
CEOU	FO / PE	W	11	3
CHSP	FO / PE	W	1	3
SOAP	FO / PE	W	1	3
YWAR	FO / PE	W	1	3
CAWP	FO / PE	W	1	3
DEWD	FO / PE	W	1	3

Pg. 3 of 5

Signature:

[Signature]

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Woods.

[illegible]

Pg. of

Signature:



(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



Stantec Consulting Ltd.
 1 – 70 Southgate Drive
 Guelph, ON
 Canada N1G 4P5
 Tel: (519) 836-6050
 Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number:

778

Project Name:

P. Myers

Date:

Aug 30, 12

Field Personnel:

BH

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

Start Time:

0855

End Time:

0929

Start Point UTM:

17T 0561597 4734843

End Point UTM:

17T 0561784 4734611

Habitat:

Woods

Transect:

2, 4 (on reverse)

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
AMRO	FO/PE	W	1	2
POWO	FO/PE	W	1	2
MOOO	FO/PE	W	1	2
NOFC	FO/PE	W	1	2
BCJA	FO/PE	W	1	2
BCCH	FO/PE	W	11	2
EAWP	FO/PE	W	11	2
ROVI	FO/PE	W	11	2
NOCA	FO/PE	W	1	2
RBNU	FO/PE	W	1	2

Pg. 4 of 5

Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

49 species, 228 individuals



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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryers

Date: Aug 31, 12

Field Personnel: B. Holden

Weather Conditions:	TEMP (°C): <u>18-24°C</u>	WIND: <u>1-2</u>	CLOUD: <u>20-30</u>	PPT: <u>/</u>	PPT (in last 24 hrs): <u>/</u>
---------------------	------------------------------	---------------------	------------------------	------------------	-----------------------------------

Start Time: _____

End Time: _____

Start Point UTM: _____

End Point UTM: _____

Habitat: Woods

Transect: 2, 1, 3, 4

Feature #: _____

TIME	Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
704	REVI	FO	W	11	2
	POWO	FO	W	1	2
	BCCH	FO	W	1111	2
	WBNU	FO	W	1	2
	CAWP	FOIPE	W	11	2
	RBWO	FOIPE	W	1	2
702	GCFL	FOIPE	W	1	2
733	BLJA	PEIFL	W	1111	1
	LEFL	FOIPE	W	1	1
	AMCK	PEIFL	W	1111	1
	SOSP	FOIPE	W	11	1
	AMGO	FOIPE	W	1111	1
	RBbr	FOIPE	W	1	1
	NOFL	FOIPE	W	11	1
	NOCA	FOIPE	W	11	1
	AMRO	FOIPE	W	1111	1
	BAEA	FL	FO	1 - 1W,	1
	LEPW	FOIPE	W	1111	1
	BCCH	FOIPE	W	1111	1

Pg. 1 of 3

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
WAUI	FO	W	1	1
BLW	FO	W	###	1
COYE	FO	W	1	1
REVI	FO	W	11	1
MAWA	FO	W	1	1
BBWA	FO	W	1	1
BAWW	FO	W	1	1
AMRG	FO	W	11	1
MERL	FL	FO	1	1
AMBL	FL	FO	25	1
0802 MODO	FO/PE	W	11	1
0817 EUST	FO FO/PE	W	1	3
HORI	FO/PE	W	11	3
NOCA	FO/PE	W	1111	3
CERW	FO/PE	W	### ##	3
SOSP	FO/PE	W	111	3
BLJA	FO/PE	W	111	3
AMBO	FO/PE	W	## 111	3
BHCO	FO/PE	W	11	3
EAPH	FO/PE	W	1	3
COUE	FO/PE	W	1	3
SSHA	FL	FO	11	3
BOBO	FL	FO	111	3
GRCA	FL	W	1	3
SWTH	FO/PE	W	1	3
MODO	FL	W	11	3
COGR	FO/PE	W	###	3
AMRE	FO/PE	W	1	3
EAVP	FO/PE	W	1	3
PUFI	FL	FO	111	3

Pg. 2 of 3

Signature:



(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Number:

778

Project Name:

P. Ryker

Date:

Aug 31, 12

Field Personnel:

BH

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Transect:

Feature #:

Species	Behaviour	Ident or Flyover	Tally	T#
NOWA	FO	W	1	3
AMGO	FO/FE	W		4
BLSA	FO/FE	W		4
AMCR	FO/PE	W		4
GRCA	FO/PE	W		4
BAOR	FO/PE	W	1	4
SGSP	FO/PE	W		4
CENW	FO/PE	W		4
NWAR	FO/PE	W	1	4
CSWA	FO/PE	W	1	4
MDRO	FO/PE	W		4
BLPW	FO/PE	W		4
TEWA	FO/PE	W		4
AMKE	FE	FO	1	4
AMRE	FO/PE	W	1	4
RBNU	FO	W		4
TUVU	FE	FO		4
WITU	FO	W		4

Pg. 3 of 3

Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014a



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Migratory Bird Survey Observation Form

44 species, 218 individuals

Project Number:

160960778

Project Name:

Port Ryerse

Date:

Sep 5th, 12

Field Personnel:

B. Holden

Weather Conditions:

TEMP (°C):

20°C - 25°C

WIND:

0-1 VAR

CLOUD:

FOG to 5%

PPT:

/

PPT (in last 24 hrs):

RAW

Start Time:

0630

End Time:

1040

Start Point UTM:

End Point UTM:

Habitat:

Woods

Transect:

1, 2, 3, 4

Feature #:

Port Ryerse

Time	Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
633	DOWO	PE	W	1	2
	GLFL	PE	W	1	2
	AMCR	PE/FO	W	11	2
	CEVW	PE	W	111	2
	CATE	FL	FO	1	2
	Warbler sp.	FL	W	1	2
	CAW/P	PE	W	11	2
	CAGO	FL	FO	20	2
	BCCH	PE/FO	W	1111	2
	CARW	FO	W	1	2
	AMGO	FL	W	111	2
765	RBWO	FO/PE	W	1	2
729	AMCR	PE/FO	W	1	1
	KBNU	"	W	1	1
	AMRO	"	W	11	1
	DOWO	"	W	1	1
	GRCA	"	W	1	1
	NOFE	"	W	1111	1
	BLJA	"	W	1111	1

Pg. 1 of 2

Signature:

[Signature]

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
BCPW	FO/PE	W	11	1
RWBC	FC	FO	1111	1
MODO	FC	W	1	1
NOCA	FO/PE	W	111	1
REVI	PE	W	1	1
Warbler sp	FC	W	111	1
CONI	FC	W	1	1
AMGO	FC	W	11	1
Sw. CAEA	PE	W	1	1
<hr/>				
828 BCPW	FO	W	1	3
AMRO	PE	W	111	3
MERC	FO/FC	W	1	3
AMCR	PE/FC	W	111	3
AMGO	PE	W	111	3
WBNU	PE	W	111	3
BOBO	FC	FO	111111	3
BOCH	FO	W	1111111111	3
SSHA	FO/FC	W	1	3
COYE	FO	W	11	3
RBWO	PE	W	11	3
BCJA	FC	W	111	3
RWBC	PE	W	1	3
MYWA	FO	W	1	3
SOSP	FO	W	11	3
CSWA	FO	W	1	3
AMCR	FO	W	11111	3
MODO	FO	W	1	3
KILL	FC	FO	11	3
PLWO	FO	W	1	3
Warbler sp	FC	W	1111	3

Pg. 3 of 4

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

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Migratory Bird Survey Observation Form

Project Number: 778Project Name: Port RyuseDate: Sep 5, 12Field Personnel: B. H.

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Transect:

Feature #:

Species	Scholar	W	FO	Tally	Transect Segment
RTHU	FL	W	I		3
CEDU	FO	W	III		W
TUVU	FL	FO	III		W
NACA	FO	W	I		W
EAWP	FO	W	I		W
SSHA	PE	W	I		W
BBWA	FO	W	I		W
REVI	FO	W	II		W
NBPA	FO	W	I		W
SWTH	FO	W	I		3
WAVI	FO	W	I		4
GRCA	FO	W	III		4
Warbler sp.	FL	W	III		4
BLJA	FL PE/FO	W	III		4
NACA	PE	W	II		4
RTHU	FL	W	II		4
SSAA	FL/FO	W	I		4
AM60	FL	FO	III		4
CEDU	FO	W	II		4
BCCIT	FO	W	W		4

Pg. 3 of 4

Signature: R

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

[illegible]

Pg. 4 of 4



Quality Control: This form is complete ☐ & legible ☐.

(Project Manager)

REV: 2011-05-03 / FORM 014

29 species, 133 individuals



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Migratory Bird Survey Observation Form

Project Number: 160160778

Project Name: Port Ryerse

Date: Sep 6, 12

Field Personnel: B. Holden

Weather Conditions: TEMP (°C): 19°C - 26°C WIND: 2-3 - W CLOUD: Fog to 30-60% PPT: / PPT (in last 24 hrs): /

Start Time: 0645

End Time: 1045

Start Point UTM:

End Point UTM:

Habitat: Woods

Transect: 2, 1, 3, 4

Feature #: Port Ryerse

TIME	Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
7646	AMCR	FL	FO	III	2
	Warbler sp	FL/PE	W	IIII	2
	BLJA	FO/PE	W	II	2
	EAWP	PE	W	I	2
705	DOWO	PE	W	I	2
739	AMGO	FO/PE	W	IIII	1
	Warbler sp	PE/FL	W	IIII I	1
	BLJA	PE	W	II	1
	MERL	PE	W	I	1
	DUP1	PE	W	II	1
	MODO	FL	W	II	1
	RTTU	FL	W	I	1
	NOCA	PE	W	II	1
812	AMCR	PE	W	I	1
829	RWBL	FL	FO	IIII	3
	BCLH	FO	W	IIII	3
	BUPW	FO	W	I	3
	EAKI	FO/PE	W	I	3

Pg. 1 of 2

Quality Control: This form is complete ☐ & legible ☐.

Signature: [Signature]

Signature: [Signature]

(Field Personnel)

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
WITU	PE	W		3
AMCR	FL	FO		3
DOWO	PE/FO	W		3
AMEO	FL	FO		3
HOWR	PE	W		3
COHE	FO	W		3
CEPW	FO/PE	W		3
AMPO	FO/PE	W		3
YWAR	FO/PE	W	1	3
SOSP	FO/PE	W	1	3
UBER	FO/PE	W	1	3
WBNU	FO/PE	W	1	3
EAWP	FO/PE	W	1	3
BTNW	FO	W		4
TEWA	FO	W		4
BLPW	FO	W		4
CEPW	FL	FO	25	4
GRCA	FO/PE	W		4
CARW	FO/PE	W		4
BLSA	FO/PE	W		4
AMCR	FO/PE	W		4
COHE	FO	W	1	4
AMOW	FO	W		4
SOSP	FO	W	1	4
TUVU	FL	FO	1	4
DOWO	FO	W	1	4
AMRE	FO	W		4
Warbler sp	FO	W		4
RBWO	FO	W	1	4

Pg. 2 of 2

Signature:



(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryerse

Date: Sep 12, 12

Field Personnel: B. Holden

Weather Conditions: TEMP (°C): 17-24°C WIND: 3-4 SW CLOUD: / PPT: / PPT (in last 24 hrs): /

Start Time: _____

End Time: _____

Start Point UTM: _____

End Point UTM: _____

Habitat: Woods

Transect: 2, 1, 3, 4

Feature #: _____

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
MERL	FL	✓	I	2
AMER	FL	✓	II	2
BLJA	PE FL	✓		2
BCCH	FO PE	W	III	2
BWHA	PE	W	I	2
OWO	PE	W	I	2
AMCR	PE	W	I	1
TUVU	FL	FO	I	1
MURU	FO	W		1
AMGU	FO	W		1
RBW	FO	✓	I	1
RBW	FO PE	✓	I	1
WAM	FO	W	I	1
EAWP	PE	✓	I	1
HOFI	PE	W	I	1
NOFL	PE	W	I	3
MURU	PE	W	III	3
RTAU	FO PE	W	II	3

Pg. 1 of 1

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Number:

160960778

Project Name:

Port Royal

Date:

Sep 13 12

Field Personnel:

B. Holden

Weather Conditions:

TEMP (°C):

22-27°C

WIND:

4-5W

CLOUD:

30

PPT:

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Woods

Transect:

2113H

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
0700 BCSA	FO	W		2
DUNO	FO	W		2
AMUR	FO	W		2
CARU	PE	W		2
0717 EALP	PE	W		2
0740 AMGO	FO	W		1
Amro	FO	W		1
AMUR	FO	W		1
BCSA	FO	W		1
NOFL	"	W		1
MORO	"	W		1
SOSP	"	W		1
MYWA	"	W		1
REVI	"	W		1
0805 NOCA	"	W		1
0827 BAFA	FO	FO	1 - Ad	3
COYE	FO	W		3
ORCA	FO	W		3

Pg. 1 of 2

Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
BLJA	FO/PE	W	##	3
AMGO	"	"		2
SOSP	"	"		1
RWBL	"	"		1
AMR	"	"		1
AMRO	"	"		2
NCCA	"	"		1
EUST	"	"	### 450	1
WQU	"	"		1
MURD	"	"		1
BHEO	"	"		1
TYUV	KL	FO	##	1
BLWC	FO/PE	W		1
BCH	"	W	###	1
WBW	"	W		1
SOSP	FO/PE	W		1
COYC	"	"		1
AMGO	"	"	###	1
NCCA	"	"		1
GRCA	"	"		1
EAPN	"	"		1
CERW	"	"	###	1
MARD	"	"		1

Pg. 22 of 22

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



Migratory Bird Survey Observation Form

160960778

UDI Part Ryerse Wind Farm

Sept 19, 2012

D Graham

12

2

02

Nave

Rain

9:11

9:47

56 | 232, 4734814

1:

Food

1

CAWL

Foraging

W

1

Between transect 1 & 4.

Signature:

Don Grady
(Field Personnel)

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: UDI Port Ryerse Wind Farm

Date: Sept 19, 2012

Field Personnel: DG

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	<u>5°C</u>	<u>2</u>	<u>10%</u>	<u>None</u>	<u>Rain</u>

#2 Start Time: 7:02

End Time: 7:47

Start Point UTM: 561599, 4734835

End Point UTM: 561798, 4734624

Habitat: FOD

Transect: 2

Feature #: _____

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
WTSP	Foraging	W	111	
AMCR	Flying	FO	111	
AMRO	Foraging	W	1111	
AMGO	Foraging	W	11	
NCA	Foraging	W	11	
HOWR	Foraging	W	1	
WBND	Foraging	W	1	
MOBO	Perched	W	111	
NAWA	Foraging	W	1	
DOWD	Foraging	W	1	
BCCH	Foraging	W	1	
BLJA	Flying	FO	1111	
HAWD	Flying	FO	1	

Pg. 2 of 8

Signature: _____

Don Graham
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

[illegible]

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Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: UDI Port Ryerse Wind Farm

Date: Sept 19, 2012

Field Personnel: DG.

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	<u>7°C</u>	<u>2</u>	<u>100</u>	<u>None</u>	<u>Rain</u>

3

Start Time: 7:56

End Time: 8:57

Start Point UTM: 562135, 4734779

End Point UTM: 561188, 4735125

Habitat: FOD

Transect: 3

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
BLJA	Foraging	W	###	
WIVR	Foraging	W	1	
AMCR	Flying	FO	1/1	
BTBW	Foraging	W	1	
WBNV	Foraging	W	1/1	
ANGO	Flying	FO	1	
WITU	Perched	W	1/1	
EUST	Perched	W	1/1	
NOFL	Perched	W	1	
COYE	Foraging	W	1/1	
MOCA	Foraging	W	1	
HOWR	Foraging	W	1	
SOSP	Foraging	W	1/1	
AMRO	Foraging	W	###	
CHSP	Foraging	W	1	
RBNV	Foraging	W	1/1	
GRCA	Foraging	W	1	
BLJA	Flying	FO	1/1	
MAWA	Foraging	W	1	
BCCN	Foraging	W	1/1	

Pg. 3 of 8

Signature: Don Guah

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

Immature Bald Eagle perched on rock along waterfront at start UTM

REV: 2011-05-03 / FORM 014

[illegible]

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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: UDI PortRusee Wind Farm

Date: Sept 19, 2012

Field Personnel: DG

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	14	2	20%	None	Rain

#4 Start Time: 10:20

End Time: 10:52

Start Point UTM: 561965, 4785247

End Point UTM: 562168, 4735272

Habitat: FOD

Transect: #4

Feature #:

Pg. 4 of 8

Signature:

Don H. [Signature]
(Field Personnel)

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Name: UDI Part Process 2nd

Field Personnel: DG

Weather Conditions:

PPT (in last 24 hrs):

Name _____

End Time: 9:43

End Point UTM: 561571 4734980

Transect: 1

Feature #:

[illegible]

Pg. 5 of 8

Signature:

Don Graham
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Strong winds reducing bird activity.



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Migratory Bird Survey Observation Form

Project Number: 160960728

Project Name: 001 Port Ryerse Wind

Date: Sept 20, 2012

Field Personnel: DG

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	<u>15</u>	<u>4</u>	<u>30%</u>	<u>None</u>	<u>None</u>

Start Time: 7:10

End Time: 7:56

Start Point UTM: _____

End Point UTM: _____

Habitat: FOO

Transect: 2

Feature #: _____

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
<u>BLJA</u>	<u>Flying</u>	<u>W</u>	<u>11</u>	
<u>TOVV</u>	<u>Flying</u>	<u>FO</u>	<u>12</u>	
<u>RTHA</u>	<u>Flying</u>	<u>FO</u>	<u>1</u>	

Pg. 6 of 8

Signature: _____

Don Graham
(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

Strong winds minimizing bird activity

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Name: Red Pencil 7101

Field Personnel: D'G

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15	4	30%	None	None

End Time: 8:57

End Point UTM: _____

Transect: 3

Feature #:

[illegible]

Pg. 7 of 8

Don Graham
(Field Personnel)

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Signature:

(Project Manager)

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Strong winds reducing larval activity

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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: UDI Port Reverse Wind

Date: Sept 20, 2012

Field Personnel: DG.

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15°C	4	80%	None	None

Start Time: 10:05

End Time: 10:56

Start Point UTM:

End Point UTM:

Habitat: FOD & CUP?

Transect: 4

Feature #:

[illegible]

Pg. 8 of 8

Signature:

Don Hughes
(Field Personnel)

(Field Personnel)

Quality Control: This form is complete ☒ & legible ☒.

Signature:

(Project Manager)

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Strongly under-reducing biodiversity



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Migratory Bird Survey Observation Form

Project Number: 160960773

Project Name: Port Ryerse

Date: Sept 24/12

Field Personnel: M. Ross

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	<u>4° - 8°</u>	<u>3 - 5</u>	<u>15</u>	<u>None</u>	<u>Rain</u>

Start Time: 7:48

End Time: 8:13

Start Point UTM:

End Point UTM:

Habitat: FOD / lakeshore

Transect: 4

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
GCKI	foraging	W		4
Warbler Sp	Fly fly	FO		"
AMPI	Fly	FO	1	"
RBNH	forage	W		"
AMGO	Perch	W		"
NOFL	forage	W	1	"
Warbler Sp	forage	W		"
WBNH	forage	W	1	"
RBWO	forage	W	1	"
DOWD	forage	W	1	"
BCCH	forage	W		"
CARW	forage	W	1	"
AMCR	Perched	W		"
SOSP	forage	W	1	"
MYWA	forage	W		"
BLJA	forage	W	1	"
WTSP	"	"		"
DCO	perch	on rocks off shore		"
GBHE	forage	Just off shore	1	"
CAGO	loafing	"		"

Pg. 1 of 3

Signature: [Signature]

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
TRANSECT 3 Start: 8:34 END: 8:54				
AM60	Perch	W	1	3
AM60	fly	FO		
HOWR	Perch	W		
SOJP	Forage	W		
AMCR	Perch	W		
CAGO	fly	FO	1	
INBU (ov)	perch	in corn	1	
BLJA	Forage	FO	1	
COYE	Perch	FO (Edge)	1	
WTSP	Perch / Forage	FO	1	
AMRO	Perch	FO	1	
EUST	fly	FO		
MYWA	Forage	FO		
RBMH	Forage	FO	1	
TRANSECT 2 Start 8:56 END: 9:06				
BLJA	Perch	W	1	2
BCCH	Forage	W	1	
AM60	Perch	FO	1	
DOWO	Forage	W	1	
Monarch	fly down road	FO	1	
BARS	Forage / fly	FO		

Pg. 2 of 3

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

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Migratory Bird Survey Observation Form

Project Number: 160960773

Project Name: Pont Ryerse

Date: Sept 25/12

Field Personnel: M. Ross

Weather Conditions:	TEMP (°C): <u>14°</u>	WIND: <u>S-6 SE</u>	CLOUD: <u>10</u>	PPT: <u>None</u>	PPT (in last 24 hrs): <u>None</u>
---------------------	-----------------------	---------------------	------------------	------------------	-----------------------------------

Start Time: 7:41

End Time: 8:07

Start Point UTM: _____

End Point UTM: _____

Habitat: FOD

Transect: 1

Feature #: _____

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
CONI	Roost on Ground	W	1	1
NOCA Adult/Youv	forage	W	11	1
WBNU	forage	W	1	1
Warbler sp	"	W	1	1
GCKI	"	W	444	1
↓				
TRANSECT 2				
AMCR	fly	FO	111	2
CEDW	fly	FO	1	2
Saddlebays sp	foraging High over laneway		1	2
↓				
TRANSECT 3				
BTBW	forage	W	11 (Ad. Male)	3
RBWO	"	W	1	3
BLJA	"	W	111	3
Warbler sp.	"	W	11	3
CAGO	fly NW	over corn field	11	3
MODD	forage (@ edge)	edge of corn field	11	3
WTSP	perch (@ edge)	in thicket @ edge	11	3
Hawk	perch (@ edge)	edge in thicket	1	3
↓				

Pg. 1 of 2

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

Signature: _____

(Field Personnel)

(Project Manager)

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Migratory Bird Survey Observation Form

Project Number: 100060778Project Name: Port RyerseDate: Oct 1, 2012Field Personnel: B Holden

Weather Conditions:

TEMP (°C): 12-16°CWIND: 2-3 WCLOUD: 20-90PPT: /PPT (in last 24 hrs): /Start Time: 11:45End Time: 12:30Start Point UTM: 111End Point UTM: 111Habitat: WoodsTransect: 2, 1, 3, 4Feature #: 111

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
<u>STAR 3715</u> CARW	<u>PE</u>	<u>W</u>	<u>1</u>	<u>2</u>
VTSP	<u>PE</u>	<u>W</u>	<u>111</u>	<u>2</u>
PVFI	<u>FL</u>	<u>FO</u>	<u>1111</u>	<u>2</u>
BLJA	<u>FL</u>	<u>W</u>	<u>1111</u>	<u>2</u>
<u>3728</u> NOCA	<u>PE</u>	<u>W</u>	<u>11</u>	<u>3</u>
<u>3723</u> EAPH	<u>FO</u>	<u>W</u>	<u>11</u>	<u>1</u>
EABL	<u>FO</u>	<u>W</u>	<u>11</u>	<u>1</u>
BLJA	<u>FL</u>	<u>W</u>	<u>1111</u>	<u>1</u>
GCKI	<u>FO</u>	<u>W</u>	<u>1111</u>	<u>1</u>
JUST	<u>FO</u>	<u>W</u>	<u>11</u>	<u>1</u>
WRWA	<u>FO</u>	<u>W</u>	<u>111</u>	<u>1</u>
MYWA	<u>FO</u>	<u>W</u>	<u>1111</u>	<u>1</u>
WTSP	<u>FO</u>	<u>W</u>	<u>1111</u>	<u>1</u>
AMRO	<u>FO</u>	<u>W</u>	<u>11</u>	<u>1</u>
CONE	<u>FO</u>	<u>W</u>	<u>1</u>	<u>1</u>
SCSP	<u>FO</u>	<u>W</u>	<u>11</u>	<u>1</u>
HGTH	<u>FO</u>	<u>W</u>	<u>1</u>	<u>1</u>
BHVI	<u>FO</u>	<u>W</u>	<u>1</u>	<u>1</u>
<u>1</u> RCKI	<u>FO</u>	<u>W</u>	<u>11</u>	<u>1</u>

Pg. 1 of 3Signature: [Signature]

(Field Personnel)

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(Project Manager)

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Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
BRCK	FO	W	1	1
RBM	FO	W	1	1
WTSP	FO	W		3
AMCR	FO	W		3
GCK1	FO	W		3
EWCS ^{WCSP}	FO	W		3
MODO	FO	W		3
RUCY	FO	W		3
NUCA	FO	W		3
UPWA ^{PAWA}	FO	W		3
POWO	FO	W		3
BCH	FO	W		3
MYWA	FO	W		3
SOSP	FO	W		3
POWO	FO	W		3
AMRO	FO	W		3
CEHE	FO	W		3
LISP ^{LISP}	FO	W	1	3
CGOV	FO	W		3
RBLW	FO	W		3
DETV	FO	W		3
EAPA	FO	W		3
GBHE	FL	FO	1	3
COGR	FL	FO	8	3
BTMW	FO	W	1	3
KICE	FO	nearby		3
TUW	FL	FO		3
RTAA	FL	FO		3
PVFI	FO	W		3
SSWA	FL	FO	1	3

Pg. 2 of ____

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

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Migratory Bird Survey Observation Form

Project Number: 778Project Name: Port RyerseDate: Oct 1, 12Field Personnel: JBH

Weather Conditions:

TEMP (°C): WIND: CLOUD: PPT: PPT (in last 24 hrs): Start Time: End Time: Start Point UTM: End Point UTM: Habitat: WoodsTransect: 4Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
<i>3rd Wood</i> BAEA	FL	FO	1	3
BRTH	FO	W	1	3
<i>START Wood</i> AMRO	FO	✓		4
WTSP	FO	W	 	4
MYUA	FO	✓		4
GCKI	FO	W	 	4
RCKI	FO	W		4
SSAA	FL	FO	1	4
SGSP	FO	W		4
DEWO	FO	✓		4
BRCP	FO	W	1	4
EATA	FO	W	1	4
TUW	FL	FO	 	4
BHVI	FO	✓	1	4
RBNV	FO	W		4
EATU	FO	W	1	4
RTAA	FL	FO		4
PLSI	FL	FO	20	4
<i>END Wood</i> WLWR	FO	W	1	4

Pg. 33Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Number:

160960778

Project Name:

Port Ryerson

Date:

Oct 3 2012

Field Personnel:

C. Holden

Weather Conditions:

TEMP (°C):

2-3

WIND:

CLOUD:

VAR

PPT:

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Woods

Transect:

2, 1, 3, 4

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
0715 HOPI	FL	FO		2
SOSP	FO	✓		2
LANG	FL	FO	100	2
MYWA	FO	W		2
PISI	PE	W	20	2
BCCA	FO	W	##	2
BCJA	PE	W		2
NACA	FO	W	1	2
RBNU	FO	W		2
WTSP	FO	W		2
0732 RCKI	FO	W	1	2
0800 MYWA	FO	W		1
RCKI	FO	W	##	1
NACA	FO	W		1
FISP	FO	W	1	1
WTSP	FO	W		1
NOFL	FO	W	1	1
MADE	FO	W		1
BCPW BLPW	FO	W		1

Pg. 1 of 3

Signature:

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Signature:

(Field Personnel)

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
TUVU	FL	FO		1
BCPL	FO	W		1
BCCH	FO	W		1
EAPH	FO	W		1
HETH	FO	W		1
SSHA	FO/FL	W		1
RBUC	FO	W		1
MYWA	FO	W	+ 25 + 12	3
BLSA	FL	W	+ 25 + 12	3
HETH	FO	W		3
WPWA	FO	W		3
BCCH	FO	W		3
NALWA	FO	W		3
RBNU	FO	W		3
Dawo	FO	W		3
BLPW	FO	W		3
TUVU	FL	FO		3
WTSP	FO	W		3
AMGO	FO	W		3
SOSP	FO	W		3
OCWA	FO	W		3
EATO	FO	W		3
RCKI	FO	W		3
AMCR	FL	FO		3
WCSP	FO	W		3
AMRO	FO	W		4
MYWA	FO	W	+ 25 + 12	4
WTSP	FO	W		4

Pg. 2 of ____

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

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Migratory Bird Survey Observation Form

Project Number: 778Project Name: P. RyersonDate: Oct 3 12Field Personnel: R. Holden

Weather Conditions:

TEMP (°C): WIND: CLOUD: PPT: PPT (in last 24 hrs): Start Time: End Time: Start Point UTM: End Point UTM: Habitat: WoodsTransect: Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
REKI	FO	W		4
AMCR	FO	W		4
NAWA	FO	W		4
BCCH	FO	W		4
GCKI	FO	W		4
TEWA	FO	W		4
BTNW	FO	W		4
OCWA	FO	W		4
TUVU	FO	FO		4
BCLW	FO	W		4
RBNV	FO	W		4
NOCA	FO	W		4
MORC	FO	W		4
EAPH	FO	W		4
HETH	FO	W		4
SHVI	FO	W		4

Pg. 3 of 3Signature:

(Field Personnel)

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(Project Manager)

REV: 2011-05-03 / FORM 014



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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Part Represe

Date: Oct 8, 12

Field Personnel: B. Holder

Weather Conditions: TEMP (°C): 6°C - 9°C WIND: 4 - W CLOUD: 80-100% PPT: / PPT (in last 24 hrs): Rain

Start Time: _____

End Time: _____

Start Point UTM: _____

End Point UTM: _____

Habitat: Woods

Transect: 2, 1, 3, 4

Feature #: _____

Start	Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
0720	BCSA	PE	W		2
	BCCH	FO	W		2
	GCKI	FO	W		2
	CARU	FO	W		2
0752	AMRO	FO	W		2
0837	RWBC	FO	W		1
	UTSP	FO	W		1
	GCKI	FO	W		1
	SOSP	FO	W		1
	AMCR	PE/FO	W		1
	UTU	FO	W		1
	RCKI	FO	W		1
	EAPH	FO	W		1
	AMRO	FO	W		1
	BCCH	FO	W		1
	MYWA	FO	W		1
	Dawo	FO	W		1
	RBNV	FO	W		1
0914					

Pg. 1 of 3

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Signature: _____

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REV: 2011-05-03 / FORM 014

0939

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
GCKI	FO	W		3
BCHT	FO	W		3
CELV	FO	W		3
MYWA	FO	W		3
WTSP	FO	W		3
LISP	FO	W	1	3
PEJU	FO	W		3
AMRO	FO	W	1	3
WPLA	FO	W	11	3
BLJA	PE	W		3
NOCA	FO	W	11	3
HEMI	FO	W	11	3
CHSP	FO	W	11	3
BLAW	FO	W	11	3
ETAO	FO	W	1	3
EAPH	FO	W	1	3
RBWO	FO	W	1	3
BHUI	FO	W	1	3
SOSP	FO	W	1	3
PISI	FL	FO	45	3
COGR	PE	W	15	3
WCSP	FO	W		3
ETWP	FO	W	1	3
NOFL	FO	W	111	3
OCWA	FO	W	1	3
SWTH	FO	W	1	3
WITU	FO	W		3
AMBO	FO	W	1111	3
AMUR	FO	W	11	4
SCTA	FO	W	1	4

1040

Pg. 2 of ____

Signature: _____

(Field Personnel)

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(Project Manager)

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Migratory Bird Survey Observation Form

Project Number:

778

Project Name:

P. Knoch

Date:

Oct 8, 12

Field Personnel:

BH

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Transect:

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
WTSP	FO	W		4
EATO	FO	W		4
EWCS	FO	W		4
MYWA	FO	W		4
SOSP	FO	W		4
NOFL	FO	W		4
RBNU	FO	W		4
BAEA	FL	FO	1-Ad 1-Boxc III	4
BCCA	FO	W		4
Medo	FO	W		4
YBSA	FO	W		4
WLWR	FO	W		4
HETH	FO	W		4
EUST	FO	W		4
TOW	FL	FO		4
BCSA	FO	W		4
DEJU	FO	W		4
CHSP	FO	W		4
BCPW	FO	W		4
WBNU	FO	W		4

Pg. 3 of 3

Signature:

(Field Personnel)

BHCO

FO

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

W

||

REV: 2011-05-03 / FORM 014

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Stantec

Migratory Bird Survey Observation Form

Project Number:

160960718

Project Name:

Port Ryers

Date:

Oct 9, 12

Field Personnel:

B Holder

Weather Conditions:

TEMP (°C):

9°C - 13°C

WIND:

4-5-SSW

CLOUD:

40-80%

PPT:

/

PPT (in last 24 hrs):

/

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Woods

Transect:

2, 3, 4

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
0729 GCKI	FO	W	###	2
BRIR	Fe	W	1	2
RCKI	FO	W	1	2
0750 RBNU	Fe	W	11	2
7831 WTSP	FO	W	1111	1
GCKI	FO	W	###	1
WILWR	FO	W	1	1
RCKI	FO	W	1111	1
RWBL	PE	W	1111	1
Pawo	FO	W	1	1
CEW	FO	W	11	1
HETH	FO	W	11	1
BCCH	Fe	W	1111	1
MYWA	Fe	W	11	1
LPWA	Fe	W	1	1
9908 DESU	FO	W	1	1
10138 Pawo	Fe	W	1	1
RWBL	PE	W	1111	1

Pg. 1 of 1

Signature:

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(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
GCKI	FO	W	#	3
LTSP	FO	W		3
WCSP	FO	W		3
SOSP	FO	W		3
RCKI	FO	W		3
DARU	FO	W		3
SUSP	FO	W		3
CEBW	FO	W		3
MYWA	FO	W		3
AMRO	FO	W		3
WILR	FO	W		3
EAPH	FO	W		3
YBSA	FO	W		3
WETH	FO	W		3
HOWR	FO	W		3
NANA	FO	W		3
BLSA	FO	W		3
EABL	FO	W		3
NOKA	FO	W		3
SSHA	FL/FO	W		3
1030				
1052				
SOSP	FO	W		4
AMGO	FO	W		4
GCKI	FO	W		4
RCKI	FO	W		4
LTSP	FO	W		4
MYWA	FO	W		4
TUUU	FL	FO		4
GRUA	FO	W		4
AMRO	FO	W		4
PUFI	FO	W		4

Pg. 3 of 3

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number:

Project Name:

Date:

Field Personnel:

Weather Conditions:

TEMP (°C):

WIND:

CLOUD:

PPT:

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Transect:

Feature #:

End!
11/9

Signature:

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)



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 Guelph, ON
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Migratory Bird Survey Observation Form

Project Number:

160960

Project Name:

Port Ryerson

Date:

Oct 15, 13

Field Personnel:

B Holden

Weather Conditions:

TEMP (°C):

10°C

WIND:

B-4-sw

CLOUD:

40-80

PPT:

/

PPT (in last 24 hrs):

Rain

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Woods

Transect:

2, 1, 3, 4

Feature #:

	Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
0727	RBNU	FO	W	11	2
0744	CARW	FO	W	1	2
0826	GCH	FO	W	11	1
	RCU	FO	W	11	1
	DEJU	FO	W	11	1
	WTSP	FO	W	11 11 11	1
	BLJA	FO	W	11	1
	EAPH	FO	W	1	1
	NOCA	NOCA FO	W	11	1
	LIWA	FO	W	1	1
	SOSP	FO	W	1	1
	AMRO	FO	W	11 11	1
	MYWA	FO	W	1	1
0854	YBSA	FO	W	1	1
0925	MUWA	FO	W	11	3
	DEJU	FO	W	11 11 11	3
	SASP	FO	W	1	3
	GCH	FO	W	11 11 11 11	3

Pg. 1 of 3

Signature:

(Field Personnel)


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Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
WTSP	FO	W		3
RCK	FO	W		
EAPH	FO	W		
BLJA	FL	FO	20	
MCPO	FO	W		
SOSP	FO	W	1	
HEMA	FO	W	1	
NOFC	FO	W	1	
BLJA	FO	W		
COMF	FO	W	1	
AMCR	FO	W	1	
HOFL	FL	FO		
VPWA	FO	W		
AMRO	FL	FO	10, 5	
AMKE	FL	FO	1	
PLSI	FO	W	20	
OWWO	FO	W	1	
BCJA	FO	W		
RBNV	FO	W	1	
NAWA	FO	W	1	
WTSP	FO	W		f
SOSP	FO	W		
DEJU	FO	W		
GCKY	FO	W		
RCKY	FO	W	1	
BPER	FO	W	1	
MUWA	FO	W		
EWCS	FO	W	1	
VPWA	FO	W	1	
AMRO	FO	W		

Pg 2 of 3
Signature: 

(Field Personnel)

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Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number:

Project Name:

Date:

Field Personnel:

Weather Conditions:

TEMP (°C):

~~WIND:~~

~~CLOUD:~~

PPT.

PPT (in last 24 hrs):

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Transect:

Feature #:1122

Pg. 2 of 3

Signature:

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Signature:

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REV: 2011-05-03 / FORM 014



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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number:

160960

Project Name:

Port Ryerse

Date:

Oct 16, 12

Field Personnel:

B. Holden

Weather Conditions:

TEMP (°C):

6-11°C

WIND:

2

CLOUD:

10-30

PPT:

/

PPT (in last 24 hrs):

/

Start Time:

End Time:

Start Point UTM:

End Point UTM:

Habitat:

Woods

Transect:

2, 11, 3, 4

Feature #:

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
OT 30				
WIWR	PE/FO	W	1	2
DWNO	FO	W	11	2
RBNV	FO	W	1	2
GCKY	FO	W	1111	2
RBLW	FO	W	1	2
BCCH	FO	W	111111	2
AMRO	FO	W	11	2
OT 50				
RCKY	FO	W	1	2
OT 24				
WTSP	FO	W	111111	1
RWBL	FO	W	111	1
MOPO	FO	W	111	1
AMCO	FO	W	111111	1
DESV	FO	W	111111	1
SOSP	FO	W	1111	1
PLSI	FL	FO	15	1
AMRO	FO	W	111111	1
AMER	FL	FO	10, 16	1
SWSP	FO	W	1	1
HTTA	FO	W	11	1

Pg. 1 of 3

Signature:

[Signature]

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

REV: 2011-05-03 / FORM 014

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
GCKI	FO	W		1
RBNU	FO	W		1
SSHA	FL	W	1	1
COGR	FL	FO	20	1
0905 NUKE NOFL	FO	✓	1	1
0929 AMRO	FO	W		3
BCCH	FO	W		3
DONO	FO	W		3
GCKY	FO	W		3
MYWA	FO	W		3
WPWA	FO	W		3
AMGO	FO	W	M	3
NAWA	FO	W		3
RexI	FO	W		3
EAPH	FO	W		3
BHVI	FO	W	1	3
BTNW	FO	W	1	3
UBNU	FO	W	1	3
BCSA	FO	W		3
HEPH	FO	W		3
RTHA	FL	FO	1	3
CASP	FO	W	1	3
PUFH	FO	W		3
YBSA	FO	W	1	3
NOCA	FO	W)	3
EUST	FO	W		3
EWCS WCSP	FO	W		3
CEPW	FO	W		3
EATO	FO	W	1	3
TUV	FL	FO		3

Pg. 2 of ____

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



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1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number: _____

Project Name: P Ryerse

Date: Oct 16, 12

Field Personnel: GA

Weather Conditions:

TEMP (°C): _____

WIND: _____

CLOUD: _____

PPT: _____

PPT (in last 24 hrs): _____

Start Time: _____

End Time: _____

Start Point UTM: _____

End Point UTM: _____

Habitat: Woods

Transect: _____

Feature #: _____

Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
TEWA	FO	W	1	3
WERN	FO	FO	11	3
WTSP	FO	✓		f
DEJU	FO	✓		f
EWCS	FO	✓		f
SOSP	FO	✓		f
CHSP	FO	✓		f
MUWA	FO	W		f
WPWA	FO	W		f
RWBL	FO	W		f
EATO	FO	W	1	f
AMRO	FO	✓		f
BLSA	FO	✓		f
GUCI	FO	W		f
ORTH	FO	W	1	f
NOCA	FO	W	1	f
FOSP	FO	W	1	f

Pg. 3 of 3

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014

**Stantec**

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Migratory Bird Survey Observation Form

Project Number: 160900778Project Name: Port RyerseDate: Oct 27, 2012Field Personnel: B. Holton

Weather Conditions: TEMP (°C): 5-13°C WIND: 3-5 CLOUD: 50-70 PPT: / PPT (in last 24 hrs): /

Start Time: _____

End Time: _____

Start Point UTM: _____

End Point UTM: _____

Habitat: WoodsTransect: 2, 1, 3, 4

Feature #: _____

	Species	Behaviour (foraging, mobbing, perched, migration, flying)	Using Woodlot (W) or Fly-over (FO)	Tally of Individuals	Transect Segment
7750	RBWO	FO	W	1	2
	BCH	FO	W		2
	GCKI	FO	W		2
804	HETH	FO	W	1	2
837	AMEL	FO	W	11	1
	SESP	FO	W	11	1
	AMWO	FO	W		1
	MEBO	FO	W		1
	YBSA	FO	W	1	1
	NOCA	FO	W	11	1
	AMWO	FO	W		1
	EUST	FL	FO	150	1
1086	RBWO	FO	W	1	1
137	DESU	FO	W		3
	EATO	FO	W	1	3
	WTSP	FO	W		3
	SESP	FO	W		3
	BLJA	FO	W		3

Pg. 1 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014



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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Migratory Bird Survey Observation Form

Project Number: 160960778

Project Name: Port Ryer

Date: Oct 24, 12

Field Personnel: A. Holden

Weather Conditions: TEMP (°C): 10-14°C WIND: 3-4 CLOUD: ☁ PPT: — PPT (in last 24 hrs): RAIN

Start Time: _____

End Time: _____

Start Point UTM: _____

End Point UTM: _____

Habitat: Woodlots

Transect: 2, 1, 3, 4

Feature #: _____

	Species	W or FO	Behavior	Tally	T#
757	CARV	W	FO	11	2
	WBMV	W	FO	1	2
	AMOV	FO	FO	1111	2
855	AMUR	W	FO	1	2
820	AMRO	W	FO	11	1
	SO SP	W	FO	1	1
	BLJA	FO	FO	1111	1
	PLSI	FO	FO	111111	1
	GERI	FO	W	1111	1
	BLER	FO	W	1	1
	RBNV	FO	W	1	1
843	NOVA	FO	W	11	1
900	WTSP	FO	W	111111	3
	GERI	FO	W	11111111	3
	SO SP	FO	W	1111	3
	BLJA	FO	W	1111	3
	RBNV	FO	W	11	3
	REKI	FO	W	1	3
	RWBL	FO	W	11	3

Pg. 1 of 2

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

REV: 2011-05-03 / FORM 014a

Memo



Stantec

To: File
Guelph, ON
File: 160960778

From: Cheryl-Anne Ross
Guelph, ON
Date: October 31, 2012

Reference: Port Ryerse Wind Project Fall 2012 Landbird Migratory Stopover Survey

The purpose of this letter is to summarize the findings of the landbird migratory stopover surveys from the fall of 2012. The methods utilized during the surveys and the survey results are presented below.

Methods

Transects of 500 m in length were chosen that corresponded to the major habitats likely to be utilized by migratory songbirds that occurred within the Project Location. All species and their total numbers observed along each transect were recorded, as well as the habitat type(s) being surveyed. A handheld GPS unit was used to geo-reference transect start and end point locations. Protocols were consistent with the guidance document *Birds and Bird Habitats: Guidelines for Wind Power Projects (OMNR, 2010b)*. These surveys were conducted from late August to late October 2012, with a total of 20 visits to each of four transects within woodland 2 (W002). A summary of survey times, weather conditions and personnel is provided in **Table 1**.

Table 1. NRWC Fall 2012 migratory passerine site investigation record

Survey Date	Survey Type	Completed By	Time	Duration of Survey	Weather Conditions*
22-Aug-12	Migratory bird transect survey	Kathryn Walpole	7:49-8:50, 9:00-10:22	2hr 23min	19°C, with a wind of 0, 40% cloud cover, no precipitation.
23-Aug-12	Migratory bird transect survey	Kathryn Walpole	7:10-9:23, 9:36-11:00	3hr 37min	17°C with a wind of 0, 0% cloud cover, no precipitation.
30-Aug-12	Migratory bird transect survey	Brandon Holden	6:36-7:15, 7:24- 8:29,8:55- 9:29, 9:50- 10:37	4hr 5min	19-24°C with a wind of 2, 25% cloud cover, no precipitation.
31-Aug-12	Migratory bird transect survey	Brandon Holden	6:41-7:03, 7:33-8:02, 8:17-9:15, 9:36-10:30	2hr 50min	18-24°C with a wind of 1-2, 20-30% cloud cover, no precipitation.

Reference: Port Ryerse Wind Project Fall 2012

Table 1. NRWC Fall 2012 migratory passerine site investigation record

Survey Date	Survey Type	Completed By	Time	Duration of Survey	Weather Conditions*
5-Sep-12	Migratory bird transect survey	Brandon Holden	6:30-6:54, 7:29-7:54, 8:28-9:26, 9:48-10:37	2hr 36min	20-25°C with a wind of 0-1, 5% cloud cover, fog, no precipitation, some rain within past 24hrs.
6-Sep-12	Migratory bird transect survey	Brandon Holden	6:46-7:05, 7:39-8:12, 8:29-9:32, 9:48-10:41	2hr 48min	19-26°C with a wind of 2-3, 30-60% cloud cover, fog, no precipitation.
12-Sep-12	Migratory bird transect survey	Brandon Holden	6:59-7:13, 7:44-8:12, 8:37-9:31, 9:45-10:39	2hr 30min	17-24°C with a wind of 3-4, 0% cloud cover, no precipitation.
13-Sep-12	Migratory bird transect survey	Brandon Holden	7:00-7:17, 7:40-8:05, 8:27-9:20, 9:45-10:40	2hr 30min	22-27°C with a wind of 4-5, 30% cloud cover, no precipitation.
19-Sep-12	Migratory bird transect survey	Don Graham	7:02-7:47, 7:56-8:57, 9:11-9:47, 10:20-10:52	2hr 58min	12°C with a wind of 2, 0% cloud cover, no precipitation, some rain in previous 24hrs.
20-Sep-12	Migratory bird transect survey	Don Graham	7:10-7:56, 8:05-8:57, 9:06-9:43, 10:05-10:56	3hr 6min	15°C, with a wind of 4, 80% cloud cover, no precipitation.
24-Sep-12	Migratory bird transect survey	Matthew Ross	7:48-8:13, 8:34-8:54, 8:56- 9:06, 9:39-9:58	1hr 14min	4-8°C, with a wind of 3-5, 15% cloud cover, no precipitation, some rain in previous 24hrs.
25-Sep-12	Migratory bird transect survey	Matthew Ross	7:41-8:07, 8:15-8:30, 8:38-9:12, 9:37-9:57	1hr, 35min	14°C, with a wind of 5-6, 10% cloud cover, no precipitation.
1-Oct-12	Migratory bird transect survey	Brandon Holden	7:15-7:28, 8:03-8:36, 9:06-10:00, 10:20-10:59	2hr 19min	12-16°C, with a wind of 2-3, 70-90% cloud cover, no precipitation.
3-Oct-12	Migratory bird transect survey	Brandon Holden	7:15-7:32, 8:00-8:30, 9:00-9:40, 10:20-11:00	2hr 7min	wind of 2-3, variable cloud cover, no precipitation (temperature was not recorded)
8-Oct-12	Migratory bird transect survey	Brandon Holden	7:20-7:52, 8:37-9:14, 9:39-10:40, 11:01-11:40	1hr 59min	6-9°C, with a wind of 4, 80-100% cloud cover, no precipitation, some rain within previous 24hrs.
9-Oct-12	migratory bird transect survey	Brandon Holden	7:29-7:50, 8:31-9:08, 9:38-10:30, 10:52-11:19	2hr 43min	9-13°C with a wind of 4-5, 40-80% cloud cover and no precipitation.

Reference: Port Ryerse Wind Project Fall 2012

Table 1. NRWC Fall 2012 migratory passerine site investigation record

Survey Date	Survey Type	Completed By	Time	Duration of Survey	Weather Conditions*
15-Oct-12	migratory bird transect survey	Brandon Holden	7:27-7:44, 8:26-8:54, 9:25-10:28, 10:39-11:22	2hrs 31min	10°C with a wind of 3-4, 40-80% cloud cover, no precipitation, precipitation within previous 24hrs.
16-Oct-12	migratory bird transect survey	Brandon Holden	7:30-7:50, 8:24-9:05, 9:29-10:30, 10:51-11:26	2hrs 37min	6-11°C with a wind of 2, 10-30% cloud cover and no precipitation.
22-Oct-12	migratory bird transect survey	Brandon Holden	7:50-8:09, 8:37-9:08, 9:37-10:21, 10:45-11:15	2hr 4min	5-13°C with a wind of 3-5, 30-70% cloud cover and no precipitation.
24-Oct-12	migratory bird transect survey	Brandon Holden	7:37-7:55, 8:20-8:43, 9:00-10:10, 10:33-11:05	2hr 22min	10-14°C with a wind of 3-4, 60% cloud cover, no precipitation, some precipitation within previous 24hrs.

* Wind conditions expressed using Beaufort scale:

0 – calm, <2km/hr 2 – light, 7-12 km/hr 4 – moderate, 20-30 km/hr 6 – strong, 41-51 km/hr
1 – light, 2-6 km/hr 3 – moderate, 13-19 km/hr 5 – fresh, 31-40 km/hr

Results

A detailed list of all species recorded during the fall migration surveys, including incidental observations, is provided in **Table 2**. A total of 115 species of birds were observed during the fall migration of 2012. All transects examined within the Port Ryerse Wind Project location are considered as one continuous woodlot, as a result all final calculations are based on all four transects combined.

The majority of Species identified are ranked S5 (i.e., secure - common and widespread and abundant in Ontario), or S4 (i.e., apparently secure – uncommon but not rare), with the exception of the Caspian tern (1) observed on September 5, (S3B-Vulnerable—Vulnerable in the province, relatively few populations) and those species listed as Species at Risk or of Special Concern as described below.

The most abundant species observed included White-throated Sparrow (284), Blue Jay (280), Golden-crowned Kinglet (206), European starling (234), Black-capped Chickadee (233), Cedar Waxwing (216), American Goldfinch (202), American Robin (196), Yellow-Rumped Warbler (180), and Canada Goose (158).

Two Species at Risk or were observed during the fall 2012 migration surveys : Bobolink (51) 38 observed on august 30, 5 observed on august 31, & 8 observed on September

Reference: Port Ryerse Wind Project Fall 2012

5 and Barn Swallow (16) 14 observed on August 30th and 2 observed on September 24 (Both species are considered threatened federally and provincially).

Four species of Special concern were observed during fall 2012 migration surveys: Canada Warbler (1) on August 30th (threatened federally, special concern provincially), Rusty Blackbird (10) observed on August 30 (special concern federally), common nighthawk (2) 1 on September 5th and 1 on September 25th (Special Concern Provincially, Threatened Federally) and Bald Eagle (9) 2 on August 30, 1 on September 5, 1 on September 13, 1 on October 1, 2 on October 8, 1 on October 15 & 1 on October 24 (Special concern provincially, threatened federally).

Table 2. Species and number of Individuals Observed during Fall migration Surveys						
Common name	Scientific name	S-Rank	G-rank	COSSARO	COSEWIC	Total
White-throated Sparrow	Zonotrichia albicollis	S5B	G5			284
Blue Jay~	Cyanocitta cristata	S5	G5			280
Golden-crowned Kinglet	Regulus satrapa	S5B	G5			250
European Starling~	Sturnus vulgaris	SNA	G5			234
Black-capped Chickadee	Poecile atricapillus	S5	G5			233
Cedar Waxwing	Bombycilla cedrorum	S5B	G5			216
American Goldfinch	Carduelis tristis	S5B	G5			202
American Robin	Turdus migratorius	S5B	G5			196
Yellow-rumped Warbler	Dendroica coronata	S5B	G5			180
Canada Goose	Branta canadensis	S5	G5			158
American Crow~	Corvus brachyrhynchos	S5B	G5			138
Pine Siskin	Carduelis pinus	S4B	G5			130
Mourning Dove	Zenaida macroura	S5	G5			103
Turkey Vulture	Cathartes aura	S5B	G5			102
Song Sparrow	Melospiza melodia	S5B	G5			99
Northern Cardinal	Cardinalis cardinalis	S5	G5			98
Red-winged Blackbird	Agelaius phoeniceus	S5	G5			78
Dark-eyed Junco	Junco hyemalis	S5B	G5			74
Ruby-crowned Kinglet	Regulus calendula	S4B	G5			58

Reference: Port Ryerse Wind Project Fall 2012

Table 2. Species and number of Individuals Observed during Fall migration Surveys						
White-crowned Sparrow	Zonotrichia leucophrys	S4B	G5			57
Wild Turkey~	Meleagris gallopava	S5	G5			52
Bobolink*	Dolichonyx oryzivorus	S4B	G5	THR	THR-NS	51
Blackpoll Warbler	Dendroica striata	S4B	G5			41
Downy Woodpecker	Picoides pubescens	S5	G5			41
Red-breasted Nuthatch	Sitta canadensis	S5	G5			41
Warbler Sp.						41
Northern Flicker	Colaptes auratus	S4B	G5			37
White-breasted Nuthatch	Sitta carolinensis	S5	G5			36
Common Grackle	Quiscalus quiscula	S5B	G5			35
Tree Swallow	Tachycineta bicolor	S4B	G5			32
Palm Warbler	Dendroica palmarum	S5B	G5			30
Purple Finch	Carpodacus purpureus	S4B	G5			28
Red-eyed Vireo	Vireo olivaceus	S5B	G5			28
Eastern Phoebe	Sayornis phoebe	S5B	G5			26
Hermit Thrush	Catharus guttatus	S5B	G5			26
Double-crested Cormorant~	Phalacrocorax auritus	S5B	G5	NAR	NAR	23
Gray Catbird	Dumetella carolinensis	S4B	G5			22
Carolina Wren	Thryothorus ludovicianus	S5B	G5			20
Common Yellowthroat	Geothlypis trichas	S5B	G5			19
Eastern Wood-Pewee	Contopus virens	S4B	G5			17
Barn Swallow*	Hirundo rustica	S4B	G5	THR	THR-NS	16
Baltimore Oriole	Icterus galbula	S4B	G5			15
Red-tailed Hawk	Buteo jamaicensis	S5	G5	NAR	NAR	15
Sharp-shinned Hawk	Accipiter striatus	S5	G5	NAR	NAR	13
House Finch	Carpodacus mexicanus	SNA	G5			13
Red-bellied Woodpecker	Melanerpes carolinus	S4	G5			12

Reference: Port Ryerse Wind Project Fall 2012

Table 2. Species and number of Individuals Observed during Fall migration Surveys						
Chipping Sparrow	Spizella passerina	S5B	G5			12
American Redstart	Setophaga ruticilla	S5B	G5			11
Nashville Warbler	Vermivora ruficapilla	S5B	G5			11
Rusty Blackbird	Euphagus carolinus	S4B	G5		SC	10
Ruby-throated Hummingbird	Archilochus colubris	S5B	G5			10
Bald Eagle	Haliaeetus leucocephalus	S2B,S4N	G4	SC	NAR	9
Winter Wren	Troglodytes troglodytes	S4B	G5	NAR	NAR	9
Brown Creeper	Certhia americana	S5B	G5			8
Eastern Towhee	Pipilo erythrophthalmus	S4B	G5			7
Black-throated Blue Warbler	Dendroica caerulescens	S5B	G5			7
Black-throated Green Warbler	Dendroica virens	S5B	G5			7
House Wren	Troglodytes aedon	S5B	G5			7
Hairy Woodpecker	Picoides villosus	S5	G5			6
Eastern Bluebird	Sialia sialis	S5B	G5	NAR	NAR	6
Blue-headed Vireo	Vireo solitarius	S5B	G5			6
Magnolia Warbler	Dendroica magnolia	S5B	G5			6
Great Crested Flycatcher	Myiarchus crinitus	S4B	G5			5
Least Flycatcher	Empidonax minimus	S4B	G5			5
Purple Martin	Progne subis	S4B	G5			5
Tennessee Warbler	Vermivora peregrina	S5B	G5			5
Warbling Vireo	Vireo gilvus	S5B	G5			5
Yellow-bellied Sapsucker	Sphyrapicus varius	S5B	G5			5
Brown Thrasher	Toxostoma rufum	S4B	G5			4
Brown-headed Cowbird~	Molothrus ater	S4B	G5			4
Orange-crowned Warbler	Vermivora celata	S4B	G5			4
Savannah Sparrow	Passerculus sandwichensis	S4B	G5			4

Reference: Port Ryerse Wind Project Fall 2012

Table 2. Species and number of Individuals Observed during Fall migration Surveys						
Wilson's Warbler	Wilsonia pusilla	S4B	G5			4
Great Blue Heron	Ardea herodias	S5	G5			4
Merlin	Falco columbarius	S5B	G5	NAR	NAR	4
Killdeer	Charadrius vociferus	S5B, S5N	G5			4
American Tree Sparrow	Spizella arborea	S4B	G5			3
Indigo Bunting	Passerina cyanea	S4B	G5			3
Ovenbird	Seiurus aurocapilla	S4B	G5			3
Rose-breasted Grosbeak	Pheucticus ludovicianus	S4B	G5			3
Swainson's Thrush	Catharus ustulatus	S4B	G5			3
American Kestrel	Falco sparverius	S5B	G5			3
Chestnut-sided Warbler	Dendroica pensylvanica	S5B	G5			3
Swamp Sparrow	Melospiza georgiana	S5B	G5			3
Yellow Warbler	Dendroica petechia	S5B	G5			3
Sparrow Sp.						3
Cooper's Hawk	Accipiter cooperii	S4	G5	NAR	NAR	2
Common Nighthawk	Chordeiles minor	S4B	G5	SC	THR	2
Blue-gray Gnatcatcher	Poliopitila caerulea	S4B	G5			2
Mourning Warbler	Oporornis philadelphia	S4B	G5			2
Great Horned Owl	Bubo virginianus	S5	G5			2
Mallard	Anas platyrhynchos	S5	G5			2
Pileated Woodpecker	Dryocopus pileatus	S5	G5			2
Wood Duck	Aix sponsa	S5	G5			2
Bay-breasted Warbler	Dendroica castanea	S5B	G5			2
Black-and-white Warbler	Mniotilta varia	S5B	G5			2
Broad-winged Hawk	Buteo platypterus	S5B	G5			2
Lincoln's Sparrow	Melospiza lincolni	S5B	G5			2
Philadelphia Vireo	Vireo philadelphicus	S5B	G5			2
Caspian Tern	Hydroprogne caspia	S3B	G5	NAR	NAR	1

Reference: Port Ryerse Wind Project Fall 2012

Table 2. Species and number of Individuals Observed during Fall migration Surveys						
American Pipit	Anthus rubescens	S4	G5			1
Canada Warbler	Wilsonia canadensis	S4B	G5	SC	THR	1
Eastern Kingbird	Tyrannus tyrannus	S4B	G5			1
Field Sparrow	Spizella pusilla	S4B	G5			1
Fox Sparrow	Passerella iliaca	S4B	G5			1
Northern Parula	Parula americana	S4B	G5			1
Scarlet Tanager	Piranga olivacea	S4B	G5			1
Veery	Catharus fuscescens	S4B	G5			1
Wood Thrush	Hylocichla mustelina	S4B	G5			1
Spotted Sandpiper	Actitis macularia	S5	G5			1
Northern Waterthrush	Seiurus noveboracensis	S5B	G5			1
Willow Flycatcher	Empidonax traillii	S5B	G5			1
Herring Gull	Larus argentatus	S5B,S5N	G5			1
blackbird sp.						1

Table 3. Total Individual birds observed by date				
Date	Total Species #	Total Individuals	> 200 ind.	> 10 species
22-Aug-12	24	140		x
23-Aug-12	33	264	x	x
30-Aug-12	18	67		x
31-Aug-12	41	227	x	x
31-Aug-12	42	218	x	x
5-Sep-12	38	185		x
6-Sep-12	30	130		x
12-Sep-12	27	94		x
13-Sep-12	24	135		x
19-Sep-12	31	110		x
20-Sep-12	20	74		x
24-Sep-12	25	102		x

Reference: Port Ryerse Wind Project Fall 2012

Table 3. Total Individual birds observed by date				
25-Sep-12	23	76		x
1-Oct-12	41	327	x	x
3-Oct-12	33	441	x	x
8-Oct-12	41	317	x	x
9-Oct-12	34	285	x	x
15-Oct-12	34	276	x	x
16-Oct-12	41	329	x	x
22-Oct-12	31	329	x	x
24-Oct-12	21	105		x

Analysis of the transect data as shown in **table 3** above, revealed that on ten of the twenty visits (August 23, 30, & 31 and October 1, 3, 8, 9, 15, 16 & 22), greater than 200 individual birds were observed. Results also determined that there were greater than 35 species observed over all of the 20 survey dates.

Based on the aforementioned data this woodlot meets the criteria to be considered significant landbird migratory stopover habitat as per the Eco-region criteria as listed in the Significant wildlife Habitat Ecoregion 7E Criterion Schedule (OMNR, 2012).

Cheryl-Anne Ross
Terrestrial Ecologist
cheryl-anne.ross@stantec.com

ELC SOILS ONTARIO	SITE: Port Kelsey
	POLYGON: FOMM 3-2 (VA04 ? W003)
	DATE: 2017-06-12
	SURVEYORS: EJ/DJ

	P/A	PP	Dr	SLOPE:					UTM		
				Position	Aspect	%	Type	Class	Z	EASTING	NORTHING
1	A	2	1	4	0	13	C	E	17	561269	4735998
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE X-HORIZON	A1 = 17cm				
	A2 > 17cm				

A1	TEXTURE	FS				
	COURSE FRAGMENTS	/				
A2	TEXTURE	FS				
	COURSE FRAGMENTS					
C	TEXTURE	/				
	COURSE FRAGMENTS					

EFFECTIVE TEXTURE	FS				
SURFACE STONINESS	0				
SURFACE ROCKINESS	0				

DEPTH TO/OF

MOTTLES	51cm				
GLEYS	N/A				
BEDROCK	7120cm				
WATER TABLE	7120cm				
CARBONATES	7120cm				
ORGANICS	0cm				
PORE SIZE DISC #1	/				
PORE SIZE DISC #2	/				
MOISTURE REGIME	1				

SOIL SURVEY MAP	/				
LEGEND CLASS	/				

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: Port Ryerse		POLYGON: FOMM3-2 (VA04 - Woods)	
	SURVEYORS: DT/LS		DATE: 2612-06-12	TIME: start 16:30
	UTMZ: 17		UTME: 561269	end 16:52
			UTMN: 4735995	

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input type="checkbox"/> Mineral Soil <input type="checkbox"/> Parent Mat'l <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input checked="" type="checkbox"/> Valley Slope <input type="checkbox"/> Tableland <input type="checkbox"/> Roll Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice/Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach/Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Cultural	<input type="checkbox"/> Plakton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input checked="" type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input type="checkbox"/> Woodland <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Plantation
SITE: <input type="checkbox"/> Open Water <input checked="" type="checkbox"/> Shallow Water <input type="checkbox"/> Surficial Dep <input type="checkbox"/> Bedrock					
			COVER:		
			<input type="checkbox"/> Open <input type="checkbox"/> Shrub <input checked="" type="checkbox"/> Treed		

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> Much greater than; > Greater than; = About equal to)
1 Canopy	1	3.4	TSUGA > ALBESCE > THAMER
2 Sub-Canopy	2	3	CARLEAE > CARLEAE
3 Understory	3	2.3	PRU PENS
4 Grd. Layer	5.6	2.3	MIA LAKE > DRUMAT = PARINSE

HT CODES: 1 = > 25m; 2 = 10 - < 25m; 3 = 2 - < 10m; 4 = 1 - < 2m; 5 = 0.5 - < 1m; 6 = 0.2 - < 0.5m; 7 = < 0.2m

CVR CODES: 0 = None; 1 = > 0 - 10%; 2 = > 10 - 25%; 3 = > 25 - 50%; 4 = > 50%

STAND COMPOSITION:					BA:
SIZE CLASS ANALYSIS:	D < 10	R 10 - 24	R 25 - 50	N > 50	
STANDING SNAGS:	R < 10	R 10 - 24	R 25 - 50	N > 50	
DEADFALL / LOGS:	R < 10	R 10 - 24	R 25 - 50	N > 50	

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMMUNITY AGE:	PIONEER	YOUNG	MID-AGE	OLD GRWTH
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SOIL ANALYSIS:

TEXTURE: FS	DEPTH TO MOTTLES/GLEY: g = 51 cm G = NA	
MOISTURE: 7	DEPTH OF ORGANICS: 0	(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK: > 120	(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	Forest	ELC CODE
COMMUNITY SERIES:	Mixed forest	FOM
ECOSITE:	Dry-fresh Hardwood mixed forest ecotype	FOMM
VEGETATION TYPE:	Dry-fresh mixed forest ecotype	FOMM3-2
INCLUSION:		
COMPLEX:		

Notes:

ELC PLANT SPECIES LIST	SITE:	Port Dysese
	POLYGON:	FORM-2 (VAC4 and Woods)
	DATE:	2012-06-12
	SURVEYORS:	EG/DT

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTORY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

[illegible][illegible]

ELC SOILS ONTARIO	SITE: Port Ryerse
	POLYGON: WODAPPLE (S of Woods)
	DATE: 2012-06-12
	SURVEYORS: DT / ET

	P/A	PP	Dr	SLOPE:					UTM		
				Position	Aspect	%	Type	Class	Z	EASTING	NORTHING
1	A	2	2	2	10	8	S	D	17	561262	4735923
2											
3											
4											
5											

SOIL	1	2	3	4	5
TEXTURE X-HORIZON	A1 = 20cm A2 > 20cm				

A	TEXTURE	FS			
	COURSE FRAGMENTS	/			
B	TEXTURE	/			
	COURSE FRAGMENTS	/			
C	TEXTURE	/			
	COURSE FRAGMENTS	/			
EFFECTIVE TEXTURE		FS			
SURFACE STONINESS					
SURFACE ROCKINESS					

DEPTH TO/OF					
MOTTLES	w/a				
GLEY	w/a				
BEDROCK	> 120cm				
WATER TABLE	> 120cm				
CARBONATES	> 120cm				
ORGANICS	0				
PORE SIZE DISC #1	/				
PORE SIZE DISC #2	/				
MOISTURE REGIME	1				

SOIL SURVEY MAP	/				
LEGEND CLASS	/				

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: <i>Port Ryers</i>		POLYGON: <i>WODAPPLE</i> (S of WOODB)	
	SURVEYORS: <i>DS/ET</i>		DATE: <i>2012-06-12</i>	TIME: start <i>16:55</i>
	UTMZ: <i>17</i>		UTME: <i>561262</i>	end <i>17:04</i>
	UTMN: <i>4735973</i>			

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral Soil <input type="checkbox"/> Parent Mat'l <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input checked="" type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input type="checkbox"/> Valley Slope <input type="checkbox"/> Tableland <input type="checkbox"/> Roll Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice/Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach/Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Cultural	<input type="checkbox"/> Plakton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input checked="" type="checkbox"/> Woodland <input type="checkbox"/> Forest <input type="checkbox"/> Plantation
SITE: <input type="checkbox"/> Open Water <input type="checkbox"/> Shallow Water <input checked="" type="checkbox"/> Surficial Dep <input type="checkbox"/> Bedrock			COVER: <input type="checkbox"/> Open <input checked="" type="checkbox"/> Shrub <input type="checkbox"/> Treed		

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> Much greater than; > Greater than; = About equal to)
1 Canopy	<i>1</i>	<i>3.4</i>	<i>PRDDUMI</i>
2 Sub-Canopy	<i>2</i>	<i>2.3</i>	<i>PRAPENS > RHUTYPH</i>
3 Understory	<i>4</i>	<i>3.4</i>	<i>SULCAMATA > POKAPAS > SCULAMA</i>
4 Grd. Layer	<i>6</i>	<i>1.2</i>	<i>VELSERP</i>

HT CODES: 1 = >= 25m; 2 = 10 - <25m; 3 = 2 - <10m; 4 = 1 - <2m; 5 = 0.5 - <1m; 6 = 0.2 - <0.5m; 7 = <0.2m

CVR CODES: 0 = None; 1 = >0 - 10%; 2 = >10 - 25%; 3 = >25 - 50%; 4 = >50%

STAND COMPOSITION:				BA:
SIZE CLASS ANALYSIS:	<i>A</i> < 10	<i>R</i> 10 - 24	<i>N</i> 25 - 50	<i>N</i> > 50
STANDING SNAGS:	<i>N</i> < 10	<i>N</i> 10 - 24	<i>N</i> 25 - 50	<i>N</i> > 50
DEADFALL / LOGS:	<i>R</i> < 10	<i>N</i> 10 - 24	<i>N</i> 25 - 50	<i>N</i> > 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMMUNITY AGE:	<i>PIONEER</i>	<i>YOUNG</i>	<i>MID-AGE</i>	<i>OLD GRWTH</i>
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SOIL ANALYSIS:

TEXTURE: <i>FS</i>	DEPTH TO MOTTLES/GLEY: g = <i>N/A</i>	G = <i>N/A</i>
MOISTURE: <i>1</i>	DEPTH OF ORGANICS: <i>0cm</i>	(cm)
HOMOGENEOUS/VARIABLE	DEPTH TO BEDROCK: <i>>120cm</i>	(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	<i>SAG</i>	ELC CODE
COMMUNITY SERIES:	<i>SAGM2</i>	<i>Shrub Agriculture</i>
ECOSITE:		<i>Orchard</i>
VEGETATION TYPE:		
INCLUSION:		
COMPLEX:		

Notes:

ELC PLANT SPECIES LIST	SITE: Port Ryans
	POLYGON: WODAPPLE (S of WOOD3)
	DATE: 2012-06-12
	SURVEYORS: DT/EJ

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTORY 4 = GROUND (GRD.) LAYER

ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

[illegible][illegible]

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: <i>R. R. 1</i>		POLYGON: <i>HR 302/303/304</i>	
	SURVEYORS: <i>V. J. 1</i>		DATE: <i>2012-06-17</i>	TIME: start <i>11:30</i>
	UTMZ: <i>7</i>		UTME: <i>0561149</i>	end <i>11:40</i>
			UTMN: <i>473428</i>	

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral Soil <input type="checkbox"/> Parent Mat'l <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input type="checkbox"/> Valley Slope <input checked="" type="checkbox"/> Tableland <input type="checkbox"/> Roll Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice/Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach/Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input type="checkbox"/> Natural <input checked="" type="checkbox"/> Cultural	<input type="checkbox"/> Plakton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input checked="" type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input type="checkbox"/> Woodland <input type="checkbox"/> Forest <input type="checkbox"/> Plantation
SITE: <input type="checkbox"/> Open Water <input type="checkbox"/> Shallow Water <input checked="" type="checkbox"/> Surficial Dep <input type="checkbox"/> Bedrock		COVER: <input type="checkbox"/> Open <input checked="" type="checkbox"/> Shrub <input type="checkbox"/> Treed			

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> Much greater than; > Greater than; = About equal to)
1 Canopy	<i>1</i>	<i>1</i>	<i>FRAPEN</i>
2 Sub-Canopy	<i>3</i>	<i>1/2</i>	<i>POPDEN = POPTREM</i>
3 Understory	<i>7</i>	<i>3</i>	<i>FRSBLAT > SOLCANL = DAUCARD</i>
4 Grd. Layer	<i>5</i>	<i>1</i>	<i>FRANRG</i>

HT CODES: 1 = >= 25m; 2 = 10 - <25m; 3 = 2 - <10m; 4 = 1 - <2m; 5 = 0.5 - <1m; 6 = 0.2 - <0.5m; 7 = <0.2m

CVR CODES: 0 = None; 1 = >0 - 10%; 2 = >10 - 25%; 3 = >25 - 50%; 4 = >50%

STAND COMPOSITION:					BA:
SIZE CLASS ANALYSIS:		<i>N</i> < 10	<i>R</i> 10 - 24	<i>A</i> 25 - 50	<i>N</i> > 50
STANDING SNAGS:		<i>R</i> < 10	<i>N</i> 10 - 24	<i>A</i> 25 - 50	<i>N</i> > 50
DEADFALL / LOGS:		<i>R</i> < 10	<i>N</i> 10 - 24	<i>A</i> 25 - 50	<i>N</i> > 50

ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMMUNITY AGE:	<input type="checkbox"/> PIONEER	<input checked="" type="checkbox"/> YOUNG	<input type="checkbox"/> MID-AGE	<input type="checkbox"/> OLD GRWTH
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SOIL ANALYSIS:

TEXTURE: <i>CL</i>	DEPTH TO MOTTLES/GLEY: g = <i>N/A</i> G = <i>N/A</i>	
MOISTURE: <i>2</i>	DEPTH OF ORGANICS: <i>0</i>	(cm)
HOMOGENEOUS/VARIABLE	DEPTH TO BEDROCK: <i>720</i>	(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	<i>Thicket</i>	ELC CODE
COMMUNITY SERIES:	<i>Deciduous thicket</i>	<i>THD</i>
ECOSITE:	<i>Greenish dead wood thicket</i>	<i>THD 3</i>
VEGETATION TYPE:		
INCLUSION:		
COMPLEX:		

Notes:

ELC SOILS ONTARIO	SITE: <u>Port River</u>
	POLYGON: <u>W002</u>
	DATE: <u>2012-06-12</u>
	SURVEYORS: <u>EJ, LJ</u>

	P/A	PP	Dr	SLOPE:					UTM		
				Position	Aspect	%	Type	Class	Z	EASTING	NORTHING
1	A	3	3	1	10	5	S	D	17	0561201	473577
2	A	3	4	1	200	21	S	E	17	0561271	4734863
3	A	3	3	1	120	35	S	G	17	0561548	4735102
4											
5											

HR301
FODS-18/100
FODS-18/100

SOIL TEXTURE X- HORIZON	1	2	3	4	5
	A > 120cm	O = 12cm	A1 = 18cm		
		A > 12cm	A2 > 18cm		

A	TEXTURE	VFS	SL	VFS		
	COURSE FRAGMENTS	/	/	/		
B	TEXTURE	/	/	/		
	COURSE FRAGMENTS	/	/	/		
C	TEXTURE	/	/	/		
	COURSE FRAGMENTS	/	/	/		

EFFECTIVE TEXTURE	VFS	SL	BS		
SURFACE STONINESS	0	0	0		
SURFACE ROCKINESS	0	0	0		

DEPTH TO/OF

MOTTLES	n/a	23cm	n/a		
GLEY	n/a	n/a	n/a		
BEDROCK	> 120cm	> 120cm	> 120cm		
WATER TABLE	> 120cm	> 120cm	> 120cm		
CARBONATES	> 120cm	> 120cm	> 120cm		
ORGANICS	0cm	12cm	0cm		
PORE SIZE DISC #1	/	/	/		
PORE SIZE DISC #2	/	/	/		
MOISTURE REGIME	2	2	2		

SOIL SURVEY MAP	/	/	/		
LEGEND CLASS	/	/	/		

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: <i>Port Ryerse</i>		POLYGON: <i>HR between VAOZ and VAOI</i>	
	SURVEYORS: <i>DJ, ET</i>		DATE: <i>2012-06-12</i>	TIME: start <i>09:25</i>
	UTMZ: <i>17</i>		UTME: <i>561201</i>	end <i>09:45</i>
			UTMN: <i>4735077</i>	

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral Soil <input type="checkbox"/> Parent Mat'l <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input type="checkbox"/> Valley Slope <input checked="" type="checkbox"/> Tableland <input type="checkbox"/> Rofl Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice/Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach/Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Cultural	<input type="checkbox"/> Plakton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input checked="" type="checkbox"/> Woodland <input type="checkbox"/> Forest <input type="checkbox"/> Plantation
SITE: <input type="checkbox"/> Open Water <input type="checkbox"/> Shallow Water <input checked="" type="checkbox"/> Surficial Dep <input type="checkbox"/> Bedrock			COVER: <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input checked="" type="checkbox"/> Treed		

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> Much greater than; > Greater than; = About equal to)
1 Canopy	1	3	<i>CARQUATS RUSSELL = PRUSERO</i>
2 Sub-Canopy	2	3	<i>PRUSERS</i>
3 Understory	3	1, 2	<i>ILMHEATH = LORRACE</i>
4 Grd. Layer	5	2, 3	<i>GELMATH = CIRQUAD</i>

HT CODES: 1 = >= 25m; 2 = 10 - <25m; 3 = 2 - <10m; 4 = 1 - <2m; 5 = 0.5 - <1m; 6 = 0.2 - <0.5m; 7 = <0.2m

CVR CODES: 0 = None; 1 = >0 - 10%; 2 = >10 - 25%; 3 = >25 - 50%; 4 = >50%

STAND COMPOSITION:	BA:
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SIZE CLASS ANALYSIS:	<i>0</i> < 10	<i>1</i> 10 - 24	<i>1</i> 25 - 50	<i>1</i> > 50
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STANDING SNAGS:	<i>1</i> < 10	<i>1</i> 10 - 24	<i>1</i> 25 - 50	<i>1</i> > 50
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DEADFALL / LOGS:	<i>1</i> < 10	<i>1</i> 10 - 24	<i>1</i> 25 - 50	<i>1</i> > 50
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ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMMUNITY AGE:	<input type="checkbox"/> PIONEER	<input type="checkbox"/> YOUNG	<input checked="" type="checkbox"/> MID-AGE	<input type="checkbox"/> OLD GRWTH
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SOIL ANALYSIS:

TEXTURE: <i>VFS</i>	DEPTH TO MOTTLES/GLEY: <i>g = N/A</i>	<i>G = N/A</i>
MOISTURE: <i>2</i>	DEPTH OF ORGANICS: <i>7</i>	(cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK: <i>120</i>	(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	<i>Woodland</i>	ELC CODE
COMMUNITY SERIES:	<i>Deciduous woodland</i>	<i>WDD</i>
ECOSITE:	<i>Shagbark hickory Deciduous</i>	<i>WDD?</i>
VEGETATION TYPE:		
INCLUSION:		
COMPLEX:		

Notes:

ELC PLANT SPECIES LIST	SITE: Port Kyness
	POLYGON: HR between VAO2 : VAO1 "HR301"
	DATE: 2012-06-12
	SURVEYORS: DJ * ET F.

LAYERS: 1 = CANOPY 2 = SUB-CANOPY 3 = UNDERSTORY 4 = GROUND (GRD.) LAYER
ABUNDANCE CODES: R = RARE O = OCCASIONAL A = ABUNDANT D = DOMINANT

[illegible][illegible]

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: <i>V1 Rye</i>		POLYGON: <i>F0DS1 (in V101)</i>	
	SURVEYORS: <i>DT/ET</i>		DATE: <i>2012-06-12</i>	TIME: start <i>10:05</i>
	UTMZ: <i>UTME: 0561271</i>		UTMN: <i>4734863</i>	
			end	

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral Soil <input type="checkbox"/> Parent Mat'l <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input checked="" type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input type="checkbox"/> Valley Slope <input type="checkbox"/> Tableland <input type="checkbox"/> Roll Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice/Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach/Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input type="checkbox"/> Natural <input type="checkbox"/> Cultural	<input type="checkbox"/> Plakton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input type="checkbox"/> Woodland <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Plantation
SITE: <input type="checkbox"/> Open Water <input type="checkbox"/> Shallow Water <input checked="" type="checkbox"/> Surficial Dep <input type="checkbox"/> Bedrock		COVER: <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input checked="" type="checkbox"/> Treed			

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> Much greater than; > Greater than; = About equal to)
1 Canopy	1	3.4	<i>ACEBAC</i>
2 Sub-Canopy	2	1.2	<i>OSTURG</i>
3 Understory	3	3	<i>CMALTB > PRAPOB</i>
4 Grd. Layer	8	3	<i>SOLTEX.7 PRAUSE</i>

HT CODES: 1 = >= 25m; 2 = 10 - <25m; 3 = 2 - <10m; 4 = 1 - <2m; 5 = 0.5 - <1m; 6 = 0.2 - <0.5m; 7 = <0.2m

CVR CODES: 0 = None; 1 = >0 - 10%; 2 = >10 - 25%; 3 = >25 - 50%; 4 = >50%

STAND COMPOSITION:					BA:			
SIZE CLASS ANALYSIS:								
	<i>0</i>	<i>< 10</i>	<i>0</i>	<i>10 - 24</i>	<i>R</i>	<i>25 - 50</i>	<i>N</i>	<i>> 50</i>
STANDING SNAGS:								
	<i>R</i>	<i>< 10</i>	<i>R</i>	<i>10 - 24</i>	<i>R</i>	<i>25 - 50</i>	<i>N</i>	<i>> 50</i>
DEADFALL / LOGS:								
	<i>R</i>	<i>< 10</i>	<i>R</i>	<i>10 - 24</i>	<i>R</i>	<i>25 - 50</i>	<i>N</i>	<i>> 50</i>
ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT								
COMMUNITY AGE:								
		<i>PIONEER</i>		<i>YOUNG</i>	<i>X</i>	<i>MID-AGE</i>		<i>OLD GRWTH</i>

SOIL ANALYSIS:	
TEXTURE: <i>SL</i>	DEPTH TO MOTTLES/GLEY: <i>g = 23</i> G = <i>N/A</i>
MOISTURE: <i>2</i>	DEPTH OF ORGANICS: <i>13</i> (cm)
HOMOGENEOUS/VARIABLE	DEPTH TO BEDROCK: <i>> 120</i> (cm)

COMMUNITY CLASSIFICATION:		ELC CODE
COMMUNITY CLASS:	<i>Forest</i>	<i>F0</i>
COMMUNITY SERIES:	<i>Deciduous forest</i>	<i>F0DM5</i>
ECOSITE:	<i>Dry-trash sugar maple dead</i>	<i>F0DM5</i>
VEGETATION TYPE:	<i>Dry-trash sugar maple dead</i>	<i>F0DM5-1</i>
INCLUSION:		
COMPLEX:		

Notes:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: Port Ryerse		POLYGON: IODMS-1B	
	SURVEYORS: DJ/EJ		DATE: 2012-06-12	TIME: start 13:40
	UTMZ: 14		UTME: 0561548	end 14:10
			UTMN: 4735102	

POLYGON DESCRIPTION:

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral Soil <input type="checkbox"/> Parent Mat'l <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input checked="" type="checkbox"/> Valley Slope <input type="checkbox"/> Tableland <input type="checkbox"/> Roll Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice/Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach/Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Cultural	<input type="checkbox"/> Plakton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input type="checkbox"/> Woodland <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Plantation
SITE: <input type="checkbox"/> Open Water <input type="checkbox"/> Shallow Water <input checked="" type="checkbox"/> Surficial Dep <input type="checkbox"/> Bedrock		COVER: <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input checked="" type="checkbox"/> Treed			

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (up to 4 sp) (>> Much greater than; > Greater than; = About equal to)
1 Canopy	1	34	ALBICEPS > TSUCANA > N. AMER = FAGORAN
2 Sub-Canopy	23	3	ALBICEPS
3 Understory	3	3	ALBICEPS
4 Grd. Layer	5	1.2	M. ALBICEPS > S. ELLANA > S. OLATA

HT CODES: 1= >= 25m; 2= 10 - <25m; 3= 2 - <10m; 4= 1 - <2m; 5= 0.5 - <1m; 6= 0.2 - <0.5m; 7= <0.2m

CVR CODES: 0 = None; 1 = >0 - 10%; 2 = >10 - 25%; 3 = >25 - 50%; 4 = >50%

STAND COMPOSITION:	BA:
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SIZE CLASS ANALYSIS:	O < 10	R 10 - 24	R 25 - 50	N > 50
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STANDING SNAGS:	R < 10	R 10 - 24	N 25 - 50	N > 50
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DEADFALL / LOGS:	R < 10	R 10 - 24	N 25 - 50	N > 50
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ABUNDANCE CODES: N = NONE R = RARE O = OCCASIONAL A = ABUNDANT

COMMUNITY AGE:	PIONEER	YOUNG	MID-AGE	OLD GRWTH
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SOIL ANALYSIS:

TEXTURE: JPS	DEPTH TO MOTTLES/GLEY: g = N/A G = N/A
MOISTURE: 2	DEPTH OF ORGANICS: 0 (cm)
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK: > 120 (cm)

COMMUNITY CLASSIFICATION:

ELC CODE

COMMUNITY CLASS:	Forest	FO
COMMUNITY SERIES:	Deciduous forest	FOD
ECOSITE:	Dry forest sugar maple hemlock	FOCM5-1
VEGETATION TYPE:	dry forest sugar maple hemlock	FOCM5-1
INCLUSION:		
COMPLEX:		

Notes:

12-5-30

54

PR-4002 pa/2
Dead Forest w ravines

End Time:

Rel. Hum.:

Habitat Type:

Wind (Bft):

Cld. Cover:

/10ths

Visibility:

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WIND ENERGY ENGINEERING

[illegible]

12-5-30

52

PA - AG. FIELDS

Plowed soy fields - few weeds grow

1200	End Time:	1830
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2	4	Rel. Hum.:	
2	4		

23

Habitat Type:

10

M.K. INCE AND ASSOCIATES LTD.
WIND ENERGY ENGINEERING

100

— 222 —

1000

1

4-6 / 10ths

[illegible]

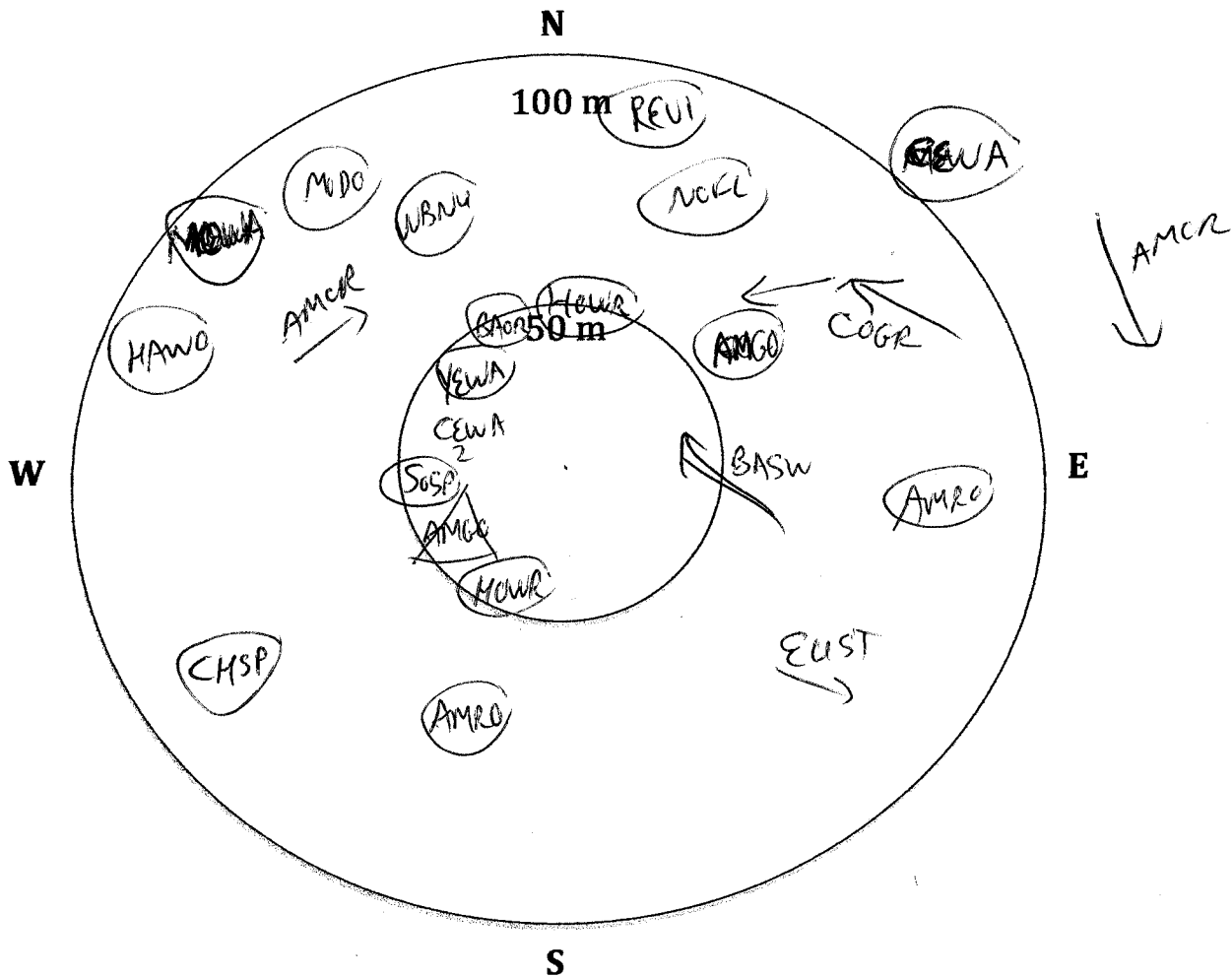
Surveyor: ROB TYMSTRA Date: 2 June 12 S. Time: 729 E. Time: 739
 Temp: 13 Wind: SW 2 Cloud: 100% Rain: NO Last 24 hrs: Yes

AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

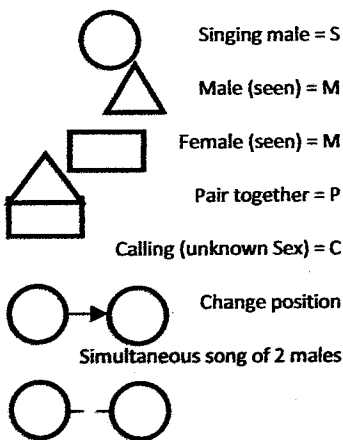
Name: PT. RYERSE Habitat Type: RURAL BARN LAWNS, WELL-TREED

GPS location: 561271 4735883 Pt. Count ID: RH-7 / AV4



Alpha Code	Status	0-3	3-5	5-10	Dist
MODO	S	1			50-100
HAWO	C		1		50-100
WBNY	C		1		50-100
AMCR	C	1	1		0-100+
CHSP	S	1			50-100
AMRO	S	2			50-100
HOWR	S	2			0-50

Status



Alpha Code	Status	0-3	3-5	5-10	Dist
AMRO	C	1	1		0-100
MOWA	S		1		50-100
SOSP	S	1			0-50
CEDW	C	1	1		0-100+
NOFL	C	1			50-100
REVI	S	1			50-100
BARS	C	1			0-100
EUST	C			1	50-100
COGR	C	1			50-100
CHSP	C				



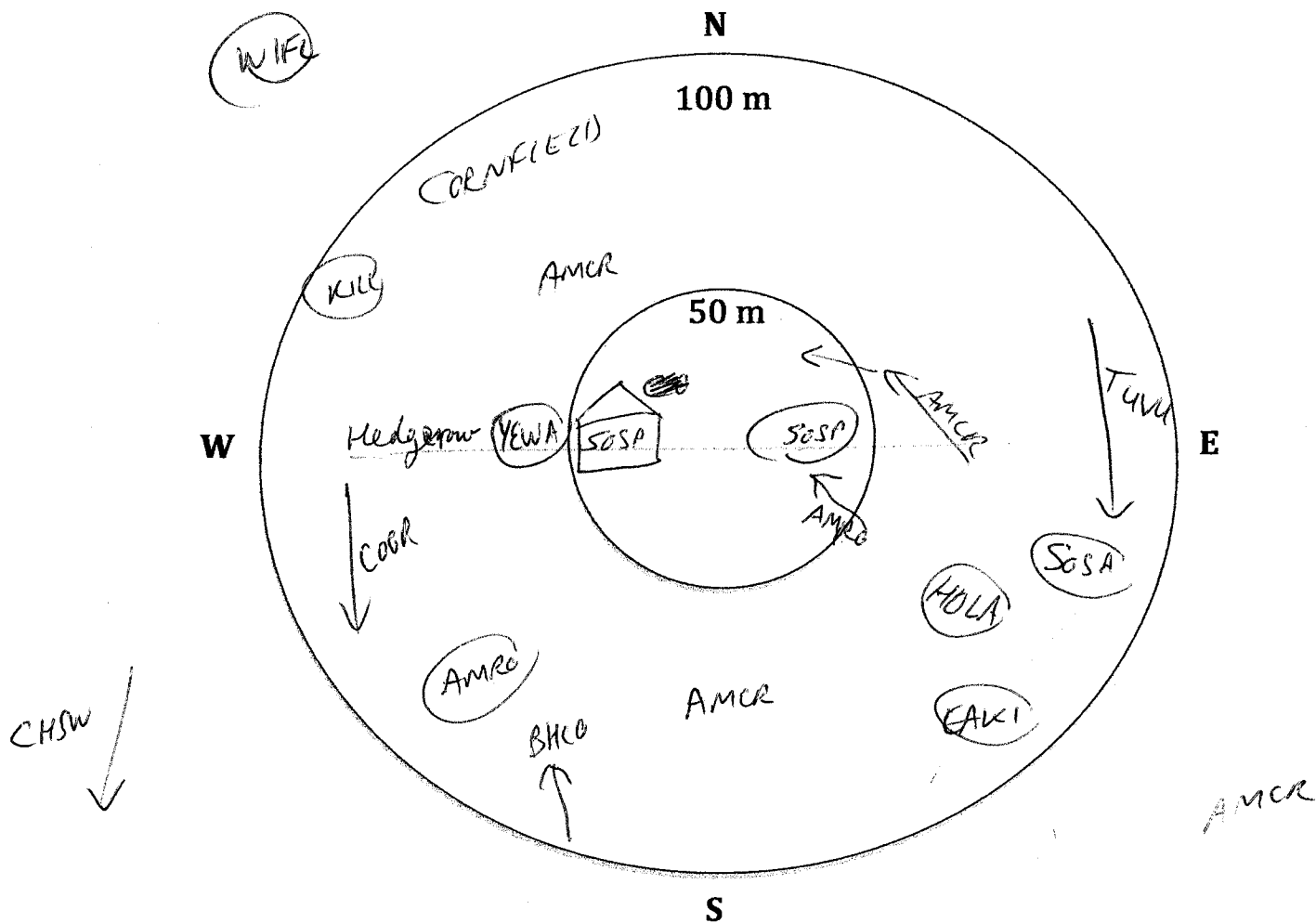
Surveyor: ROB TYMSTRA Date: 2 June 12 S. Time 7⁰⁸ E. Time 7¹⁸
 Temp: 14 Wind: SW 2 Cloud: 100% Rain: NO Last 24 hrs: YES

AVIAN POINT COUNT CENSUS FORM

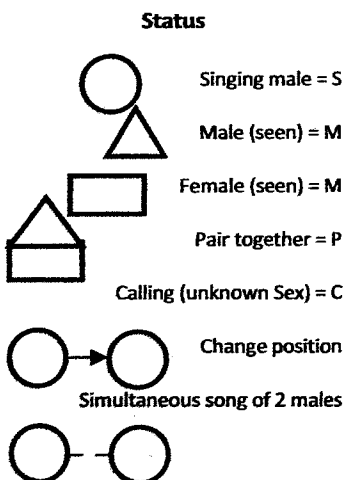
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: PORT RYERSE Habitat Type: CORNFIELD WITH DIVIDING HEDGEROW

GPS location: 560872 4734753 Pt. Count ID: RH-1



Alpha Code	Status	0-3	3-5	5-10	Dist
AMRO	M		1	1	0-100
WIFL	S		1		100 +
CHSW	X			1	100 +
KILL	C	1			50-100
COGR	M	1			50-100
BHCO	M	1			50-100
YEWA	S	1			50-100



Alpha Code	Status	0-3	3-5	5-10	Dist
AMCR	C	2	1	1	50-100 100
SOSP	S, P	3		1	0-50/50-100
TUVU	X			1	50-100
HOLA	C	1			50-100
EAKI	C			1	50-100

x-flyover



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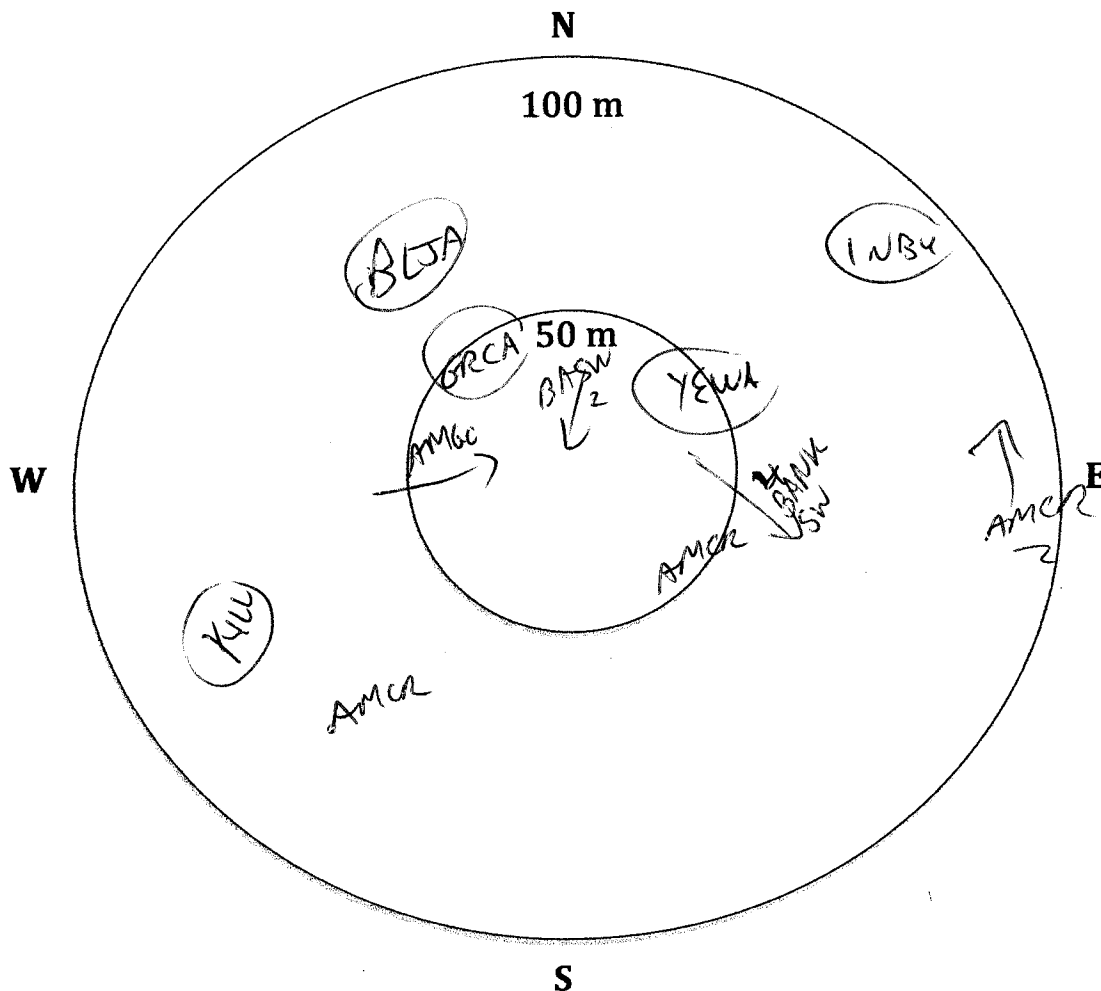
Surveyor: ROB TYMSTRA Date: June 2/12 S. Time 8:35 E. Time 8:45
 Temp: 14 Wind: SW 2 Cloud: 100% Rain: NO Last 24 hrs: Yes

AVIAN POINT COUNT CENSUS FORM

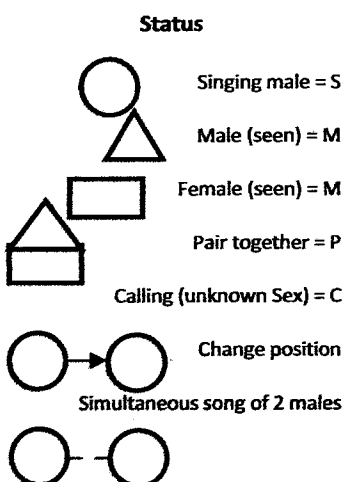
*Conducted on a day with good visibility, no precipitation, and ≤3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Wooded Ravine / cornfield

GPS location: 561296 4734871 Pt. Count ID: RH-2



Alpha Code	Status	0-3	3-5	5-10	Dist
KILL	C	1			50-100
AMCR	C	4			0-100
BANS	C	2			0-50
AMGO	C		1		0-50
BLJA	C			1	50-100
GRCA	S	1			0-50
YEWA	S	1			0-50



Alpha Code	Status	0-3	3-5	5-10	Dist
INBU	S	1			50-100
BANS	C	2			0-100

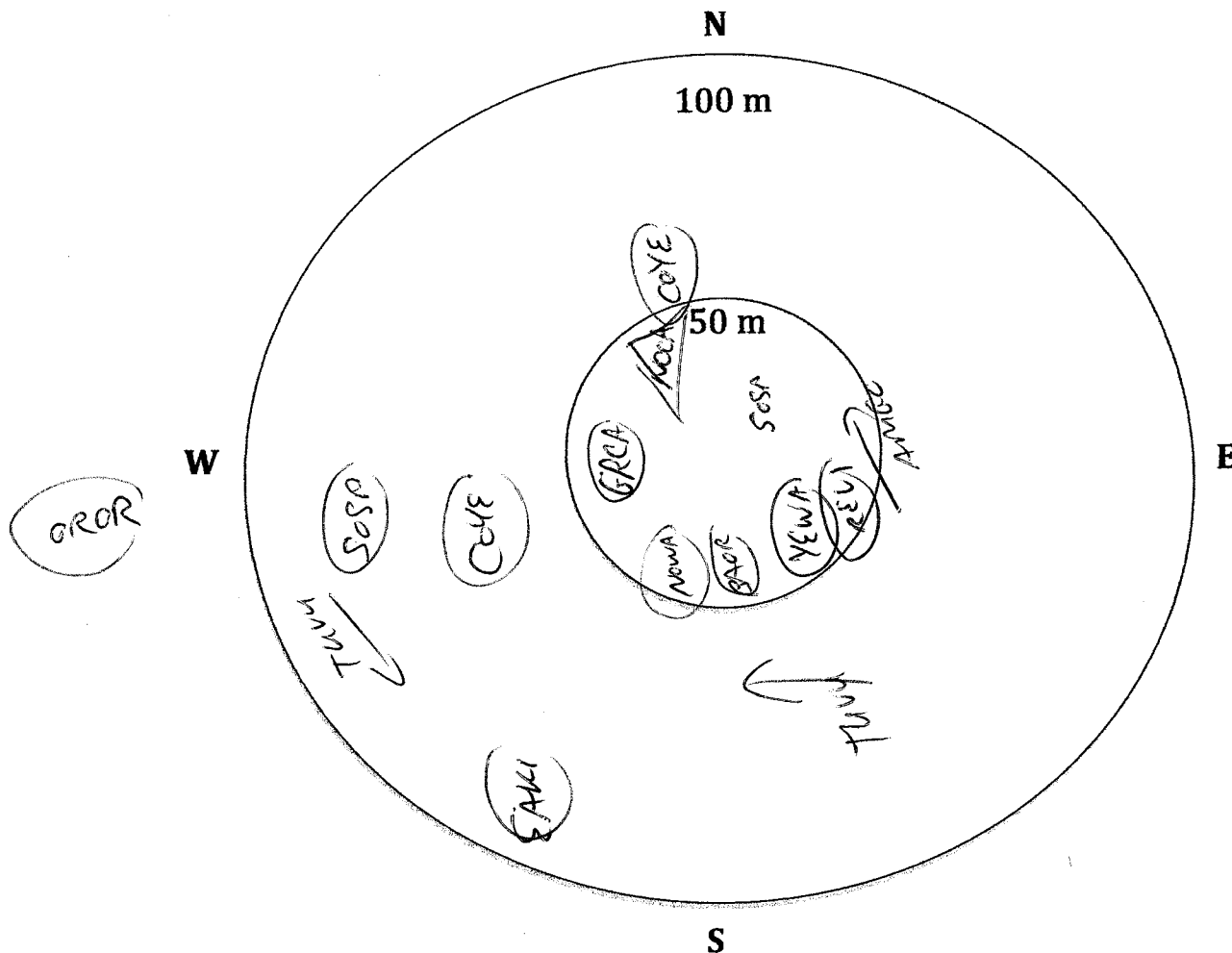
Surveyor: Rob Tymstra Date: 2 Jan 12 S. Time 8:19 E. Time 8:29
 Temp: 15 Wind: SWZ Cloud: 60% Rain: NO Last 24 hrs: YES

AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

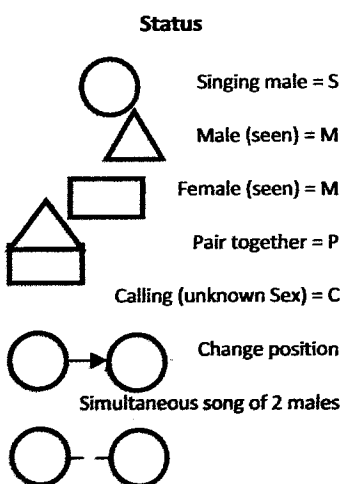
Name: PORT RYERSE Habitat Type: Corn field = hedgerow, wooded creek

GPS location: 561211 4735141 Pt. Count ID: RH-3



Alpha Code	Status	0-3	3-5	5-10	Dist
GROR	S			1	100+
TUVU	X	1	1		50-100
EAKI	S	1			50-100
SOSP	S	2			0-100
COYE	S	1	1		50-100
GRCA	S	1			0-50
NOWA	S	1			0-50

x-flyover



Alpha Code	Status	0-3	3-5	5-10	Dist
BAOR	S	1			0-50
YEWA	S	1			0-50
REVI	S	1			0-50
AMGO	C		1		0-50
NOWA	M		1		0-50



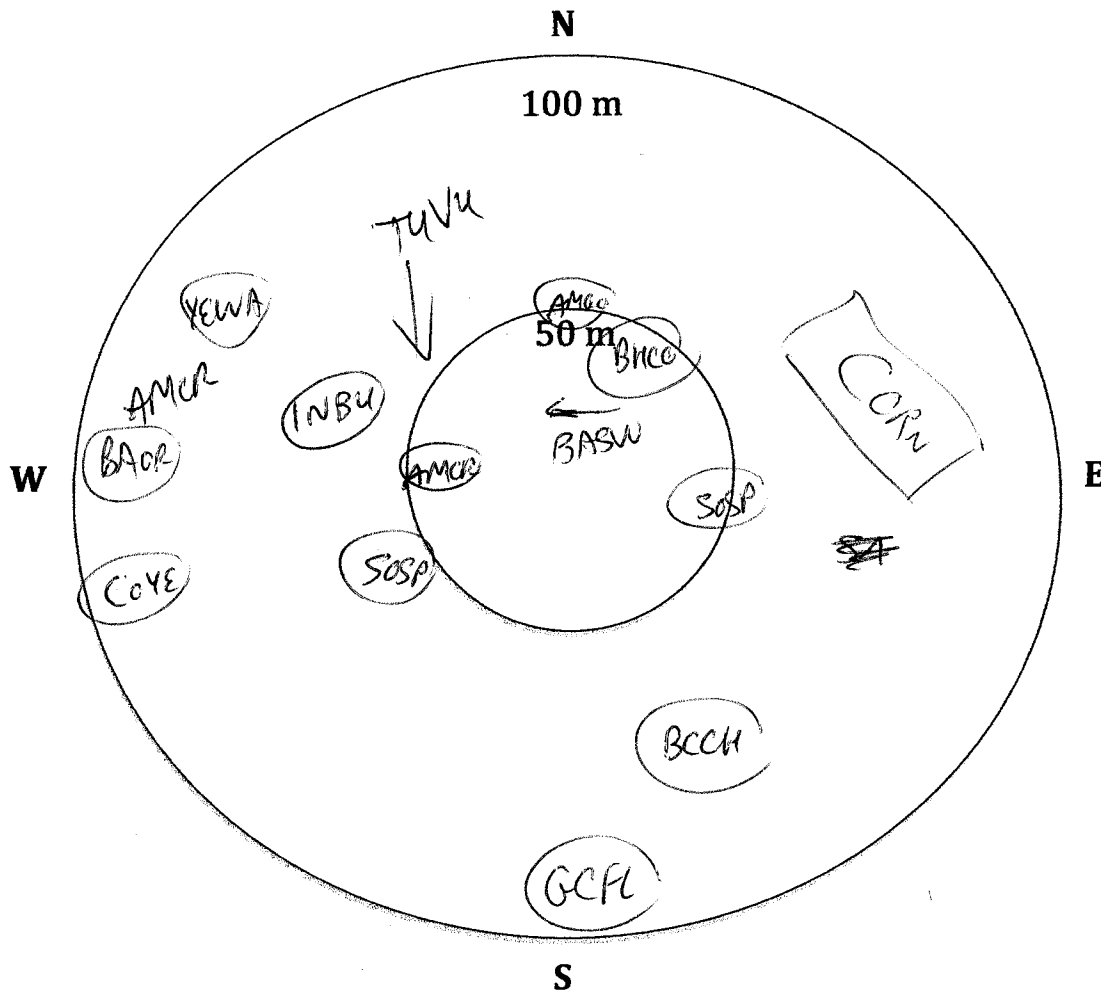
M.K. INCE AND ASSOCIATES LTD.
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Surveyor: Rob Tymstra Date: 2 Jun 12 S. Time 8⁰⁵ E. Time 8¹⁵
 Temp: 14 Wind: SW 2 Cloud: 80% Rain: No Last 24 hrs: Yes

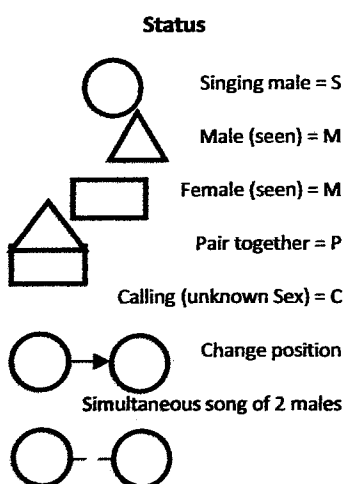
AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfield intersected by wooded ravine forested area to west
 GPS location: 561355 4735230 Pt. Count ID: RH-24



Alpha Code	Status	0-3	3-5	5-10	Dist
GCFL	S		1		50-100
BCCH	C			1	50-100
SOSP	S	1	1		0-100
BARS	C	2			0-50
AMCR	C	2			0-100
COYE	S	1			50-100
BAOR	S	1			50-100



Alpha Code	Status	0-3	3-5	5-10	Dist
INBU	S	1			50-100
TUVU	X	1			50-100
Yewa	S	1			50-100
BHCO	S		1		0-50

X-flyover

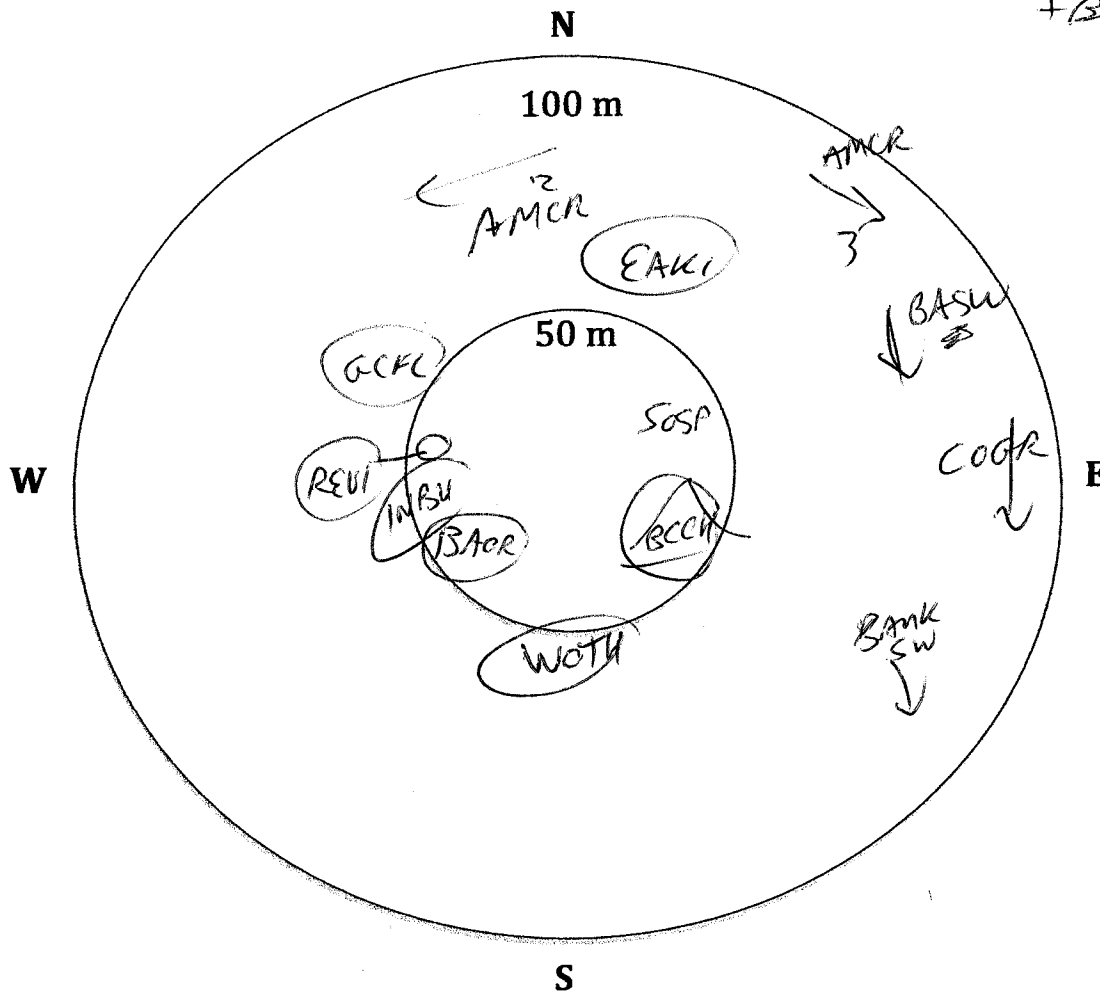
Surveyor: Rob Tymstra Date: Jan 2/12 S. Time 855 E. Time 905
 Temp: 15 Wind: SW 2 Cloud: 100% Rain: NO Last 24 hrs: Yes

AVIAN POINT COUNT CENSUS FORM

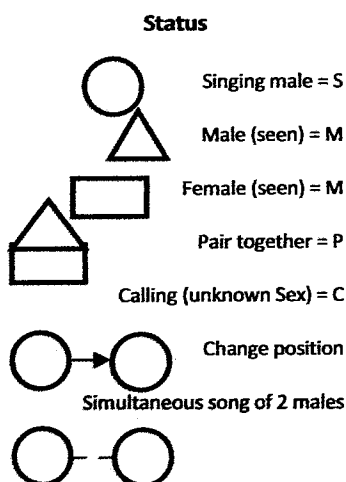
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Wooded ravine flanked by cornfield
 GPS location: 561656 4735067 Pt. Count ID: RH-5

+Beans



Alpha Code	Status	0-3	3-5	5-10	Dist
BAOR	S	1			0-50
BCCH	S		1		0-50
WOTH	S			1	50-100
INBU	S	1			0-50
SOSP					
REVI	S	1			0-100
GCKL	S		1		50-100



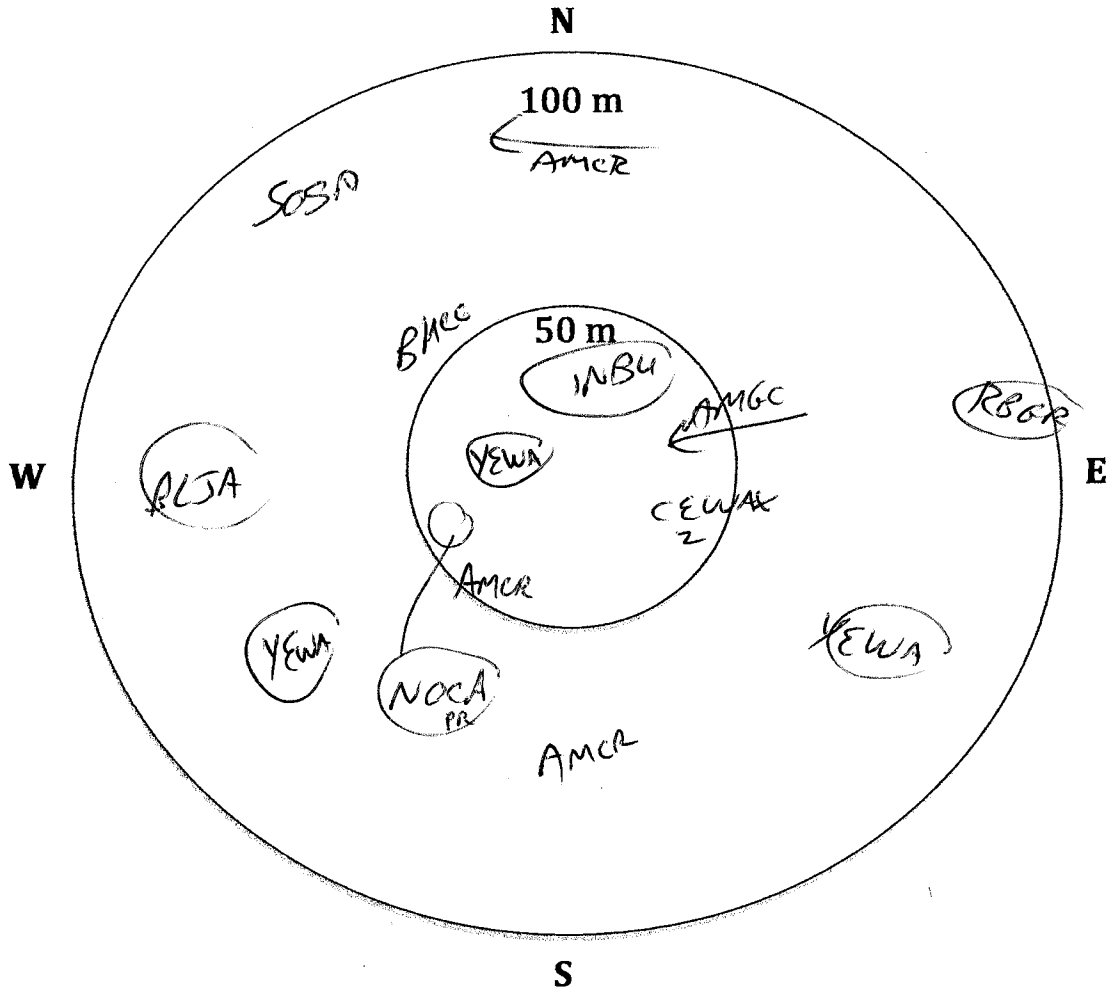
Alpha Code	Status	0-3	3-5	5-10	Dist
BANS	C	2			50-100
AMCR	C	5			50-100
BARS	C	1			50-100
COGR	C	1			50-100

Surveyor: _____ Date: 2 June 12 S. Time 9¹⁰ E. Time 9²⁰
 Temp: 15 Wind: SW2 Cloud: 100% Rain: No Last 24 hrs: Yes

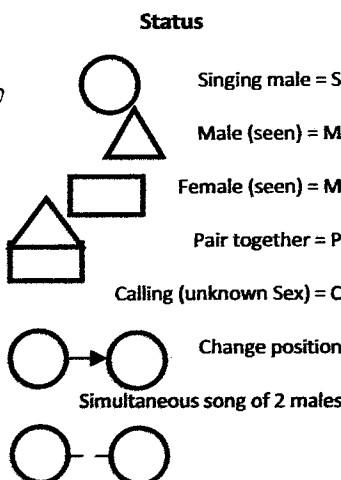
AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfield with remnant woodlot hedgerows
 GPS location: 561936 4735294 Pt. Count ID: RH-6



Alpha Code	Status	0-3	3-5	5-10	Dist
SOSP	S			1	50-100
AMCR	C	2	1		0-100
BLJA	C			1	50-100
RBGR	S	1			50-100
YEWA	S	2			50-100
NOCA	S	1			0-100
CEDW	C	2			0-50



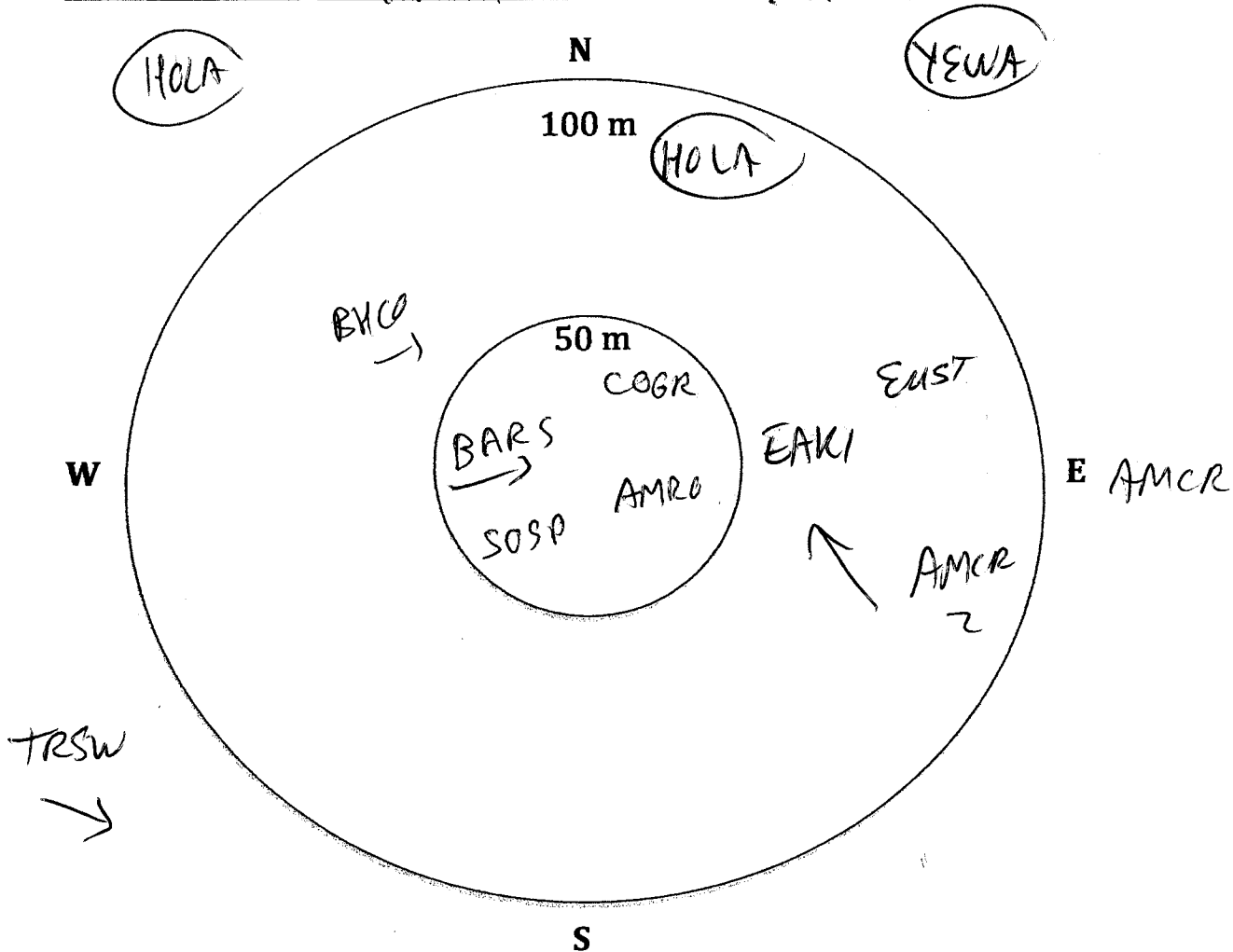
Alpha Code	Status	0-3	3-5	5-10	Dist
AMGO	S	1			0-100
INBU	S	1			0-50
BHCO	C		1		50-100

Surveyor: R. Tymstra Date: 12-6-12 S. Time 730 E. Time 740
 Temp: 24 Wind SW 1 Cloud: 10/10 Rain: N Last 24 hrs: Y

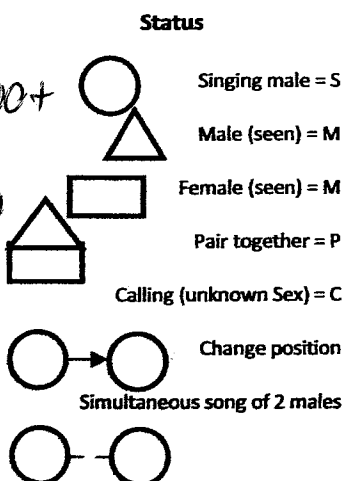
AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfield & hedgerow: shrubs + small trees
 GPS location: 560872 4734754 Pt. Count ID: RM# 1



Alpha Code	Status	0-3	3-5	5-10	Dist
HOLA	S	1	1		50-100+
Yewa	S	1			100+
BICO	C		1		50-100
BARS	M	1			0-50
COGR	M	1			0-50
AMRO	M	1			0-50
EAKI	M			1	50-100



Alpha Code	Status	0-3	3-5	5-10	Dist
EUST	C	2			50-100
AMCR	C	2		1	50-100
TRSW	M			1	100+
SOSP	S	1			0-50

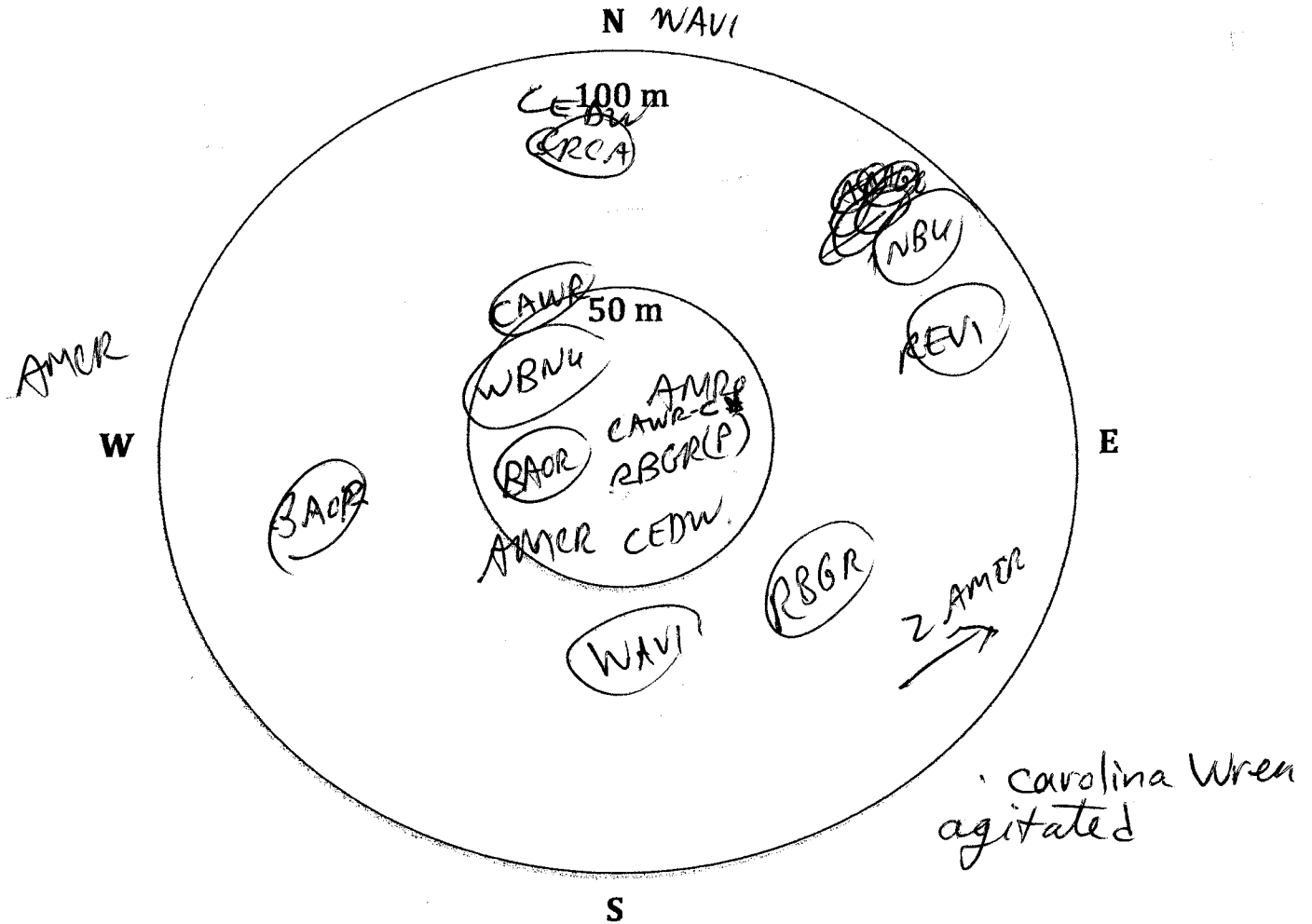
Surveyor: R Tymstra Date: 12-6-12 S. Time: 655 E. Time: 705
 Temp: 24°C Wind: 51 Cloud: 10/10 Rain: N Last 24 hrs: Y

AVIAN POINT COUNT CENSUS FORM

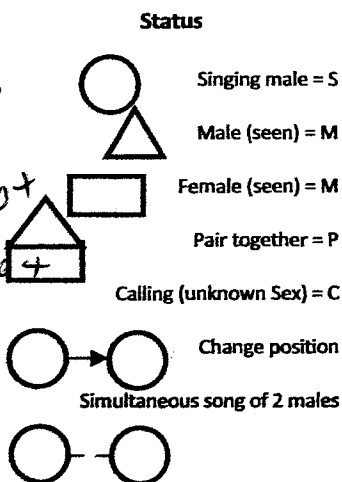
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Wooded ravine & corn fields

GPS location: 561295 4734871 Pt. Count ID: RH#2



Alpha Code	Status	0-3	3-5	5-10	Dist
CEDW	C	1		1	0-100
GRCA	S	1			50-100
WAVI	S	1		1	50-100+
AMCR	C	3			0-100
CAWR	S	1		1	0-100
WBNH	S		1		0-50
BAOR	S	2			0-100



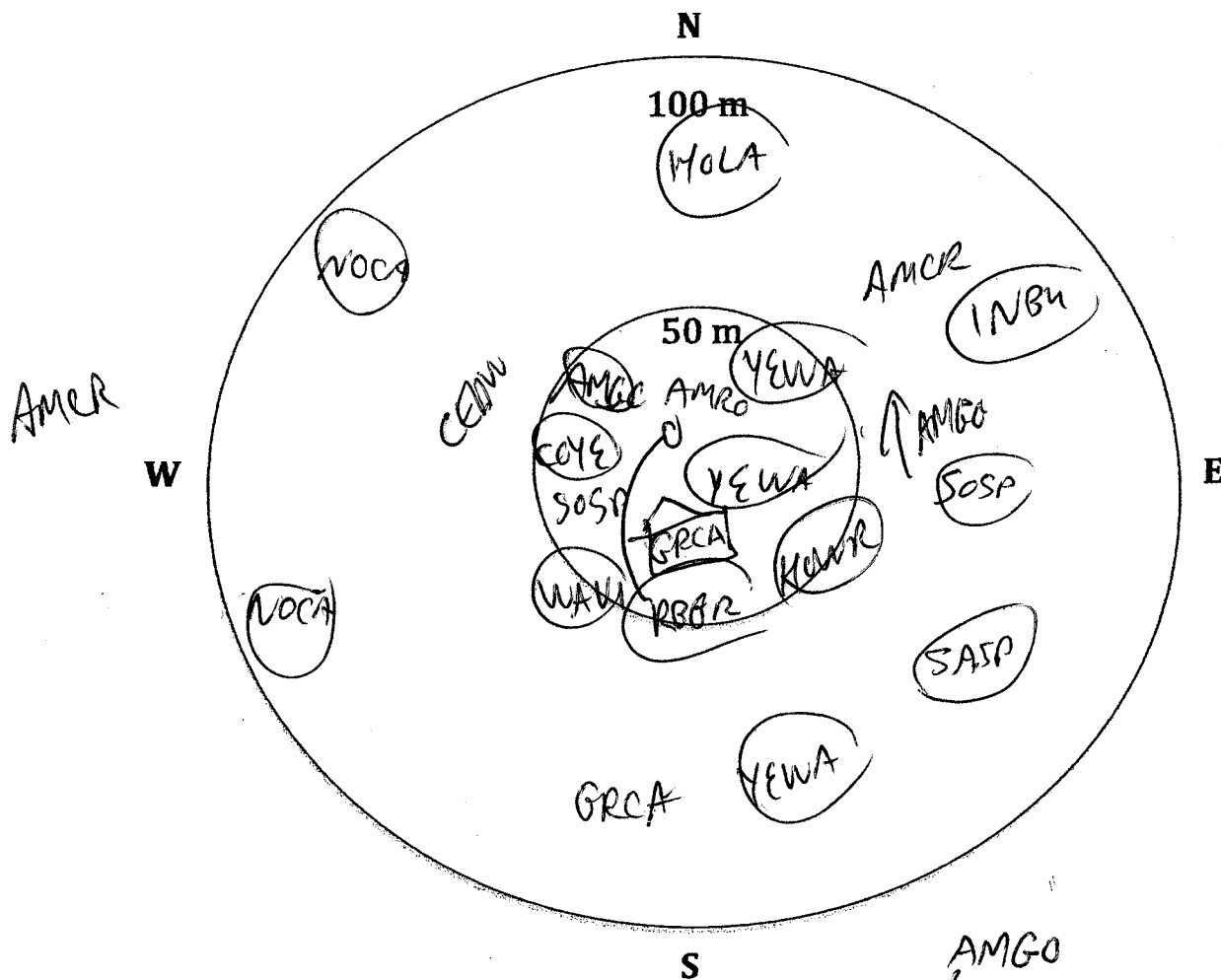
Alpha Code	Status	0-3	3-5	5-10	Dist
RBGR	S	1		1	0-100
AMRO	C		1		0-50
REVI	S			1	50-100
INBU	S			1	50-100

Surveyor: R. Tymstra Date: 12 Jun 12 S. Time 642 E. Time 652
 Temp: 24°C Wind: 51 Cloud: 10/10 Rain: N Last 24 hrs: Y

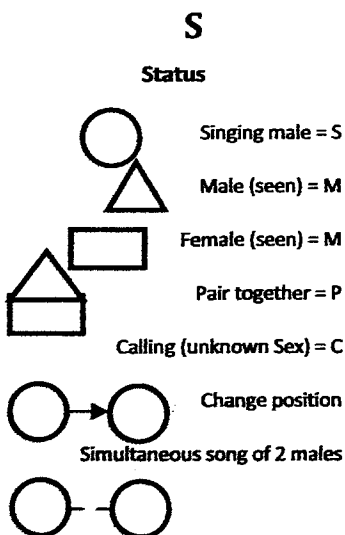
AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfields, Wooded creek
Tree Rows
 GPS location: 561212 4735142 Pt. Count ID: RH#3



Alpha Code	Status	0-3	3-5	5-10	Dist
YEWA	S	2	1		0-100
WAVI	S	1			0-50
GRCA	P	1		2	0-100
COYE	S	1			0-50
SASP	S	1			50-100
HOWR	S	1			0-50
INBU	S		1		50-100



Alpha Code	Status	0-3	3-5	5-10	Dist
AMGO	C	2			0-100
AMCR	C	1	1		50-100
HOLA	S	1			0-50
RBGR	S			1	0-50
AMRO	C				
CEDW	C		1	1	0-50
SOSP	S	1		1	0-100

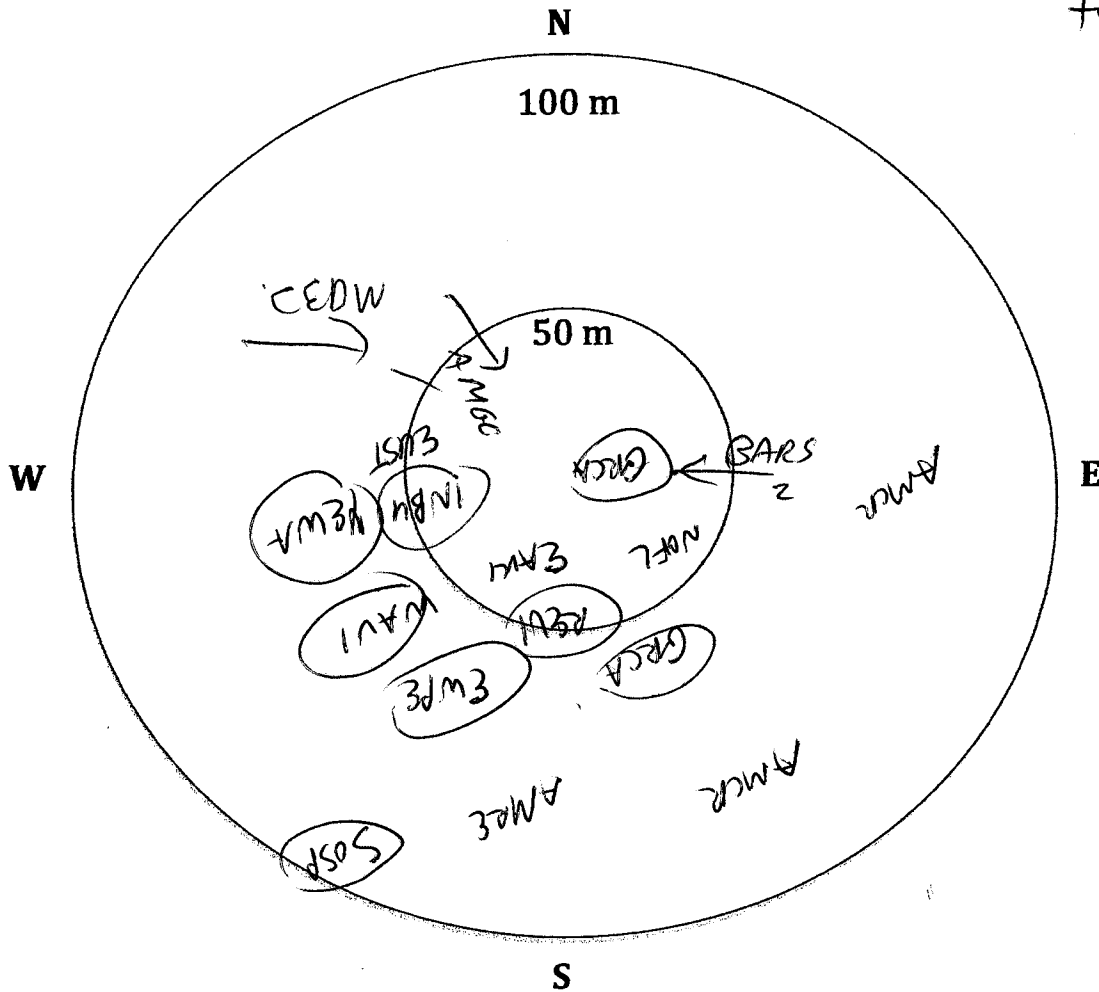
Surveyor: R Tymstra Date: 12 Jun 12 S. Time 6²⁷ E. Time 6³⁷
 Temp: 24°C Wind: SW2 Cloud: 10/10 Rain: NO Last 24 hrs: YES

AVIAN POINT COUNT CENSUS FORM

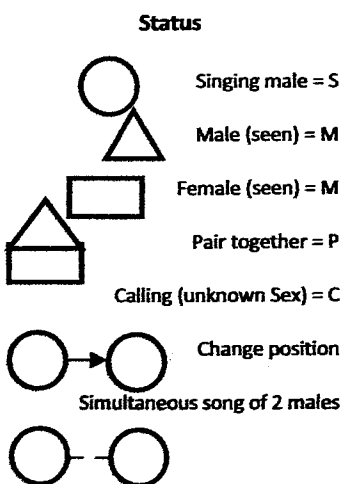
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfield & treed hedgerow

GPS location: 561355 4735230 Pt. Count ID: RH#4 Wooded ravine to south



Alpha Code	Status	0-3	3-5	5-10	Dist
AMGO	C			1	0-50
BARS	M			2	0-100
AMCR	S			1	50-100
CEDW	M			2	50-100
EUST	M	1			0-50
INBU	S	1			0-50
Yewa	S	1			50-100



Alpha Code	Status	0-3	3-5	5-10	Dist
WAVI	S	1			50-100
REVI	S	1			0-50
EWPE	S	1			50-100
GRCA	S	1		1	0-100
AMCR	C	2			50-100
SOSP	S	1			50-100

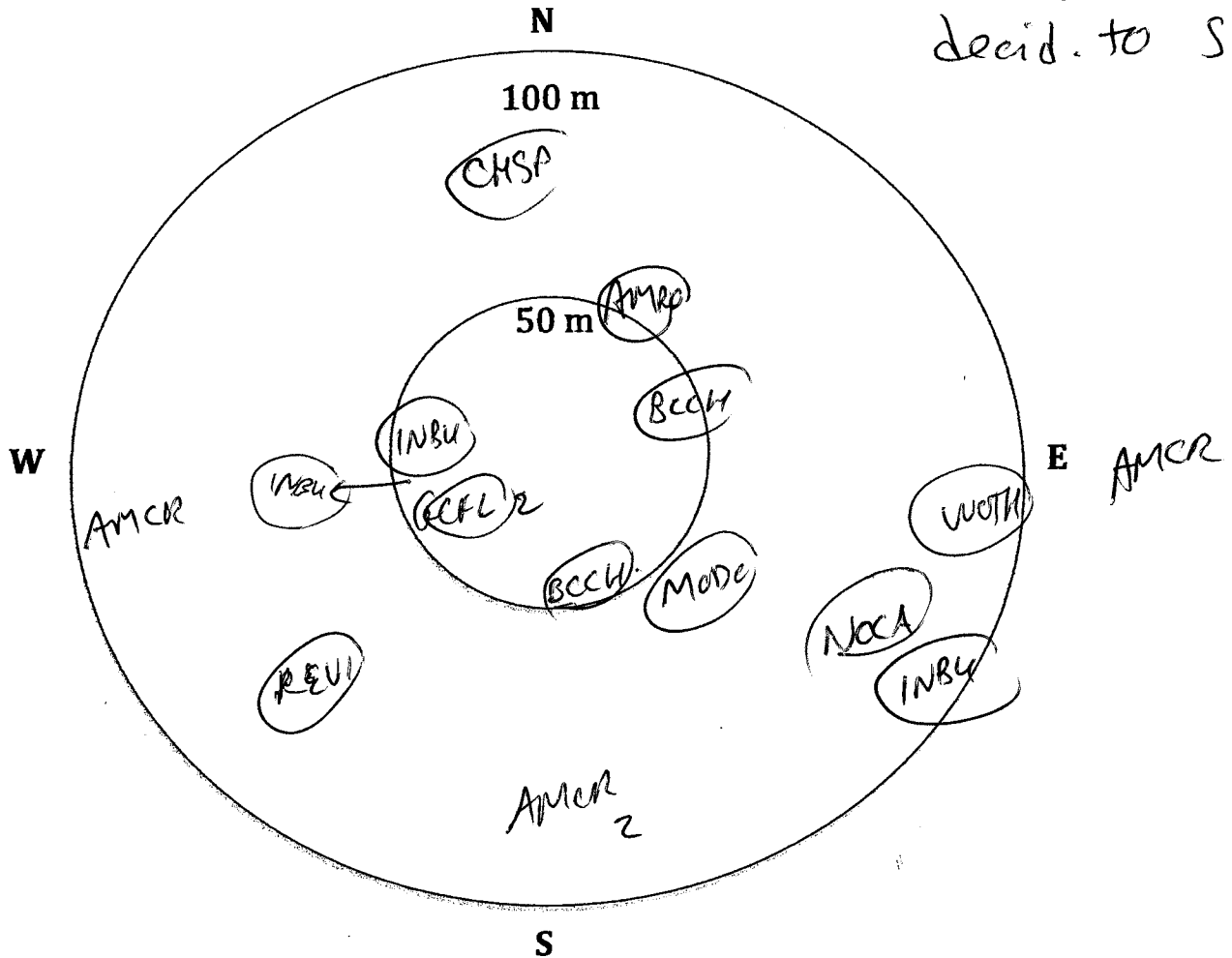
Surveyor: Rob T Date: 12 Jan 12 S. Time 532 E. Time 542
 Temp: 22°C Wind: SE 1 Cloud: 10/10 Rain: NO Last 24 hrs: YES

AVIAN POINT COUNT CENSUS FORM

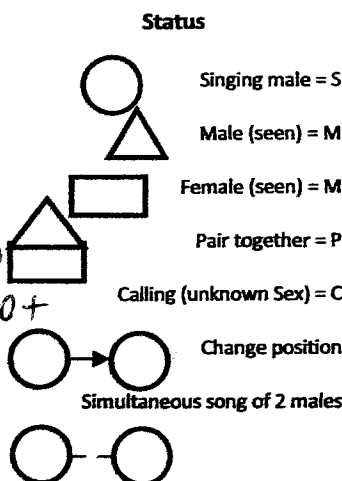
*Conducted on a day with good visibility, no precipitation, and ≤3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Comfield to N. Hedgerow & trees

GPS location: 561656 4735067 Pt. Count ID: RH #5
Woodlot decid. to S.



Alpha Code	Status	0-3	3-5	5-10	Dist
INBU	S	1		1	0-100
GCFL	S	1		1	
BCCH	S	1	1		0-50
REVI	S	1			50-100
AMCR	C	1	4		50-100+
WOTH	S	1			50-100
MODE	S	1			50-100



Alpha Code	Status	0-3	3-5	5-10	Dist
AMRO	S			1	0-50
NOCA	S			1	50-100
CHSP	S	1		1	50-100

Surveyor: ROB TYMSTR Date: 12 JUNE 12 S. Time 5:15 E. Time 5:25
 Temp: 22°C Wind: S 2 Cloud: 10/10 Rain: NO Last 24 hrs: YES

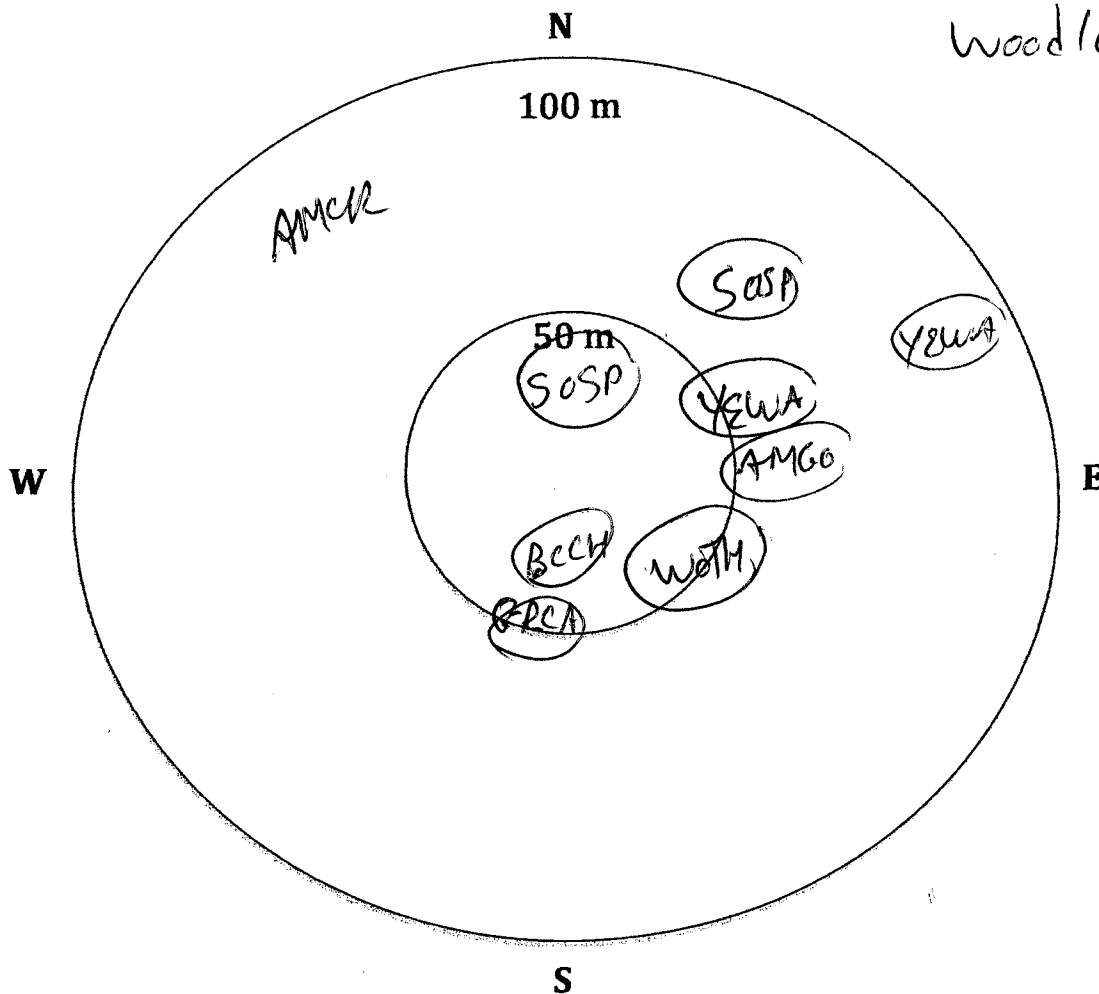
AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

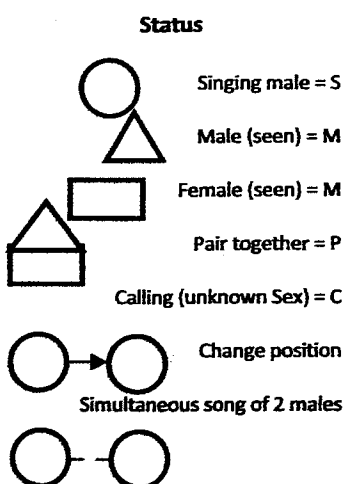
Name: PORT RIVER SE Habitat Type: Cornfield, hedgerows,

GPS location: 561936 4735294 Pt. Count ID: RH#6

deciduous
woodlot edge



Alpha Code	Status	0-3	3-5	5-10	Dist
WOTH	S	1			0-50
SOSP	S	2			0-100
BCCH	S	1		1	0-50
YLWA	S	2			0-100
GRCA	S		1	1	0-50
AMGO	S		1		0-50
AMCR	C			1	50-100



Alpha Code	Status	0-3	3-5	5-10	Dist

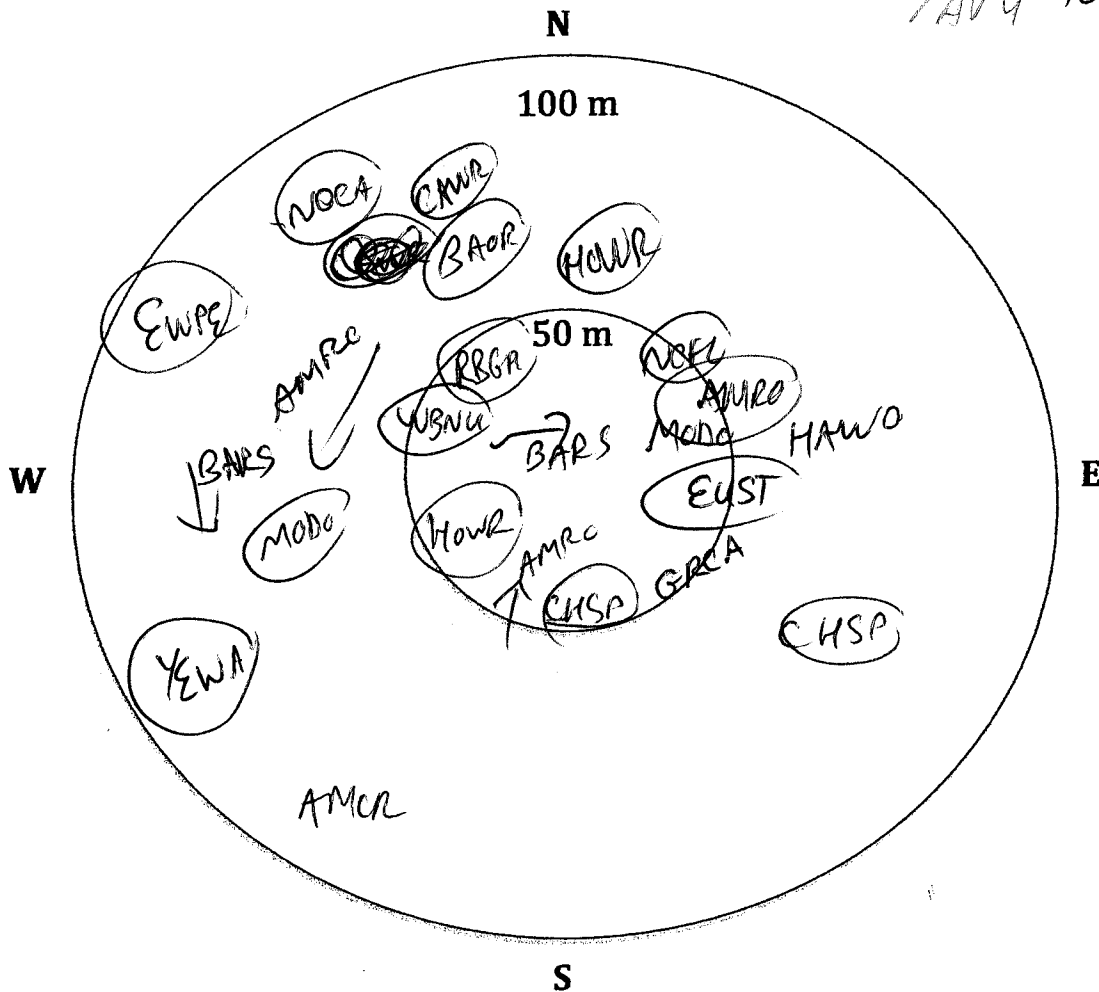
Surveyor: R. Tymstra Date: 12 Jan 12 S. Time 552 E. Time 602
 Temp: 23°C Wind: SW Cloud: 10/10 Rain: NO Last 24 hrs: _____

AVIAN POINT COUNT CENSUS FORM

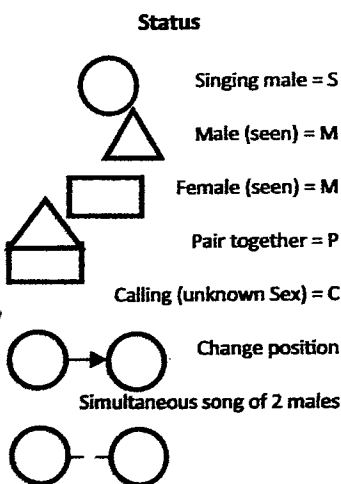
*Conducted on a day with good visibility, no precipitation, and ≤3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Farmhouses, manicured lawns

GPS location: 561260 4735883 Pt. Count ID: RH#7 deciduous wood
AV4 to North



Alpha Code	Status	0-3	3-5	5-10	Dist
BARS	M		2		0-100
EWPE	S	1			50-100
NOCA	S		1		50-100
BAOR	S		1		50-100
YEWA	S		1		50-100
AMCR	C	1			50-100
CHSP	S	2			0-100



Alpha Code	Status	0-3	3-5	5-10	Dist
GRCA	S	1	1		0-50
HAWR	S	1	1		0-100
MODO	S	1	1	1	0-100
NOFL	C	1			0-50
RBGR	S	1			0-50
EUST	S	1			0-50
AMRO	S	1	1	1	0-100

HAWO C 1 50-100
 WBNU S 1 0-50
 CAWR S 1 50-100

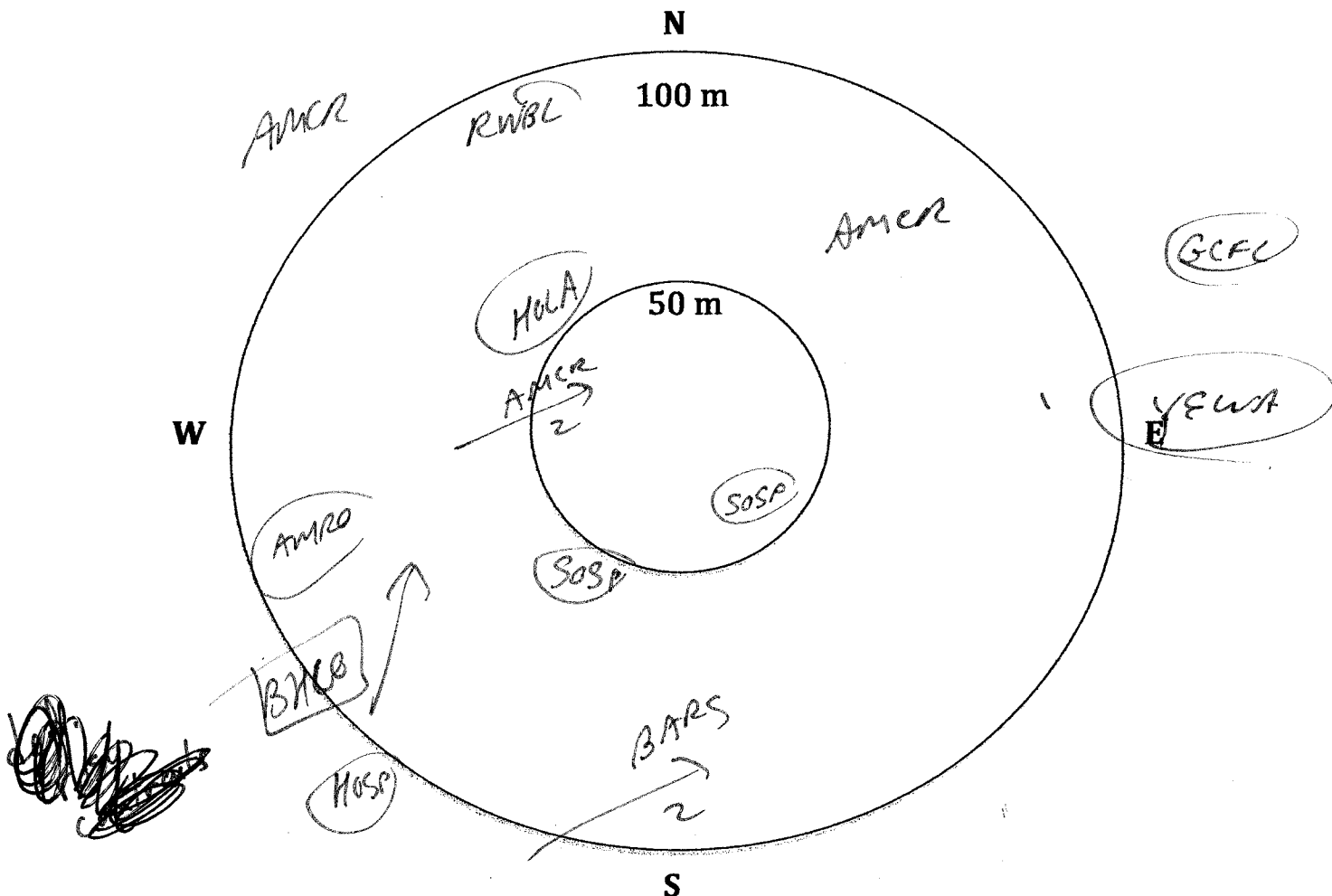
Surveyor: Rob Tymstra Date: 24 June 12 S. Time 6:05 E. Time 6:15
 Temp: 17°C Wind: calm Cloud: 20% Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

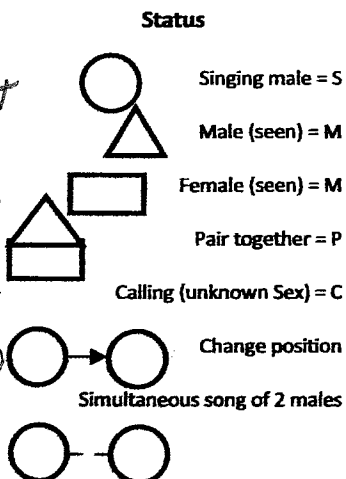
*Conducted on a day with good visibility, no precipitation, and ≤3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfields with hedgerow

GPS location: 560872 4734871 Pt. Count ID: RH 1



Alpha Code	Status	0-3	3-5	5-10	Dist
AMCR	C	1	2	1	50-100+
RWBL	C	1			50-100
HOLA	S	1			50-100
GCFL	S	1			100+
YELWA	S	1			100+
BARS	M	2			50-100
HOSP	C	1			100+



Alpha Code	Status	0-3	3-5	5-10	Dist
BHCO	M	1	1		50-100
AMRO	S	1			50-100
SOSA	S	2			0-100

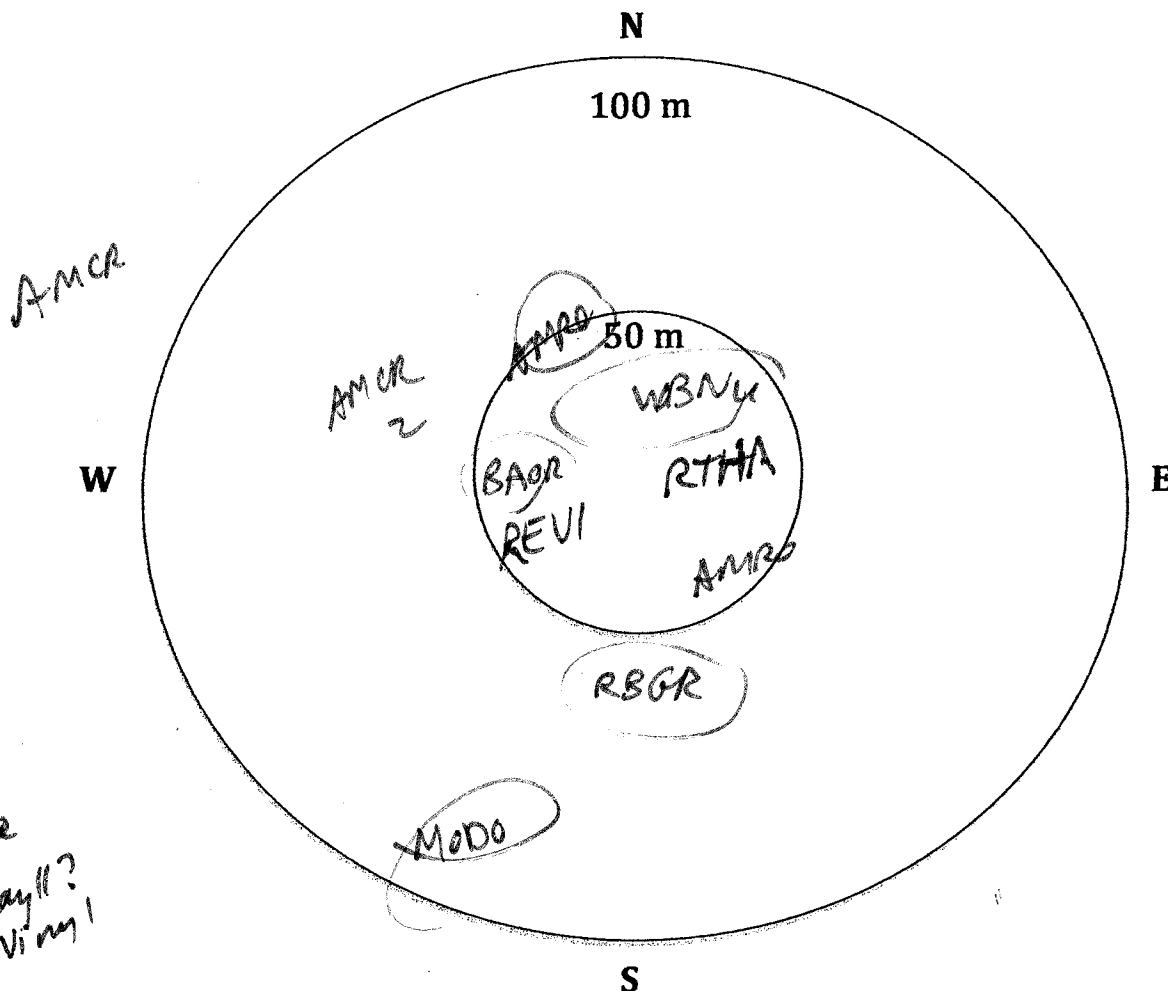
Surveyor: R. Tymstra Date: 24 Jun 12 S. Time 745 E. Time 755
 Temp: 19°C Wind: Calm Cloud: 100% Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

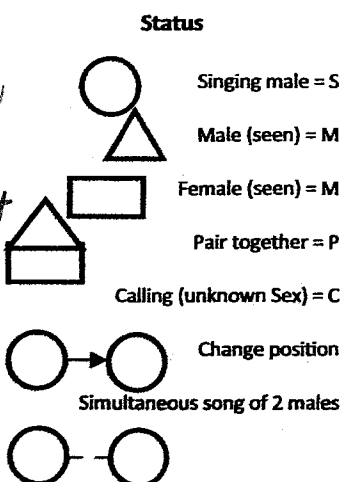
Name: PT Ryerse Habitat Type: Wooded creek, cornfields

GPS location: 561296 4734871 Pt. Count ID: RH-2



~~RBGR~~
 - May 11?
 - V. m. 1

Alpha Code	Status	0-3	3-5	5-10	Dist
RBGR	S	1			50-100
REVI	C			1	0-50
AMCR	C	2	1		50-100+
WBNU	C	1			0-50
RTHA	C	1			0-50
BAOR	S			1	0-50
AMRO	S			1	0-50



Alpha Code	Status	0-3	3-5	5-10	Dist
MODO	S			1	50-100

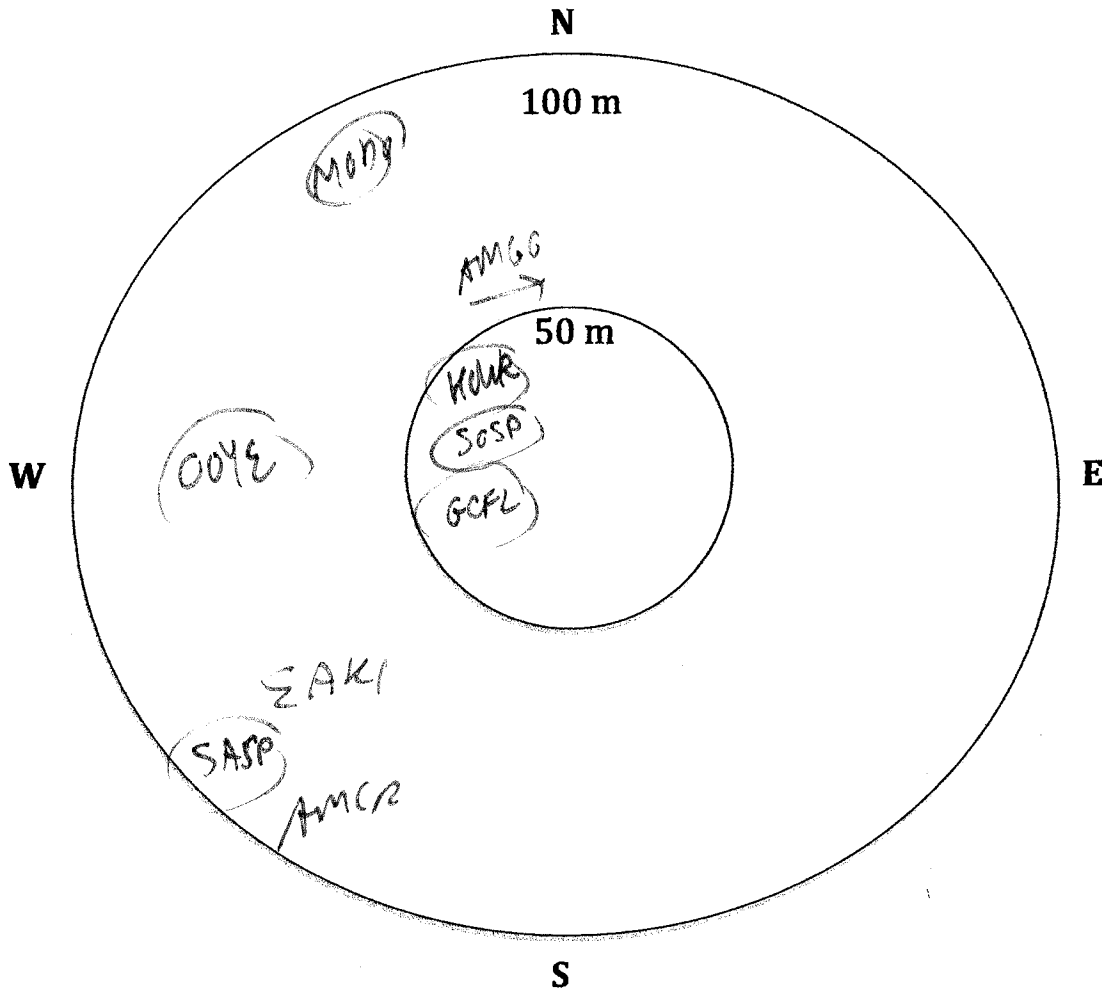
Surveyor: R. Tymstra Date: 24 Jun 12 S. Time: 7:15 E. Time: 7:25
 Temp: 18°C Wind: Calm Cloud: 60% Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

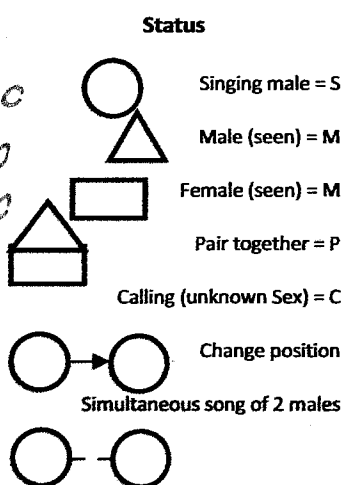
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt. Ryerse Habitat Type: Corn shelterow, creek riparian

GPS location: 561211 4735141 Pt. Count ID: RH-3



Alpha Code	Status	0-3	3-5	5-10	Dist
SASP	S			1	50-100
AMCR	C	1			50-100
EAKI	C	1			50-100
COYE	S	1			50-100
GCFL	S	1			0-50
SOSP	S	1			0-50
HWR	S	1			0-50



Alpha Code	Status	0-3	3-5	5-10	Dist
AMGO	C		1		50-100
MODO	S	1			50-100

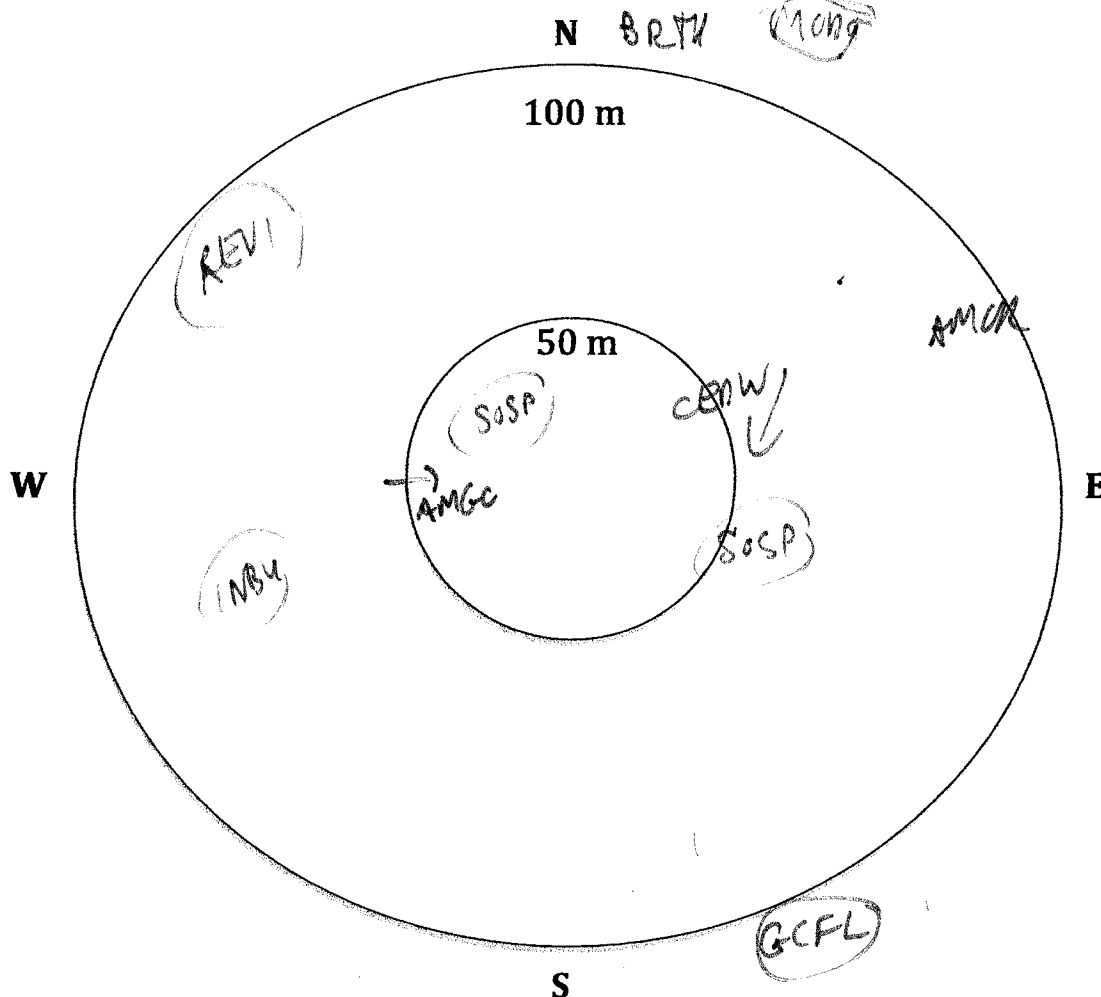
Surveyor: R. Tymstra Date: 24 Jun 12 S. Time 658 E. Time 708
 Temp: 17°C Wind: calm Cloud: 70% Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

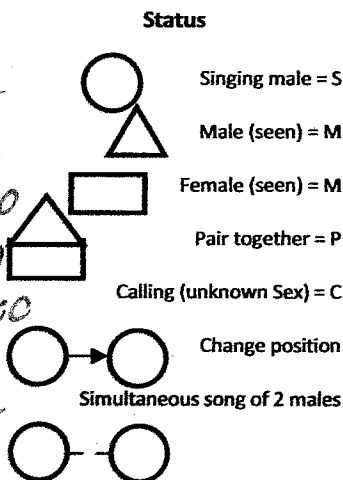
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: P. Rymse Habitat Type: AMCR corn = hedgerow
= trees

GPS location: 561355 4735230 Pt. Count ID: RH.4



Alpha Code	Status	0-3	3-5	5-10	Dist
GCFL	S			1	100+
SOSP	S	1	1		50-100
CEDW	M	1			50-100
AMGC	C	1			50-100
AMCR	C	1			50-100
BRTM	M	1			100+
MOD0	S	1			100+



Alpha Code	Status	0-3	3-5	5-10	Dist
REV1	S	1			50-100
INBU	S	1			50-100

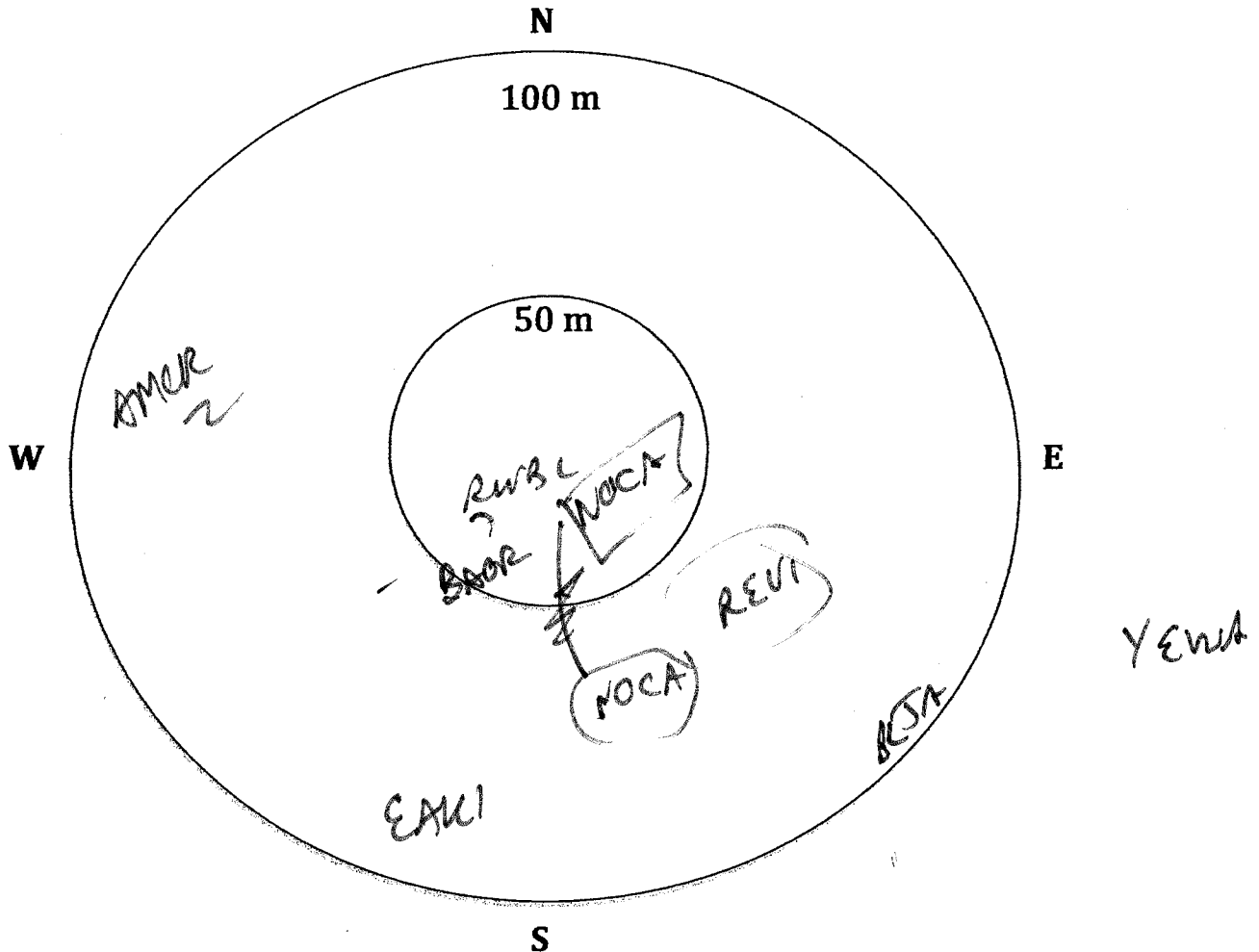
Surveyor: P. Tymstra Date: 24 Jan 12 S. Time 825 E. Time 835
 Temp: 21 Wind: W.1 Cloud: W1 Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

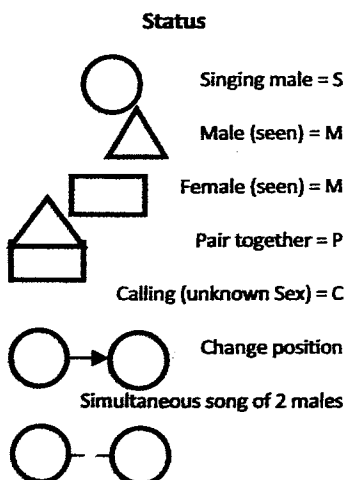
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt. Ryer Habitat Type: Corn. hedgerow, wooded creek

GPS location: 561656 4735067 Pt. Count ID: RH 5



Alpha Code	Status	0-3	3-5	5-10	Dist
AMCR	C		1		0-50
NOCA	S	1	1		50-100
BLJA	C	1			50-100
REVI	S		1		50-100
RWBL	M	1			0-50
AMCR	C	2			50-100
YENA	S			1	100+



Alpha Code	Status	0-3	3-5	5-10	Dist
EAKI	C			1	50-100

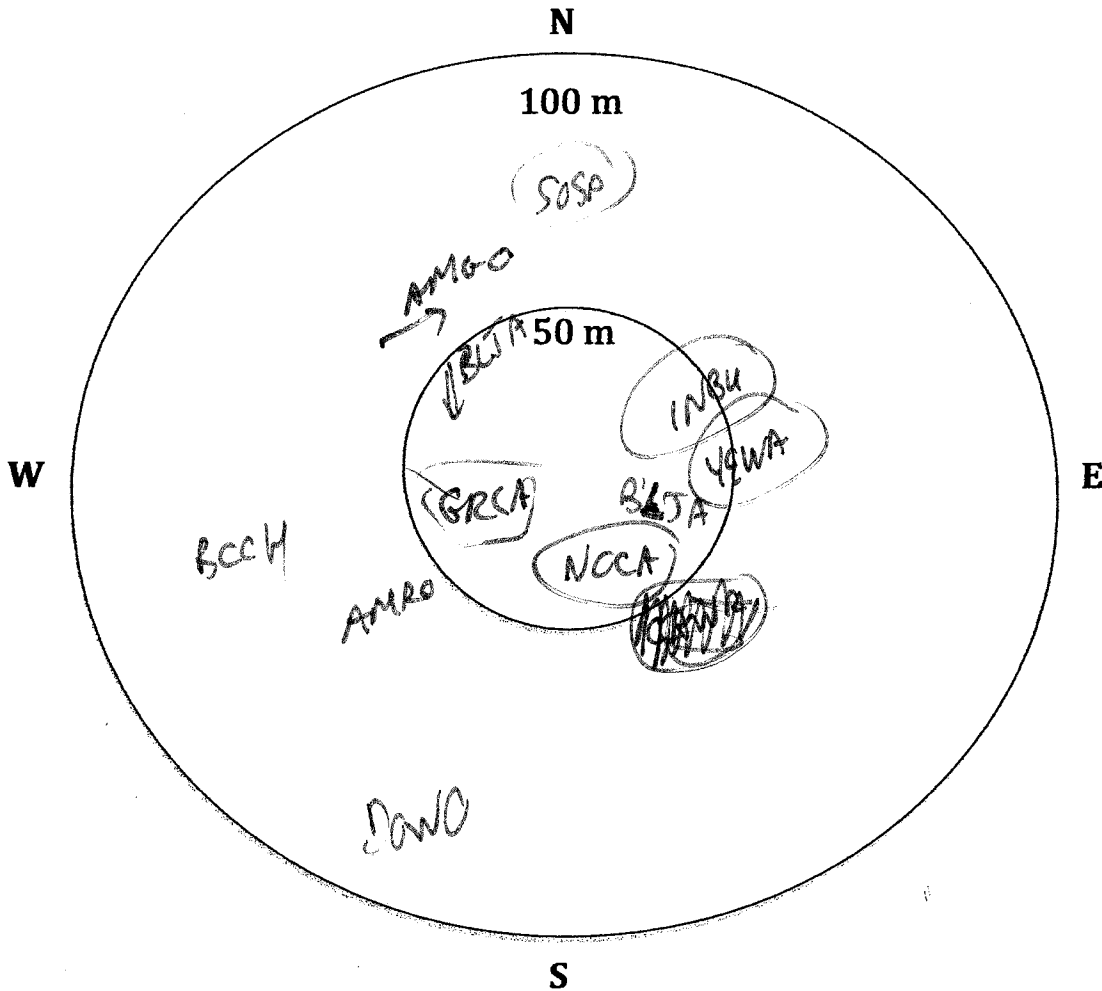
Surveyor: R. Tymstra Date: 24 Jun 12 S. Time 8:05 E. Time 8:15
 Temp: 20°C Wind: W 1 Cloud: 10% Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

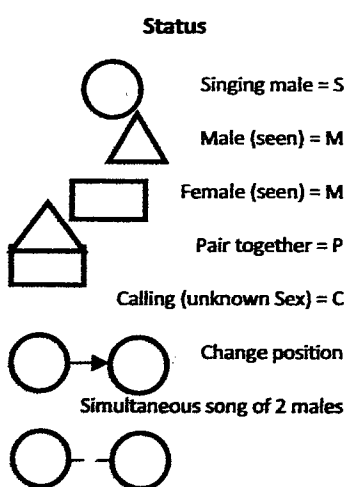
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: Pt Ryerse Habitat Type: Cornfield, hedgerow, woodland edge
Beans

GPS location: 561936, 4735294 Pt. Count ID: RH 6



Alpha Code	Status	0-3	3-5	5-10	Dist
SOSP	S	1			50-100
AMGO	C	1			50-100
BLJA	C	1	1		0-50
GRCA	S	1			0-50
NOCA	S	1			0-50
INBU	S	1			0-50
YEWA	S	1			0-50



Alpha Code	Status	0-3	3-5	5-10	Dist
AMRO	C		1		50-100
DOWO	C	1			50-100
BCCH	C	1	1		50-100

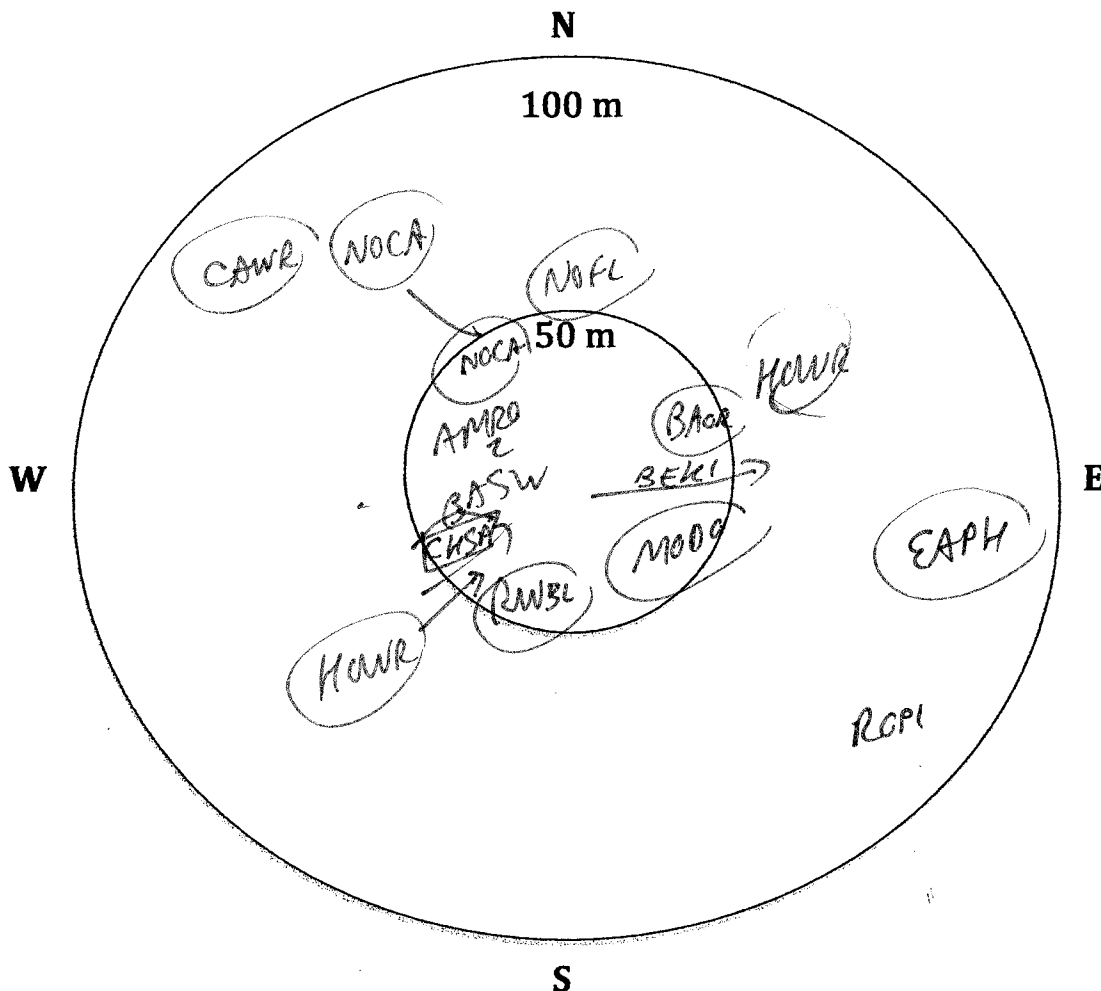
Surveyor: R. Tymstra Date: 24 Jun 12 S. Time: 6:25 E. Time: 6:35
 Temp: 17°C Wind: Calm Cloud: 40% Rain: 0 Last 24 hrs: 0

AVIAN POINT COUNT CENSUS FORM

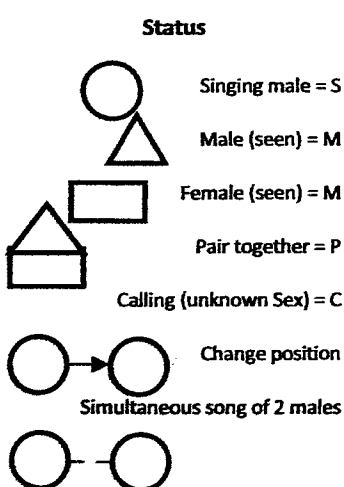
*Conducted on a day with good visibility, no precipitation, and ≤ 3 on the Beaufort Scale

Name: PJ Ryerse Habitat Type: Laurel woodland edge

GPS location: 561271 4735883 Pt. Count ID: RH 7

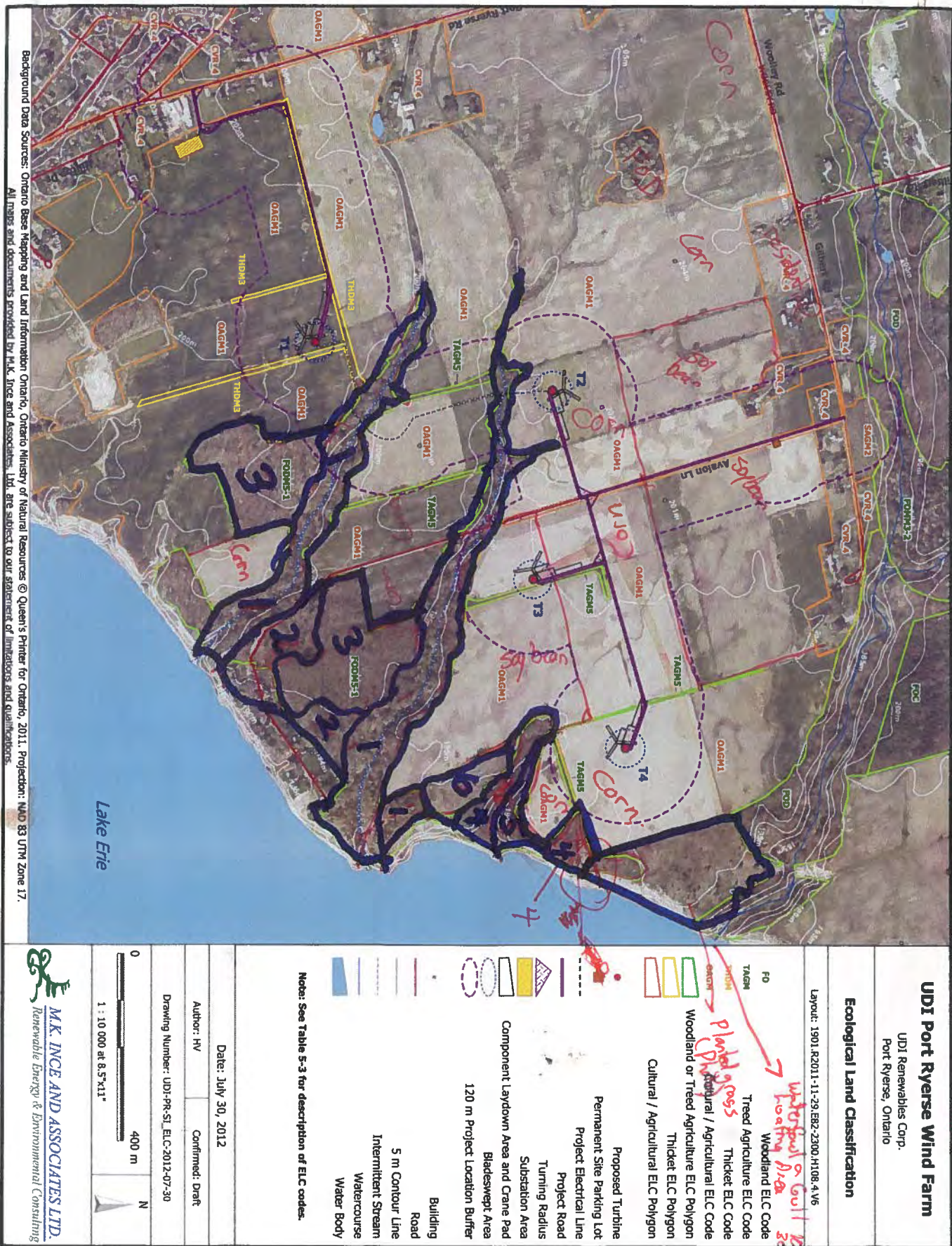


Alpha Code	Status	0-3	3-5	5-10	Dist
BEKI	M			1	0-50
EAPH	S			1	50-100
CAWR	S			1	50-100
ROPI	M	1			50-100
HAWR	S	2			0-100
RWBL	M	1			0-50
BASW	M	2			0-50



Alpha Code	Status	0-3	3-5	5-10	Dist
BAOR	S	1			0-50
AMRO	M	2			0-50
NOCA	S	1			0-100
NOFL	C	1			50-100
CAWR	S	1			50-100

EQUIV: Dry-Fresh Sugar Maple Forest - almost entirely dominated by sugar maple
 OAGM1: Annual Row Crops
 TAGM5: Fence row
 THDM3: Dry-Fresh Deciduous Hedgerow Thicket



Background Data Sources: Ontario Base Mapping and Land Information Ontario, Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011, Projection: NAD 83 UTM Zone 17.
 All maps and documents provided by M.K. Ince and Associates, Ltd. are subject to our statement of limitations and qualifications.

ELC SITE: UDI Port Ryse Wood Farm
SURVEYOR(S): D. Graham DATE: 2
COMMUNITY DESCRIPTION & CLASSIFICATION START: END: UTM2: UTM1:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL	<input type="checkbox"/> ORGANIC	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> NATURAL	<input type="checkbox"/> PLANKTON	<input type="checkbox"/> LAKE
<input type="checkbox"/> WETLAND	<input type="checkbox"/> MINERAL SOIL	<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CULTURAL	<input type="checkbox"/> SUBMERGED	<input type="checkbox"/> POND
<input type="checkbox"/> AQUATIC	<input type="checkbox"/> PARENT MIN.	<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> TERRACE	<input type="checkbox"/> FLOATING-LV.	<input type="checkbox"/> RIVER
	<input type="checkbox"/> ACIDIC BEDRK.	<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> FORB	<input type="checkbox"/> GRAMINOID	<input type="checkbox"/> STREAM
	<input type="checkbox"/> BASIC BEDRK.	<input type="checkbox"/> ROLL UPLAND	<input type="checkbox"/> UCHEN	<input type="checkbox"/> SWAMP	<input type="checkbox"/> MARSH
	<input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS	<input type="checkbox"/> COVER	<input type="checkbox"/> BRYOPHYTE	<input type="checkbox"/> FEN
	<input type="checkbox"/> OPEN WATER	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> OPEN	<input type="checkbox"/> DECIUOUS	<input type="checkbox"/> BOG
<input type="checkbox"/> SHALLOW WATER	<input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> ALVAR	<input type="checkbox"/> SHRUB	<input type="checkbox"/> MIXED	<input type="checkbox"/> BARREN
<input type="checkbox"/> SURFICIAL DEP.	<input type="checkbox"/> ROCKLAND	<input type="checkbox"/> BEACH / BAR	<input type="checkbox"/> TREED	<input type="checkbox"/> MEADOW	<input type="checkbox"/> PRAIRIE
<input type="checkbox"/> BEDROCK	<input type="checkbox"/> SAND DUNE	<input type="checkbox"/> BLUFF	<input type="checkbox"/> PLANTATION	<input type="checkbox"/> THICKET	<input type="checkbox"/> SAVANNAH
				<input type="checkbox"/> WOODLAND	<input type="checkbox"/> FOREST

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	3	Canopy > Herb > Fraxinus > Populus
2 SUB-CANOPY	3	3	Fraxinus > Fraxinus > Fraxinus
3 UNDERSTORY	1	3	Fraxinus > Fraxinus > Fraxinus
4 GRD. LAYER	3	3	Fraxinus > Fraxinus > Fraxinus

HT CODES: 1=25m 2=10<HT<25m 3=2<HT<10m 4=1<HT<2m 5=0.5<HT<1m 6=0.2<HT<0.5m 7=HT<0.2m
CVR CODES: 0=NONE 1=0%<CVR<10% 2=10<CVR<25% 3=25<CVR<50% 4=CVR>50%

STAND COMPOSITION:

SIZE CLASS ANALYSIS:	BA:			
<input type="checkbox"/> <10	<input type="checkbox"/> 10-24	<input type="checkbox"/> 25-50	<input type="checkbox"/> >50	
<input type="checkbox"/> STANDING SNAGS:	<input type="checkbox"/> <10	<input type="checkbox"/> 10-24	<input type="checkbox"/> 25-50	<input type="checkbox"/> >50
<input type="checkbox"/> DEADFALL LOGS:	<input type="checkbox"/> <10	<input type="checkbox"/> 10-24	<input type="checkbox"/> 25-50	<input type="checkbox"/> >50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES/GLEY g= G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE:

ECOSITE: CODE:

VEGETATION TYPE: CODE:

Evidence of Disturbance / Notes: Shear hickory CODE: FOD 9-4

COMPLEX CODE:

Disturbance due to ~~tree~~ cutting & tree removal evident & widespread
Canopy gaps frequent

ELC SITE: UDI Port Ryse Wood Farm
SURVEYOR(S): D. Graham DATE: 2
COMMUNITY DESCRIPTION & CLASSIFICATION START: END: UTM2: UTM1:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL	<input type="checkbox"/> ORGANIC	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> NATURAL	<input type="checkbox"/> PLANKTON	<input type="checkbox"/> LAKE
<input type="checkbox"/> WETLAND	<input type="checkbox"/> MINERAL SOIL	<input type="checkbox"/> RIVERINE	<input type="checkbox"/> CULTURAL	<input type="checkbox"/> SUBMERGED	<input type="checkbox"/> POND
<input type="checkbox"/> AQUATIC	<input type="checkbox"/> PARENT MIN.	<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> TERRACE	<input type="checkbox"/> FLOATING-LV.	<input type="checkbox"/> RIVER
	<input type="checkbox"/> ACIDIC BEDRK.	<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> FORB	<input type="checkbox"/> GRAMINOID	<input type="checkbox"/> STREAM
	<input type="checkbox"/> BASIC BEDRK.	<input type="checkbox"/> ROLL UPLAND	<input type="checkbox"/> UCHEN	<input type="checkbox"/> SWAMP	<input type="checkbox"/> MARSH
	<input type="checkbox"/> CLIFF	<input type="checkbox"/> TALUS	<input type="checkbox"/> COVER	<input type="checkbox"/> BRYOPHYTE	<input type="checkbox"/> FEN
	<input type="checkbox"/> OPEN WATER	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> OPEN	<input type="checkbox"/> DECIUOUS	<input type="checkbox"/> BOG
<input type="checkbox"/> SHALLOW WATER	<input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> ALVAR	<input type="checkbox"/> SHRUB	<input type="checkbox"/> MIXED	<input type="checkbox"/> BARREN
<input type="checkbox"/> SURFICIAL DEP.	<input type="checkbox"/> ROCKLAND	<input type="checkbox"/> BEACH / BAR	<input type="checkbox"/> TREED	<input type="checkbox"/> MEADOW	<input type="checkbox"/> PRAIRIE
<input type="checkbox"/> BEDROCK	<input type="checkbox"/> SAND DUNE	<input type="checkbox"/> BLUFF	<input type="checkbox"/> PLANTATION	<input type="checkbox"/> THICKET	<input type="checkbox"/> SAVANNAH
				<input type="checkbox"/> WOODLAND	<input type="checkbox"/> FOREST

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	3	Canopy > Herb > Fraxinus > Populus
2 SUB-CANOPY	3	3	Fraxinus > Fraxinus > Fraxinus
3 UNDERSTORY	1	3	Fraxinus > Fraxinus > Fraxinus
4 GRD. LAYER	3	3	Fraxinus > Fraxinus > Fraxinus

HT CODES: 1=25m 2=10<HT<25m 3=2<HT<10m 4=1<HT<2m 5=0.5<HT<1m 6=0.2<HT<0.5m 7=HT<0.2m
CVR CODES: 0=NONE 1=0%<CVR<10% 2=10<CVR<25% 3=25<CVR<50% 4=CVR>50%

STAND COMPOSITION:

SIZE CLASS ANALYSIS:	BA:			
<input type="checkbox"/> <10	<input type="checkbox"/> 10-24	<input type="checkbox"/> 25-50	<input type="checkbox"/> >50	
<input type="checkbox"/> STANDING SNAGS:	<input type="checkbox"/> <10	<input type="checkbox"/> 10-24	<input type="checkbox"/> 25-50	<input type="checkbox"/> >50
<input type="checkbox"/> DEADFALL LOGS:	<input type="checkbox"/> <10	<input type="checkbox"/> 10-24	<input type="checkbox"/> 25-50	<input type="checkbox"/> >50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

COMM. AGE: PIONEER YOUNG MID-AGE MATURE OLD GROWTH

SOIL ANALYSIS:

TEXTURE: DEPTH TO MOTTLES/GLEY g= G=

MOISTURE: DEPTH OF ORGANICS: (cm)

HOMOGENEOUS / VARIABLE DEPTH TO BEDROCK: (cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: CODE:

ECOSITE: CODE:

VEGETATION TYPE: CODE:

Evidence of Disturbance / Notes: Shear hickory CODE: FOD 9-4

COMPLEX CODE:

Disturbance due to ~~tree~~ cutting & tree removal evident & widespread
Canopy gaps frequent

ELC	SITE: UDI
COMMUNITY DESCRIPTION & CLASSIFICATION	Port Rose Wind Farm
	POLYGON: 3
	DATE:
	SURVEYOR(S): P. Gaba

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	K	B
Vibices:		
Puradi:		
Museo	O	
Puradi:		O
Lasse		O

Use _____ of _____
 Signature: _____

 (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.
 Signature: _____

 (Product Manager)

ELC	SITE: UDI Port Royal Wind Farm
COMMUNITY DESCRIPTION & CLASSIFICATION	POLYGON:
SURVEYOR(S): D. Corbett	DATE:

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
Prunner						P. Symplex					
Asplenium	A	A	A			Sol. lancea					
Fraxinus			A. A			Asplenium					
B. leucost				O		Hedera					
Ruscus						Sol. lancea					
Alnus						Hedera					
Carum						Sol. lancea					
Quercus	O					Hedera					
						Sol. lancea					
						Hedera					
						Sol. lancea					
						Hedera					
						Sol. lancea					
						Hedera					
						Sol. lancea					
						Hedera					
						Sol. lancea					
						Hedera					
						Sol. lancea					
						Hedera					
						Sol. lancea					
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						Sol. lancea					

Serial No	Year	Hybrid or earlier	Serial No	Year	Hybrid or earlier
1	19		1	19	
2	20		2	20	
3	21		3	21	
4	22		4	22	
5	23		5	23	
6	24		6	24	
7	25		7	25	
8	26		8	26	
9	27		9	27	
10	28		10	28	
11	29		11	29	
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13	31		13	31	
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53	71		53	71	
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66	84		66	84	
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69	87		69	87	
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71	89		71	89	
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74	92		74	92	
75	93		75	93	
76	94		76	94	
77	95		77	95	
78	96		78	96	
79	97		79	97	
80	98		80	98	
81	99		81	99	
82	100		82	100	

BA.

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Sl. No.	Page No.	Score	Remarks
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

[illegible]

CODE:

Signature: _____ **Signature:** _____
 (Field Personnel) (Project Manager)

Vegetation removed on east side of this feature so that

ELC SITE: VDI Port Ryse Wood Farm
COMMUNITY DESCRIPTION & CLASSIFICATION: START: D. Graham DATE: POLYGON: 55
END: UTMZ: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> TERRESTRIAL	<input checked="" type="checkbox"/> ORGANIC	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> NATURAL	<input type="checkbox"/> PLANKTON	<input type="checkbox"/> LAKE
<input type="checkbox"/> WETLAND	<input checked="" type="checkbox"/> MINERAL SOIL	<input type="checkbox"/> RIVERINE	<input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> SUBMERGED	<input type="checkbox"/> POND
<input type="checkbox"/> AQUATIC	<input type="checkbox"/> PARENT MIN.	<input type="checkbox"/> BOTTOMLAND	<input type="checkbox"/> TERRACE	<input type="checkbox"/> FLOATING VD.	<input type="checkbox"/> RIVER
	<input type="checkbox"/> ACIDIC BEDR.	<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> TABLELAND	<input type="checkbox"/> GRAMINOID	<input type="checkbox"/> STREAM
	<input type="checkbox"/> BASIC BEDR.	<input type="checkbox"/> ROLL. UPLAND	<input type="checkbox"/> CLIFF	<input type="checkbox"/> FORB	<input type="checkbox"/> MARSH
		<input type="checkbox"/> TALUS	<input type="checkbox"/> COVER	<input type="checkbox"/> LICHEN	<input type="checkbox"/> SWAMP
<input type="checkbox"/> OPEN WATER	<input type="checkbox"/> CARB. BEDR.	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> OPEN	<input type="checkbox"/> BRYOPHYTE	<input type="checkbox"/> BOG
<input type="checkbox"/> SHALLOW		<input type="checkbox"/> ALVAR	<input type="checkbox"/> COVER	<input type="checkbox"/> DECIDUOUS	<input type="checkbox"/> BARREN
<input type="checkbox"/> SURFICIAL DEP.		<input type="checkbox"/> ROCKLAND	<input type="checkbox"/> OPEN	<input type="checkbox"/> CONIFEROUS	<input type="checkbox"/> MEADOW
<input type="checkbox"/> BEDROCK		<input type="checkbox"/> BEACH / BAR	<input type="checkbox"/> SHRUB	<input type="checkbox"/> MIXED	<input type="checkbox"/> PRAIRIE
		<input type="checkbox"/> SAND DUNE	<input type="checkbox"/> TREED		<input type="checkbox"/> THICKET
		<input type="checkbox"/> BLUFF			<input type="checkbox"/> SAVANNAH
					<input type="checkbox"/> WOODLAND
					<input type="checkbox"/> FOREST
					<input type="checkbox"/> PLANTATION

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	3	4	B. Locust > P. Pines > C. Poplar > A. Ash
2 SUB-CANOPY	3	3	P. Cane > P. Rosmalt
3 UNDERSTOREY	3	3	
4 GRD. LAYER	4	4	H. S. Mat > W. S. D. > A. off. > C. off. > S. off.

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0.5-1m 6=0.2-1m 7=0.1-0.2m
CVR CODES: 0=NONE 1=0%<CVR<10% 2=10%<CVR<25% 3=25%<CVR<50% 4=CVR>50%

STAND COMPOSITION:

SIZE CLASS ANALYSIS:	A	10 - 24	R	25 - 50	N	> 50
STANDING SNAGS:						
DEADFALL/LOGS:						

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

SOIL ANALYSIS:

SOIL ANALYSIS:			
TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
MOISTURE:	DEPTH OF ORGANICS:		
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		
			(cm)
			(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	CODE:
COMMUNITY SERIES:	CODE:
ECOSITE:	CODE:
VEGETATION TYPE:	CODE:

EVIDENCE OF DISTURBANCE / NOTES:

High non-native component

ELC SITE: VDI Port Ryse Wood Farm
COMMUNITY DESCRIPTION & CLASSIFICATION: START: D. Graham DATE: POLYGON: 55
END: UTMZ: UTMN:

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

SPECIES CODE	1	2	3	4	COLL.
1					
2					
3					
4					

SPECIES CODE	1	2	3	4	COLL.
1					
2					
3					
4					

SPECIES CODE	1	2	3	4	COLL.
1					
2					
3					
4					

SPECIES CODE	1	2	3	4	COLL.
1					
2					
3					
4					

SPECIES CODE	1	2	3	4	COLL.
1					
2					
3					
4					

Page ____ of ____

Signature: _____

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____

(Project Manager)

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: UDT	POLYGON: 6
	SURVEYOR(S): D. Graham	DATE:
	START: END:	UTM: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL	<input type="checkbox"/> ORGANIC	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> NATURAL	<input type="checkbox"/> PLANKTON	<input type="checkbox"/> LAKE
<input type="checkbox"/> WETLAND	<input type="checkbox"/> MINERAL SOIL	<input type="checkbox"/> BOTTOMLAND	<input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> SUBMERGED	<input type="checkbox"/> POND
<input type="checkbox"/> AQUATIC	<input type="checkbox"/> PARENT MIN.	<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> TERRACE	<input type="checkbox"/> GRAMINOID	<input type="checkbox"/> RIVER
	<input type="checkbox"/> ACIDIC BEDRK.	<input type="checkbox"/> ROLL, UPLAND	<input type="checkbox"/> CLIFF	<input type="checkbox"/> FORB	<input type="checkbox"/> STREAM
	<input type="checkbox"/> BASIC BEDRK.	<input type="checkbox"/> TALUS	<input type="checkbox"/> COVER	<input type="checkbox"/> LICHEN	<input type="checkbox"/> MARSH
	<input type="checkbox"/> OPEN WATER	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> OPEN	<input type="checkbox"/> BRYOPHYTE	<input type="checkbox"/> SWAMP
<input type="checkbox"/> SHALLOW	<input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> ALVAR	<input type="checkbox"/> SHRUB	<input type="checkbox"/> CONIFEROUS	<input type="checkbox"/> FEN
<input type="checkbox"/> WATER	<input type="checkbox"/> ROCKLAND	<input type="checkbox"/> BEACH / BAR	<input type="checkbox"/> TREED	<input type="checkbox"/> MIXED	<input type="checkbox"/> BARE
<input type="checkbox"/> SURFICIAL DEP.	<input type="checkbox"/> SAND DUNE	<input type="checkbox"/> BLUFF			<input type="checkbox"/> MEADOW
<input type="checkbox"/> BEDROCK					<input type="checkbox"/> PRAIRIE
					<input type="checkbox"/> BUTTICKET
					<input type="checkbox"/> SAVANNAH
					<input type="checkbox"/> WOODLAND
					<input type="checkbox"/> FOREST
					<input type="checkbox"/> PLANTATION

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	1	Pop. Canadensis
2 SUB-CANOPY	3	2	Urtica
3 UNDERSTOREY	4	3	Cor. sp.
4 GRD. LAYER		4	Urtica

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0.5-1m 6=0.2-1m 7=HT < 0.2m
CVR CODES: 0=NONE 1=0%<CVR<10% 2=10%<CVR<25% 3=25%<CVR<50% 4=CVR>50%

STAND COMPOSITION:

BA:

SIZE CLASS ANALYSIS:	<10	10-24	25-50	>50
STANDING SNAGS:				
DEADFALL/LOGS:	<10	10-24	25-50	>50
ABUNDANCE CODES:	N=NONE	R=RARE	O=OCCASIONAL	A=ABUNDANT
COMM. AGE:	PIONEER	YOUNG	MID-AGE	MATURE
				OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	CODE:
COMMUNITY SERIES:	CODE:
ECOSITE:	CODE:
VEGETATION TYPE:	CODE:
INCLUSION	CODE:
COMPLEX	CODE:

Evidence of Disturbance / Notes:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	SITE: UDT	POLYGON: 6
	SURVEYOR(S): D. Graham	DATE:
	START: END:	UTM: UTMN:

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input type="checkbox"/> TERRESTRIAL	<input type="checkbox"/> ORGANIC	<input type="checkbox"/> LACUSTRINE	<input type="checkbox"/> NATURAL	<input type="checkbox"/> PLANKTON	<input type="checkbox"/> LAKE
<input type="checkbox"/> WETLAND	<input type="checkbox"/> MINERAL SOIL	<input type="checkbox"/> BOTTOMLAND	<input checked="" type="checkbox"/> CULTURAL	<input type="checkbox"/> SUBMERGED	<input type="checkbox"/> POND
<input type="checkbox"/> AQUATIC	<input type="checkbox"/> PARENT MIN.	<input type="checkbox"/> VALLEY SLOPE	<input type="checkbox"/> TERRACE	<input type="checkbox"/> GRAMINOID	<input type="checkbox"/> RIVER
	<input type="checkbox"/> ACIDIC BEDRK.	<input type="checkbox"/> ROLL, UPLAND	<input type="checkbox"/> CLIFF	<input type="checkbox"/> FORB	<input type="checkbox"/> STREAM
	<input type="checkbox"/> BASIC BEDRK.	<input type="checkbox"/> TALUS	<input type="checkbox"/> COVER	<input type="checkbox"/> LICHEN	<input type="checkbox"/> MARSH
	<input type="checkbox"/> OPEN WATER	<input type="checkbox"/> CREVICE / CAVE	<input type="checkbox"/> OPEN	<input type="checkbox"/> BRYOPHYTE	<input type="checkbox"/> SWAMP
<input type="checkbox"/> SHALLOW	<input type="checkbox"/> CARB. BEDRK.	<input type="checkbox"/> ALVAR	<input type="checkbox"/> SHRUB	<input type="checkbox"/> CONIFEROUS	<input type="checkbox"/> FEN
<input type="checkbox"/> WATER	<input type="checkbox"/> ROCKLAND	<input type="checkbox"/> BEACH / BAR	<input type="checkbox"/> TREED	<input type="checkbox"/> MIXED	<input type="checkbox"/> BARE
<input type="checkbox"/> SURFICIAL DEP.	<input type="checkbox"/> SAND DUNE	<input type="checkbox"/> BLUFF			<input type="checkbox"/> MEADOW
<input type="checkbox"/> BEDROCK					<input type="checkbox"/> PRAIRIE
					<input type="checkbox"/> BUTTICKET
					<input type="checkbox"/> SAVANNAH
					<input type="checkbox"/> WOODLAND
					<input type="checkbox"/> FOREST
					<input type="checkbox"/> PLANTATION

STAND DESCRIPTION:

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1 CANOPY	2	1	Pop. Canadensis
2 SUB-CANOPY	3	2	Urtica
3 UNDERSTOREY	4	3	Cor. sp.
4 GRD. LAYER		4	Urtica

HT CODES: 1=25m 2=10-25m 3=2-10m 4=1-2m 5=0.5-1m 6=0.2-1m 7=HT < 0.2m
CVR CODES: 0=NONE 1=0%<CVR<10% 2=10%<CVR<25% 3=25%<CVR<50% 4=CVR>50%

STAND COMPOSITION:

BA:

SIZE CLASS ANALYSIS:	<10	10-24	25-50	>50
STANDING SNAGS:				
DEADFALL/LOGS:	<10	10-24	25-50	>50
ABUNDANCE CODES:	N=NONE	R=RARE	O=OCCASIONAL	A=ABUNDANT
COMM. AGE:	PIONEER	YOUNG	MID-AGE	MATURE
				OLD GROWTH

SOIL ANALYSIS:

TEXTURE:	DEPTH TO MOTTLES/GLEY	g=	G=
MOISTURE:	DEPTH OF ORGANICS:		(cm)
HOMOGENEOUS / VARIABLE	DEPTH TO BEDROCK:		(cm)

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS:	CODE:
COMMUNITY SERIES:	CODE:
ECOSITE:	CODE:
VEGETATION TYPE:	CODE:
INCLUSION	CODE:
COMPLEX	CODE:

Evidence of Disturbance / Notes:

Page 1 of 1

Signature:

(Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature:

(Project Manager)

**Stantec**

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Woodland & Wildlife Habitat Assessment Form

Project Number: 160960773Project Name: Port RyerseDate: Sept 24/12Field Personnel: M. Ross

Weather Conditions:	TEMP (°C): <u>15°</u>	WIND: <u>S</u>	CLOUD: <u>20</u>	PPT: <u>None</u>	PPT (in last 24 hrs): <u>Rain</u>
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ELC Polygon: # B Assessment Type: ☒ Visual; roadside, no access / ☐ Physical; walk through featureExtent of Physical Investigation of Feature: ☐ Entire / ☐ Partial, walk through polygon (indicate on map)**Reptile / Bat Hibernacula Features:**

Contains potential reptile hibernacula features?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

[i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]

Contains potential bat hibernacula features?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

[i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features:

Contains potential bat roosting features?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

[i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests:

Contains large stick nests?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)**STICK NEST(S) IDENTIFIED**

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools:

Contains seeps/springs/vernal pools?

☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)**SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED**

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HQ=house/den; OB=observed; SC=scar; SI=other sign; TK=track; VO=vocalization

**Stantec**

Stantec Consulting Ltd.
1 - 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Woodland & Wildlife Habitat Assessment Form

Project Number: 160960773Project Name: Port RyerseDate: Sept 24/12Field Personnel: M. Ross

Weather Conditions:	TEMP (°C): <u>15°</u>	WIND: <u>5</u>	CLOUD: <u>20</u>	PPT: <u>None</u>	PPT (in last 24 hrs): <u>None</u>
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ELC Polygon: # A Assessment Type: ☒-Visual; roadside, no access / ☐-Physical; walk through featureExtent of Physical Investigation of Feature: ☐-Entire / ☐-Partial, walk through polygon (indicate on map)

Reptile / Bat Hibernacula Features: Contains potential reptile hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. features that would provide a route underground, including buried concrete or rock (e.g. foundations, bridge abutments or culverts with cracks/entry points, exposed rock crevices or inactive animal burrows)]
 Contains potential bat hibernacula features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. karst topography, abandoned mines or caves]

POTENTIAL HIBERNACULA FEATURE(S) IDENTIFIED

UTM	Feature Description	Photo No.	Spp. Observed Using Feature

Bat Roosting Features: Contains potential bat roosting features?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)
 [i.e. tall trees with open surroundings, DBH >25cm, side-facing cavities ~10m high in tree]

POTENTIAL BAT ROOSTING FEATURE(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	DBH	Photo No.	Decay Class (1-5)	No. of Cavities	Height and Type of Cavities

Stick Nests: Contains large stick nests?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

STICK NEST(S) IDENTIFIED

UTM	Tree ID	Tree Spp.	Nest Size	Photo No.	Spp. Observed Using Feature

Seeps/Springs/Vernal Pools: Contains seeps/springs/vernal pools?
☐-Y* / ☐-N / ☒-Unknown, no access (*if yes, describe in table below)

SEEP / SPRING / VERNAL POOL FEATURE(S) IDENTIFIED

UTM	Feature No. & Type	Feature Size (Diameter)	Water Depth	Photo No.	Sub/Emergent Veg. Spp. Present?	Shrubs/ Logs at Edge Present?

SPECIES & HABITAT OBSERVATIONS (list species and type of observation & indicate on map)

CA=carcass; DP=distinctive parts; FE=feeding evidence; FY=eggs/nest; HO=house/den; OB=observed; SC=scar; SI=other sign; TK=track; VO=vocalization

Port A 1007-4 (7-4)



Legend

- Zone of Investigation (120 m)
- Proposed Turbine
- Bladeswept Area / Rotor Diameter (82 m)
- Proposed Access Road
- Turning Radius
- Proposed Collector Line
- Component Laydown Area and Crane Pad
- Substation
- Proposed Permanent Site Parking Lot
- Major Road
- Local Road
- Watercourse
- Waterbody
- Wooded Area
- Valleyland
- Intermittent Stream
- Permanent Stream
- Hedgerow

Notes

- Coordinate System: NAD 1983 UTM Zone 17N
- Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.
- Orthographic Imagery Source: © First Base Solutions, 2 Imagery taken in Spring 2010.



Stantec

September 2012
160960773

Client/Project
Boralex
Port Ryerse Wind Farm
Port Ryerse, Ontario

Figure No.
2 **DRAFT**

Title
**ELC Communities and
Natural Features**

Surveys for Bat Maternity Colonies

[illegible]

[illegible]

Appendix D

Staff Summaries

Appendix D. Staff Summaries

Name: Andrew Taylor, BSc

Company or organization: Stantec Consulting Ltd.

Address: 70 Southgate Dr. Suite 1, Guelph, ON N1G 4P5

Phone: (519) 836-6050 **Fax:** (519) 836-2493

Email: andrew.taylor@stantec.com

Andrew Taylor has successfully managed both small and large projects, including environmental impact statements, constraint analyses and environmental implementation reports. In addition, he has coordinated natural heritage components of Environmental Assessments. These projects involve the implementation of natural heritage policies of the Ontario Provincial Policy Statement, Greenbelt Plan and municipal policy documents. He is familiar with various Acts and their application to projects, including the Migratory Birds Convention Act, Endangered Species Act, Species at Risk Act and others. Andrew also has experience with policies pertaining to Threatened and Endangered Species including Butternut. Andrew has strong field skills including identification of vascular plants, breeding amphibians (calling frogs and toads), breeding salamanders (adult and egg studies), reptiles and bats, with a particular emphasis on birds, butterflies and dragonflies. He is skilled at assessing wildlife habitat, applying Ecological Land Classification (ELC) and delineating wetland boundaries. Andrew is experienced at analyzing natural heritage features for the presence of Significant Woodlands or Significant Wildlife Habitat using guidance documents such as the 'Natural Heritage Reference Manual, How Much Habitat is Enough?' and the 'Significant Wildlife Habitat Technical Guide'. Andrew has provided terrestrial ecology expertise in a wide range of sectors, including urban lands, energy (including renewable energy), recreational development, infrastructure and aggregate extraction.

Andrew was the Senior Advisor for this Natural Heritage Assessment.

Name: Katherine St. James, BSc, MSc

Company or organization: Stantec Consulting Ltd.

Address: 70 Southgate Dr. Suite 1, Guelph, ON N1G 4P5

Phone: (519) 836-6050 **Fax:** (519) 836-2493

Email: Katherine.St.James@stantec.com

Katherine St. James is a Terrestrial Ecologist certified in Ecological Land Classification (ELC) with several years' experience in ecological field surveys, specializing in herpetofauna and bird surveys. She has been employed in both the public and private sectors and has experience working on a range of projects such as species at-risk, wind development and monitoring, wetland restoration, wildlife hazard management, environmental impact studies, and various other development projects. She specializes in environmental sciences, ecology, and bio-geographical studies, and completed her master's research on potential barrier effects on salamander populations. During her master's research and consulting experience, Katherine has routinely conducted ecological assessments and collected field information on vegetation, birds, amphibians, and other wildlife species throughout Ontario.

Katherine assisted with the preparation of this report.

Name: Matthew Ross, B.Sc., FWT

Company or organization: Stantec Consulting Ltd.

Address: 70 Southgate Dr. Suite 1, Guelph, ON N1G 4P5

Phone: (519) 836-6050 **Fax:** (519) 836-2493

Email: matt.ross@stantec.com

Matthew Ross is a terrestrial ecologist whose skills include bird, mammal, reptile and plant identification. He is adept at conducting wildlife and wildlife habitat surveys, including those that relate to environmental assessment, conservation and species at risk. Matthew is familiar with provincial and federal guidelines, including Ontario Wetland Evaluation System (OWES), Ecological Land Classification (ELC) and Renewable Energy Approvals (REA). He has conducted surveys for a variety of development projects, including renewable energy, aggregate extraction and residential, and has work experience in both the public and private sector. In addition, Matthew recently obtained his Ecological Land Classification certificate.

Matthew carried out ELC work for this project.

Name: Don Graham, M.Sc., B.Ed., B.A

Company or organization: Stantec Consulting Ltd.

Address: 70 Southgate Dr. Suite 1, Guelph, ON N1G 4P5

Phone: (519) 836-6050 **Fax:** (519) 836-2493

Email: don.graham@stantec.com

Don Graham is a Field Biologist with Stantec's Terrestrial Team providing environmental management consultation services to projects across Ontario. Don has a diverse background, having completed his Master of Science in Zoology at the University of Guelph and continued his education obtaining a Teaching Certificate from the University of Western Ontario, as well as the Ontario Wetland Evaluation System (OWES) course offered by the Ministry of Natural Resources. Don has extensive experience conducting terrestrial fieldwork and writing terrestrial components of reports which meet provincial and municipal requirements for Class EA for Transportation Facilities, Municipal Class EA, Environmental Impact Studies and Natural Heritage Evaluations. Don's experience includes transportation, servicing, residential, industrial and commercial projects. His projects have involved a broad spectrum of field survey types including assessment of breeding birds, amphibians, vegetation communities, vegetation species, reptiles and Species at Risk in a variety of habitats within southern, central, eastern and northern Ontario, using protocols of the Ontario Breeding Bird Atlas, Marsh Monitoring Program and Ecological Land Classification. He is familiar with pertinent policies such as the Natural Heritage policies of the Provincial Policy Statement, Conservation Authority Regulatory Areas, the Endangered Species Act and the Migratory Bird Convention Act, and is experienced at effective regulatory agency liaison.

Don carried out ELC and wildlife inventory work for this project.

Andrew Taylor B.Sc.

Ecologist



Andrew Taylor is a knowledgeable terrestrial ecologist and project manager. He has successfully managed both small and large projects, including environmental impact statements, constraint analyses and environmental implementation reports. In addition, he has coordinated natural heritage components of Environmental Assessments. These projects involve the implementation of natural heritage policies of the Ontario Provincial Policy Statement, Greenbelt Plan and municipal policy documents. He is familiar with various Acts and their application to projects, including the *Migratory Birds Convention Act*, *Endangered Species Act*, *Species at Risk Act* and others. Andrew also has experience with policies pertaining to Threatened and Endangered Species including Butternut.

Andrew has strong field skills including identification of vascular plants, breeding amphibians (calling frogs and toads), breeding salamanders (adult and egg studies), reptiles and bats, with a particular emphasis on birds, butterflies and dragonflies. He is skilled at assessing wildlife habitat, applying Ecological Land Classification (ELC) and delineating wetland boundaries. Andrew is experienced at analyzing natural heritage features for the presence of Significant Woodlands or Significant Wildlife Habitat using guidance documents such as the 'Natural Heritage Reference Manual, How Much Habitat is Enough?' and the 'Significant Wildlife Habitat Technical Guide'.

Andrew has provided terrestrial ecology expertise in a wide range of sectors, including urban lands, energy (including renewable energy), recreational development, infrastructure and aggregate extraction.

EDUCATION

B.Sc. (Hons), University of Guelph / Environmental Toxicology, Guelph, Ontario, 2001

Certificate, Ecological Land Classification for Southern Ontario, Turkey Point, Ontario, 2006

AWARDS

2000 University of Guelph, Dean's List

1997 University of Guelph, Dean's List

PROJECT EXPERIENCE

Aggregate Services

Proposed Bromberg Pit, Ayr, Ontario (Terrestrial Ecologist)

Natural environment field inventories with emphasis on Species at Risk (SAR).

Neubauer Pit, Town of Puslinch, Ontario (Terrestrial Ecologist)

Natural environment field inventories with emphasis on Species at Risk (SAR).

Dufferin Aggregates Acton Quarry Extension, Acton, Ontario (Terrestrial Ecologist)

The extension of the existing Acton Quarry is proposed to meet the need for additional close-to-market aggregate resources of high quality Amabel Dolostone. Andrew has conducted extensive ecological field surveys and habitat assessments for breeding birds, amphibians and mammals with specific emphasis on Species at Risk (SAR).

St. Marys Cement Flamborough Quarry License Environmental Impact Study and Level 2 Natural Environment Technical Report (Ecologist)

Identification and impact assessment of natural heritage features, compensation and management plan for Species at Risk (Butternut), water balance to maintain provincially significant wetland, salamander habitat and migration study, assessment of provincially significant woodland and significant wildlife habitat, environmental impacts of transportation.

* denotes projects completed with other firms

Andrew Taylor B.Sc.

Ecologist

Electrical Power Distribution

Bruce to Milton Transmission Reinforcement Project,
Multiple Sites, Ontario (Terrestrial Ecologist)

Terrestrial surveys related for Species at Risk (SAR) protected under the provincial Endangered Species Act (2007).

Coote's Paradise Transmission Reinforcement Project,
Hamilton, Ontario (Terrestrial Ecologist)

Terrestrial surveys included vegetation community assessments, floral inventory, with emphasis on Species at Risk (SAR).

Natural Sciences & Heritage Resources

Crates Marina, Keswick, Ontario (Project Manager / Ecologist)

Environmental policies, approvals and design. Identification of natural heritage features and sensitive species.

Kortright East Development, Guelph, Ontario (Project Manager / Ecologist)

Environmental Implementation Report. Vegetation buffers, wildlife corridor, tree conservation plan, planning and design of invasive species removal, design of compliance and performance monitoring program.

Southeast Sutton Development Area Plan, Sutton, Ontario (Project Manager / Ecologist)

Environmental policies, approval and design. Identification of natural heritage features and constraints for Development Area Plan. Plan of Subdivision forest buffers, mitigation of impacts to forest resources, sensitive vegetation and Species at Risk. Participation in Ontario Municipal Board discussions.

Fourteen Mile Creek Development, Oakville, Ontario (Ecologist)

Natural Heritage Monitoring Program Director - directed monitoring program of vegetation communities, change in species composition, avian wildlife, aquatic Species at Risk, benthic invertebrate communities, hydrogeology, geomorphology and erosion.

Activa Waterloo East, Waterloo, Ontario (Ecologist)

Terrestrial and Aquatic Monitoring Program - monitoring of vegetation communities, changes in species composition and disturbance levels were undertaken, interpreted and reported. Directed monitoring of benthic invertebrate communities.

Oil & Gas

Bickford to Dawn Pipeline Project, Chatham, Ontario (Terrestrial Ecologist)

Terrestrial surveys included vegetation community assessments, floral inventory and Species at Risk (SAR) habitat assessments. Study design and development in conjunction with local Ontario Ministry of Natural Resources (OMNR) district for Eastern Foxsnake, including a SAR 17b permit application.

Renewable Energy

Environmental Screening Report / Environmental Review Report, Multiple Projects, Various Sites, Ontario (Terrestrial Ecologist)

Environmental Screening Reports (ESR's)/Environmental Review Reports (ERR's) were prepared for various wind energy projects in compliance with the Ministry of the Environment's Guide to Environmental Assessment Requirements for Electricity Projects and the Canadian Environmental Assessment Act (CEAA).

Andrew's involvement included pre-construction study design, coordination and conducting of monitoring for avian and other wildlife species, including targeted surveys for Species at Risk (SAR). Avian studies included breeding grassland and forest birds, wintering raptors and migratory surveys for waterfowl, raptors, passerines and shorebirds. Andrew also conducted and coordinated acoustic bat surveys including data collection, species identification, data analysis and reporting, and co-authoring technical reports as part of the following projects:

- Wolfe Island Wind Project (Wolfe Island, Ontario; 86 turbines);
- Port Alma Wind Power Project (Municipality of Chatham-Kent, Ontario; 44 turbines);
- Plateau Wind Project (Municipality of Grey Highlands & Melancthon Township, Ontario; 18 turbines);
- Kingsbridge II Wind Project (Huron County, Ontario; 69 turbines);
- Gosfield Comber Wind Energy Project (Essex County, Ontario; 149 turbines);
- Chatham Wind Power Project (Municipality of Chatham-Kent, Ontario; 44 turbines); and
- Melancthon Wind Plant, Phases I & II (Melancthon and Amaranth Townships, Ontario; 177 turbines)

* denotes projects completed with other firms

Andrew Taylor B.Sc.

Ecologist

Post-construction Monitoring Programs, Multiple Projects, Various Sites, Ontario (Terrestrial Ecologist)

The post-construction of monitoring of renewable energy projects assess the direct impacts to birds and bats and indirect impacts to breeding, migrating and wintering wildlife. The purpose of post-construction monitoring programs is to verify predictions of the pre-construction assessment and if necessary, implement appropriate measures to mitigate adverse effects. Andrew has coordinated and conducted monitoring field studies including assessment disturbance to grassland, forest and wetland breeding birds, staging waterfowl and shorebirds, tundra swans and wintering raptors and co-authored or authored the post-construction monitoring reports for the following projects:

- Wolfe Island Wind Project (Wolfe Island, Ontario; 86 turbines);
- Melancthon Wind Plant, Phase I & II (Melancthon & Amaranth Townships, Ontario; 177 turbines);
- Kingsbridge I Wind Plant (Huron County, Ontario; 22 turbines); and
- Port Alma Wind Power Project (Municipality of Chatham-Kent, Ontario; 44 turbines);

Renewable Energy Approval (REA), Multiple Projects, Various Sites, Ontario (Terrestrial Ecologist)

Natural Heritage Assessments (NHA's) and Environmental Impact Studies (EIS's) were prepared in accordance with Ontario Regulation 359/09 issued under the Environmental Protection Act with guidance obtained from the Draft Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2010). NHA's included records review and site investigation which included, but not limited to, vascular plant surveys. Ecological Land Classification (ELC) and wildlife surveys for avian species, amphibians, reptiles, mammals and invertebrates. Results of the field investigations were used to identify and evaluate significant natural heritage features including wetlands, woodlands, valleylands and significant wildlife habitat. Outside the REA process, field surveys and habitat assessment were completed for species protected under the provincial Endangered Species Act.

Andrew coordinated and conducted field studies, habitat assessments for Species at Risk (SAR), authored technical reports and public consultation for the following renewable energy projects:

- Grand Renewable Energy Park (Haldimand County, Ontario; 69 turbines and solar totalling 253.1 MW);
- Port Dover and Nanticoke Wind Project (Norfolk and Haldimand Counties, Ontario; 58 turbines);
- Ostrander Wind Energy Park (Prince Edward County, Ontario; 9 turbines);

- Fairview Wind Farm (Simcoe County, Ontario; 4 turbines);
- Whittington Wind Farm (Dufferin County, Ontario; 3 turbines);
- Springwood Wind Farm (Wellington County, Ontario; 4 turbines); and
- Brooke-Alvinston Wind Farm (Lambton County, Ontario; 4 turbines)

Research / Laboratories

Rice Lake Plains Joint Initiative*, Northumberland County, Ontario (Ecologist)

Tallgrass prairie research program. Identification and detailed cataloging of remnant tallgrass prairie sites, landowner liaison and education, development of tallgrass prairie management plans, reporting of findings.

Alderville First Nations Black Oak Savannah*, Alderville, Ontario (Ecologist)

Tallgrass prairie and black oak savannah research program. Technical reporting. Vegetation monitoring, tallgrass prairie reconstruction, wildlife monitoring, Species at Risk reintroduction.

Sports, Recreation & Leisure

Sunnidale Park Master Plan, Barrie, Ontario (Ecologist)

Identification and delineation of ecological management units. Design of management plans for ecological units, wetland and forest habitat rehabilitation. Technical reporting.

Transportation Planning

City of Toronto Fort York Pedestrian Footbridge, Toronto, Ontario (Terrestrial Ecologist)

Coordinated Natural Sciences component of project including assessment of potential impacts, with an emphasis on Species at Risk (SAR).

Natural Science Reports Related to MTO Highway Improvement Works, Various Sites, Ontario (Terrestrial Ecologist)

Produced numerous Natural Sciences reports related to highway improvement works. Where required, Fisheries Act authorization was obtained and Fish Habitat Compensation Plans were developed. Potential impacts to terrestrial vegetation, wetlands and wildlife were described for the following studies:

- Highway 3 (Essex County): Preliminary Design Study;
- Highway 40 (Municipality of Chatham-Kent): Detail Design Study;
- Highway 11 (Town of Bracebridge): Preliminary Design;
- Highway 24 (Cambridge): Detailed Design;

* denotes projects completed with other firms

Andrew Taylor B.Sc.

Ecologist

- Highway 8 (Perth County): Detailed Design;
- Highway 401 (Kitchener): Post-construction Compliance Monitoring;
- Highway 401 (Essex County, near Comber): Post-construction Compliance Monitoring;
- Highway 26 (County of Grey): Post-construction Compliance Monitoring;
- Highway 17 (Sudbury): Preliminary Design Study;
- Highway 9 (Municipality of South Bruce): Post-construction Compliance Monitoring.

Katherine St. James is a Terrestrial Ecologist certified in Ecological Land Classification (ELC) with several years' experience in ecological field surveys, specializing in herpetofauna and bird surveys. She has been employed in both the public and private sectors. Her experience spans on a range of projects such as Species at Risk, wind development and monitoring, wetland restoration, wildlife hazard management, environmental impact studies, and various other development projects.

Katherine has successfully managed both small and large projects, including environmental impact statements (EIS), constraint analyses, and natural heritage assessments for wind, solar, and hydroelectric. She is familiar with various Acts and their application to projects, including the Migratory Birds Convention Act, Endangered Species Act, Species at Risk Act, and others.

EDUCATION

B.Sc. (Hons) of Environmental Science, Minor in Biology,
University of Waterloo, Waterloo, Ontario, 2005

M.Sc. of Geography and Environmental Management,
University of Waterloo, Waterloo, Ontario, 2009

Ontario Provincial Ecological Land Classification (ELC),
Timmins, Ontario, 2012

PROJECT EXPERIENCE

Environmental Assessment

Brantford -Kirkwall Pipeline, Brantford, Ontario
(Terrestrial Lead)

Terrestrial lead managing field investigations, including correspondence with client and agencies. Provided development of methods and field survey protocols.

Sprott Power Wind Project Analysis, Ontario (Ecologist)

Analyzed status and viability of various wind farms available for purchase throughout Ontario

Algonquin Power's Amherst Island Wind Farm, Amherst Island, Ontario (Terrestrial Ecologist)

Produced NHA and EIS reports for a 37-turbine wind farm located on Amherst Island, Ontario.

Suncor's Cedar Point Wind Farm, Forest, Ontario
(Terrestrial Ecologist)

Produced NHA and EIS reports for this 72-turbine wind farm located near Chatham, Ontario.

Cambridge Hydro EIS - Preston 27 kv Feeder,
Cambridge, Ontario (Terrestrial Ecologist)

Managed field work, mapping and produced EIS report for this hydro-line upgrade in Cambridge, Ontario.

Renewable Energy Natural Heritage Assessments*,
Ontario (Project Manager)

Conducted terrestrial evaluations including Ecological Land Classification, wildlife habitat assessments, and Species at Risk evaluations for various wind and solar projects including Oxley Wind Farm, Silvercreek Solar Park, 77 Netherby Solar Park, Armow Wind Farm, South Kent Wind Farm, and Skyway 124 Wind Farm.

Wetland Restoration*, Chatham, Ontario

Created wetland EIS and detailed restoration plan for Mud Creek Provincially-Significant Wetland after construction occurred within wetland.

* denotes projects completed with other firms

Katherine St. James MSc, BSc

Terrestrial Ecologist

PUBLICATIONS

The Ecological Effects of Cleared Boundaries of BPNP.
Master's Thesis, 2009.

"How We Mark Our Territory". 2009 A.D. Latornell
Conference Symposium, 2009.

"Assessing Stream Management Needs on Public Land
in Pinedale, Wyoming". *Conference Presentation at
2007 CAG-ONT*, 2007.

Predicting Birdstrike Hazard from Gulls at Landfill Sites.
*International Bird Strike Committee, Warsaw Poland,
2003.*

Don Graham is a Field Biologist with Stantec's Terrestrial Team providing environmental management consultation services to projects across Ontario. Don has a diverse background, having completed his Master of Science in Zoology at the University of Guelph and continued his education obtaining a Teaching Certificate from the University of Western Ontario, as well as the Ontario Wetland Evaluation System (OWES) course offered by the Ministry of Natural Resources.

Don has extensive experience conducting terrestrial fieldwork and writing terrestrial components of reports which meet provincial and municipal requirements for Class EA for Transportation Facilities, Municipal Class EA, Environmental Impact Studies and Natural Heritage Evaluations. Don's experience includes transportation, servicing, residential, industrial and commercial projects. His projects have involved a broad spectrum of field survey types including assessment of breeding birds, amphibians, vegetation communities, vegetation species, reptiles and Species at Risk in a variety of habitats within southern, central, eastern and northern Ontario, using protocols of the Ontario Breeding Bird Atlas, Marsh Monitoring Program and Ecological Land Classification. He is familiar with pertinent policies such as the Natural Heritage policies of the Provincial Policy Statement, Conservation Authority Regulatory Areas, the *Endangered Species Act* and the *Migratory Bird Convention Act*, and is experienced at effective regulatory agency liaison.

EDUCATION

B.A., University of Guelph / Psychology, Guelph, Ontario, 1983

M.Sc., University of Guelph / Zoology, Guelph, Ontario, 1987

B.Ed., University of Western Ontario / Ontario Teaching Certificate, London, Ontario, 1990

Certificate, Ministry of Natural Resources / Ontario Wetland Evaluation System, North Bay, Ontario, 2005

Diploma, McMaster University / Spatial Analysis and GIS, Hamilton, Ontario, 2004

MEMBERSHIPS

Member, Field Botanists of Ontario

Member, Ontario Field Ornithologists

Member, Bird Studies Canada

PROJECT EXPERIENCE

Commercial / Retail Development

Various Commercial Development Projects*, Ontario (Biologist)

Conducted terrestrial fieldwork and wrote terrestrial components of Environmental Impact Studies to support Commercial Development projects in Ontario, including:

- Proposed golf course in Kawartha Lakes;
- Existing golf course in Gravenhurst;
- Mall expansion in Cookstown;
- Car dealership in Toronto; and
- Strip mall in Ajax.

Highway and Transportation

Various Highway and Transportation Projects*, Ontario (Biologist)

Conducted terrestrial fieldwork and wrote terrestrial components of Class EA Reports for Transportation Facilities and supporting Technical Reports to support proposed road improvements in Ontario, including:

- New Highway 7 corridor between Kitchener-Waterloo and Guelph;
- Improvements to Highway 7 corridor in Durham Region;
- Improvements to Highway 11 north of Temagami;
- Twinning of Highway 11 in and north of Burk's Falls;
- Twinning of Highway 69 in vicinity of Pointe au Baril;
- Improvements to Highway 11 between Cochrane and Kirkland Lake;
- Bridge improvements and replacements in central Ontario;
- Proposed LRT line in Ottawa;
- Proposed LRT line linking Mississauga and Brampton;

* denotes projects completed with other firms

Don Graham M.Sc., B.Ed., B.A.

Ecologist

- Extension of Peterborough Airport runway;
- Proposed Toronto-Bolton GO rail transit line; and
- Improvements to Toronto-Milton GO rail transit line.

Industrial Development

Various Industrial Development Projects*, Ontario (Biologist)

Conducted terrestrial fieldwork and wrote terrestrial components of Environmental Impact Studies to support Industrial Development projects in Ontario, including projects in Oakville and Toronto, Ontario.

Linear Infrastructure

Various Servicing Projects*, Ontario (Biologist)

Conducted terrestrial fieldwork and wrote terrestrial components of Municipal Class EA Reports and supporting Technical Reports to support proposed linear infrastructure construction in Ontario, including:

- York-Durham Sanitary Sewer development;
- Don River and Waterfront Sewer Improvements, Toronto;
- Horgan Watermain construction in Scarborough;
- Kennedy Road Sewer development in Markham;
- Improvements to sewage lagoon in Neustadt;
- Watermain in Sauble Beach;
- Jet fuel pipeline for Pearson International Fuel Facilities Corp. in Toronto;
- Repair of Trans-Northern Pipelines Inc. in eastern Ontario; and
- Construction of new pipeline for Trans-Northern Pipelines Inc. in eastern Ontario.

Natural Sciences & Heritage Resources

City of Hamilton Professional and Consultant Services Roster 2011-2012 (C12-06-10); Fruitland-Winona Secondary Plan Area Breeding Bird Survey, Hamilton, Ontario (Terrestrial Ecologist)

Conducted breeding bird surveys, including point count surveys, for Species at Risk. Surveys were conducted for Bobolink, Eastern Meadowlark, Barn Swallow, and Chimney Swift, using MNR or Ontario Breeding Bird Atlas protocols, as applicable.

City of Hamilton Professional and Consultant Services Roster 2011-2012 (C12-06-10); Scube Central, Scube East Parcel 'A', and Scube East Parcel 'B' Breeding Bird Surveys, Hamilton, Ontario (Terrestrial Ecologist)

Conducted breeding bird surveys, including point count surveys, for Species at Risk. Surveys were conducted for Bobolink, Eastern Meadowlark, Barn Swallow, and Chimney Swift, using MNR or Ontario Breeding Bird Atlas protocols, as applicable.

Species at Risk in Ontario*, Various Sites (Biologist)

Field experience with many Species at Risk including: Butternut, Blanding's turtle, Snapping Turtle, Eastern Hog-nosed Snake, Chimney Swift, Common Nighthawk, Bobolink, Least Bittern, Hooded Warbler, Acadian Flycatcher, Loggerhead Shrike, Canada Warbler and Golden-winged Warbler.

Ontario Ministry of Natural Resources*, London and Aylmer District, Ontario (Field Biologist / Ornithological Technician)

Scored wetlands within Aylmer District for the Ministry of Natural Resources using the Southern Ontario Wetland Evaluation System (3rd Edition) protocol. Work involved assessment of biological, social, hydrological and special features of wetlands in accordance with OWES, landowner liaison and planning of fieldwork. Created, edited, organized and managed data layers for Ontario wetlands, forests and urbanization using aerial photography, satellite imagery and ArcGIS software. Searched research plots for bird nests, collected field data on forest bird nesting success and plant characteristics using established techniques, managed data and created maps of research sites and nest locations using GIS software.

Bird Studies Canada*, Port Rowan, Ontario (Ornithological Technician)

Conducted bird and amphibian inventories for a wetland study using specified protocols. Reviewed background data and literature and wrote reports on population trends of colonial nesting tern species. Conducted forest bird inventories used in developing forestry management practices. Reported current bird sightings for the Bird Studies Canada web-site.

* denotes projects completed with other firms

Don Graham M.Sc., B.Ed., B.A.

Ecologist

Residential Development

Various Residential Development Projects*, Ontario

(Biologist)

Conducted terrestrial fieldwork and wrote terrestrial components of Environmental Impact Studies to support Residential Development projects in Ontario, including projects located in: Kawartha Lakes, Pickering, Holland Landing East, Holland Landing West, Sharon, Newmarket, Belleville, Peterborough, Aurora and Toronto.

** denotes projects completed with other firms*

Matthew Ross is an ecologist whose skills include bird, mammal, reptile and plant identification. He is adept at conducting wildlife and wildlife habitat surveys, including those that relate to environmental assessment, conservation and species at risk. Matthew is familiar with provincial and federal guidelines, including Ontario Wetland Evaluation System (OWES), Ecological Land Classification (ELC) and Renewable Energy Approvals (REA). He has conducted surveys for a variety of development projects, including renewable energy, aggregate extraction and residential, and has work experience in both the public and private sector. In addition, Matthew is familiar with wildlife handling, including bird banding and migration monitoring at Selkirk Provincial Park. He has performed native tree species plantings and been involved in exotic plant control efforts as a volunteer at Florida Panther National Wildlife Refuge.

EDUCATION

B.Sc., University of Northern British Columbia / Natural Resources Management Wildlife and Fisheries, Prince George, British Columbia, 2007

Sir Sandford Fleming College / Fish and Wildlife Technologist, Lindsay, Ontario, 2004

Certificate, Ontario Ministry of Natural Resources / Ecological Land Classification System for Southern Ontario, Kempenfelt, Ontario, 2011

Certificate, Stantec Consulting Ltd. / WHMIS, Guelph, Ontario, 2011

PROJECT EXPERIENCE

Aggregate Services

Proposed Melancthon Quarry, Melancthon, Ontario (Terrestrial Technician)

Conducted habitat assessment and species at risk surveys and performed reporting

Multi-Unit / Family Residential

Clair Creek Meadows, Waterloo, Ontario (Terrestrial Technician)

Matthew conducted an assessment of silt fence integrity

Hammersley, Cambridge, Ontario (Terrestrial Technician)

Conducted snake cover board and amphibian surveys

Buffalo Springs Residential Development, Ontario (Terrestrial Technician)

Matthew conducted habitat assessment and species at risk surveys, and performed project reporting

Natural Sciences & Heritage Resources

Nova 2020 Plant Expansion Project, Corunna, Ontario (Terrestrial Technician)

Conducted snake cover board and amphibian surveys

Woodland Bird Nest Surveys, Ontario Ministry of Natural Resources (MNR), 2006* (Avian Nest Biologist)

Matthew performed surveys that involved finding and monitoring woodland bird nests in southern Ontario, including species at risk, radio tracking and identifying fledgling birds, as well as associated vegetation surveys

Wildlife and Habitat Surveys, 2009* (Biologist)

While working for a private consulting firm, Matthew carried out various wildlife and habitat surveys for several energy related projects, including wind farm mortality monitoring, breeding bird surveys, amphibian, reptile and mammal surveys. He also conducted scientific literature research and data entry, as well as assisted in writing project proposals and presentation to clients

Various Development Projects, 2007, 2008, 2010* (Biologist)

While working for a private consulting firm, Matthew conducted biological field surveys and associated data management and analysis for various developments throughout Ontario and other provinces, including renewable energy. These involved breeding bird surveys, nest searches, amphibian counts, salamander population monitoring for species at risk, wind farm mortality monitoring, bat species and abundance monitoring and wetland evaluation. He also conducted associated research and assisted in reporting

* denotes projects completed with other firms

Matthew Ross B.Sc.

Ecologist

Oil and Gas Pipelines

TransCanada Pipelines Ltd., Eastern Mainline Expansion, Ontario (Terrestrial Technician)

Conducted species at risk breeding bird surveys

Enbridge Integrity Dig Program, Ontario (Terrestrial Technician)

Conducted nesting bird surveys and nest monitoring surveys

Trans-Northern Pipelines Inc., Bronte Creek Risk Assessment, Burlington, Ontario (Terrestrial Technician)

Assisted in conducting an initial site assessment and salamander egg mass survey

Nova Chemicals Genesis Pipeline Extension, Corunna, Ontario (Terrestrial Technician)

Conducted snake cover board and amphibian surveys

St. Clair Pipelines Bluewater River Crossing Replacement, Corunna, Ontario (Terrestrial Technician)

Conducted snake cover board and amphibian surveys

Post-Construction

Victoria Park, Kitchener, Ontario (Terrestrial Technician)

Conducted post-construction migratory waterfowl, botanical inventory and replanting monitoring surveys

Renewable Energy

Solray Renewable Solar Energy Project, Ontario (Terrestrial Technician)

Conducted due diligence site assessment with client to identify project constraints and assisted in reporting

Various Renewable Wind Energy Projects, Ontario (Terrestrial Technician)

Conducted ELC, amphibian, migratory passerine, waterfowl, raptor and crepuscular bird auditory surveys, species at risk habitat assessment and surveys, amphibian surveys, post-construction monitoring, and assisted with technical reporting for various wind energy projects, including Wolfe Island Wind Farm, Amherst Island Wind Farm, White Pines Wind Farm, Niagara Region Wind Centre, Bow Lake Wind Farm, K2 Wind Project, Cedar Point Wind Project, and Dorland Wind Project

Roads and Highways

Detail Design for the Rehabilitation of Highway 6/10 from Chatsworth to Owen Sound, Grey County, Ontario (Terrestrial Technician)

This study included a 15 km stretch of highway through several significant natural habitat features, including the Niagara Escarpment, Life Science ANSI, unevaluated wetlands, and large continuous tracts of mature forest and riparian habitat. Matt's responsibilities on this assignment included Ecological Land Classification, bird surveys and surveys for species at risk, documentation of wildlife species and habitat, and mapping of birds' nests

* denotes projects completed with other firms

BIOGRAPHY

Erin Jaggard is a Renewable Energy Analyst for M.K. Ince and Associates. Erin recently completed her Master of Science in Physical Geography at Queen's University. Her research focused on land-use change following the establishment of switchgrass as a bioenergy feedstock in southeastern Ontario. She continues to work on papers for publication specifically on biogeochemistry and alternative valuation techniques to support the emergence of conservation bioenergy crops.

During Erin's studies she was concurrently involved with local energy initiatives in the Kingston area. She worked with Lafarge, Bath Plant on their Cement 2020 alternative energy project to assess renewable energy sources for industrial use. She established field trials for bioenergy crops and evaluated them utilizing geospatial analysis and life cycle assessment protocols. With the FABRECC laboratory she conducted greenhouse gas emission studies in partnership with OMAFRA for bioenergy crops.

Prior to returning to school Erin spent many years working in the forestry sector. Over the years, she has managed field operation amounting to the planting of over five million trees in northern Ontario. She has also provided additional silviculture services to a variety of stakeholders.

Erin's work in numerous terrestrial systems in conjunction with her excellence in project management and dedication towards alternative energy initiatives has given her the skills to provide services in the renewable energy approvals process. Her past experiences make her an asset to MKI in both field and office settings.

When Erin is not working she can be found walking her dog in the great outdoors and taking deep yogi breaths.

EXPERIENCE

- Over five years of experience working in natural resource management, with extensive integration of provincial land-use legislation and ISO 14000 series standards
- Field experience in a variety of terrestrial systems including agricultural and forestry settings
- Experience with the public consultation process and community energy conferences
- Experience with data management and analysis, systems modelling, report writing
- Awards for academic excellence, written reports and presentations

EDUCATION

- Master of Science, Physical Geography, Queen's University, 2012
- Bachelor of Science, Environmental Science, Queen's University, 2006

AFFILIATIONS

- Member of SWITCH – sustainable energy network for eastern Ontario
- Pursuing P. Ag. designation

PROJECT EXPERIENCE

- Bow Lake Wind Farm Species at Risk Reporting
- ZEP Settler's Landing and Snowy Ridge REA Natural Heritage Reporting
- REA Water Bodies Assessment Reporting

PRIOR WORK / VOLUNTEER EXPERIENCE

- Queen's Institute for Energy and Environmental Policy Research Assistant
- Lafarge, Bath Plant, Cement 2020 Alternative Energy Project, Researcher
- FABRECC laboratory, Research Assistant - emphasis on pedology, forestry, and agricultural projects
- A&M Reforestation, Project Manager - silviculture projects for Domtar, Tembec, Buchanan, and Green Forest
- Volunteer Instructor for Kingston Field Naturalist Junior Program

BIOGRAPHY

Dave Jolly is a Senior Biologist/Ecologist with expertise in all aspects of terrestrial and wetland ecology and has been involved with Class 1 to 4 renewable energy projects since 2008. At M.K. Ince and Associates Ltd. (MKI) Dave is presently involved in ELC, wetland assessments, and wildlife habitat surveys as part of pre-construction Environmental Assessment, Natural Heritage reporting and the new REA processes for over a dozen commercial scale wind power projects across Ontario.

Before joining MKI, Dave has worked for all levels of government and non-government agencies as well the education and private sector in Canada, the United States, Panama, Costa Rica, Peru, Mexico, and Nepal. He has experience in training environmental professionals in areas that include but are not limited to methodology and protocols for performing ecological studies, GIS, environmental law, flora and fauna identification including Species at Risk, Ecological Land Classification (ELC), Ontario Wetland Evaluation System, natural heritage assessments, and environmental assessments. Dave has experience as an expedition leader/scientist designing, marketing and operating over 20 international research and conservation expeditions to Central, South America and southeast Asia to study primates, plants, birds and mammals. He is skilled in all aspects of the environmental consulting process (with over 10 years of experience), project development/management and managing client relations. Dave has secured numerous government contracts valued at > \$100 000 each and is fully adept in GIS, ELC, Wetland evaluation, staff management, environmental and site assessments.

In his spare time Dave enjoys hiking in search of various vascular plants including Species at Risk, writing books, photography, assisting non-profit organizations with their natural heritage inventories and spending time with family.

EXPERIENCE

- Facilitated regulatory approvals under the *Migratory Birds Convention Act*, *Fish and Wildlife Act*, *Conservation Authorities Act*, *Provincial Policy Statement*, *provincial and federal Species at Risk Act*, *provincial and federal Endangered Species Act*, *Planning Act*, *Ontario Environmental Assessment Act* and the *Canadian Environmental Assessment Act*
- Provided expertise and senior review to over 100 terrestrial and wetland biophysical assessments including wetland studies and monitoring projects, Ecological Land Classification projects, various Species at Risk projects
- Environmental inspection and compliance monitoring for construction projects in York, Durham, and Niagara Regions
- Trained environmental professionals through teaching and designing over 30 certification courses that are exempt from registration from the Ontario Ministry of Training and Colleges and Universities
- Extensive experience in negotiations and business development with Métis and First Nation groups

EDUCATION

- B.Sc., Ecology and Evolution, University of Western Ontario, 1992

AFFILIATIONS

- Field Botanists of Ontario, member
- Haldimand Bird Observatory, member

TRAINING/CERTIFICATIONS

- Lichen identification, 2012
- Bear Awareness, 2011
- Ice Safety, 2011
- Project management/ leadership, 2004
- Ontario Wetland Evaluation Systems, 2008
- Ecological Land Classification for Southern Ontario, 2004
- Standard First Aid and CPR certified

PROJECT EXPERIENCE

- ZEP Wind Farm Ganaraska, Next Era Wind Farm, Ernesttown Horizon Wind Farm, Port Ryerse Wind Farm, Grey Highlands ZEP Wind Park, Grey Highlands Clean Energy, Clean Breeze Centreton Wind Park, Clean Breeze Grafton Wind Park, Dufferin Wind Farm, Bow Lake Phase 1 —REA Application Process
- Organization and implementation of biological field studies for all projects listed above

PRIOR WORK / VOLUNTEER EXPERIENCE

- Senior Biologist/Ecologist: Dillon, AECOM, EARTHQUEST, Avalon Professional Consultants of Ontario, Fieldlife Environmental Consultants
- Senior Instructor & President: EARTHQUEST Biological Field School.
- Volunteer Botanist for the Grand River Conservation Authority
- Designed, published and marketed five field guide books on flora and fauna of Ontario and the Bruce Trail system
- Designed, marketed and operated over 20 international research/conservation expeditions to Central, South America and southeast Asia

BIOGRAPHY

Rick Ludkin is an avian wildlife specialist with M.K. Ince and Associates.

Rick's avian wildlife experience includes bird censuses, migration monitoring and banding. He has worked on avian surveys and studies across Canada and with research facilities worldwide. As a long time contributor to numerous birding programs Rick has contributed to the establishment of various birding networks and monitoring programs.

His broad and extensive experience in all things avian makes Rick a highly valued member of the MKI team.

EXPERIENCE

- Participated in bird surveys, censuses, expeditions and migration monitoring programs across Canada and remote parts of the world.
- Chairman of the Haldimand Bird Observatory. Initiated the Ruthven Banding Program, part of the Canadian Migration Monitoring Network.
- Established the Ruthven Banding Station, a training facility for university and college students interested in learning avian field methods.
- Extensive participation in the Ontario Forest Birds Monitoring Program. Contributed to Ontario Breeding Bird Atlases 1980-1985 and 2000-2005.
- Led bird surveys for the Norsk Polar Institute, Norway, studying Brunnich's Guillemots. Researcher for a passerines banding project with Lund University, Sweden.
- Completed field studies for Canadian Wildlife Services in the Canadian Arctic on Devon Island and Southampton Island. Trained to perform ship-based seabird counts and helicopter surveys.
- Co-founder of the Canadian Snow Bunting Network, a country wide network that studies the winter behaviour and biology of Snow Buntings.
- Established a banding project to study the decline of the Golden-winged Warblers. Received master banding permit.

EDUCATION

- Ontario College Advanced Diploma, George Brown College, 1972

TRAINING

- Banding and migration monitoring training, Long Point Observatory, Ontario
- Master Banding Permit, 1994

CORE COMPETENCIES

- Avian surveying, monitoring and censuses
- Bird-banding
- Field studies

RELEVANT INDUSTRY EXPERIENCE

- Avian surveys, censuses, expeditions and migration monitoring
- Established numerous birding programs.
- Long time participation in Canadian Monitoring and Banding programs.
- Contributor to Bird Atlases

MEMBERSHIPS AND ASSOCIATIONS

- Chairman of Haldimand Bird Observatory.
- Lead bander at Ruthven Banding Program and Station
- Co-founder of Canadian Snow Bunting Network

BIOGRAPHY

Robert Tymstra is an avian wildlife specialist with M.K. Ince and Associates. He graduated from the University of Waterloo with a Bachelor of Environmental Studies.

Rob's avian wildlife experience includes bird surveys, censuses, expeditions, banding, and migration monitoring. He has worked on avian surveys and studies in Ontario and has birded in over 60 counties worldwide. Since 2004, Rob has specialized in conducting avian surveys for wind turbine projects across Canada. His broad and extensive experience in all things avian makes Rob a highly valued member of the MKI team.

EXPERIENCE

- Participated in bird surveys, censuses, expeditions and migration monitoring programs across Canada and remote parts of the world.
- Regional Co-ordinator for Ontario Herpetological Atlas and Ontario Mammal Atlas. Participated in Ontario Forest Birds Monitoring Program.
- Led bird survey expeditions in Hudson Bay Lowlands for Ontario Breeding Bird Atlas (Opinnagau and Albany Rivers) and completed several sections in Southern Ontario for Breeding Bird Atlas 1981-1985 and 2001-2005.
- Researcher and camp leader for a Habitat Based Wildlife Assessment of Ekwan Point, Longridge Point and Western James Bay coast. Field work involved walking line transects, point counts.
- Worked as Nature Interpreter at Algonquin Provincial Park
- Initiated a long-term distributional study of the birds of the little-known islands and waters of James Bay.
- Participated in Yunnan, China expedition in a successful search for *Slater's Monal*, a rare pheasant not seen by Westerners since WWII. Also documented other limited distribution bird species.
- Conducted population surveys on endangered *Butler's Garter Snake* in southern Ontario 2008-2010.

EDUCATION

- B.E.S., University of Waterloo, 1991.
- Professional Photography Diploma, New York Institute of Photography

TRAINING

- Wildlife biology, Marine and Fisheries courses: courses, University of Guelph
- Wilderness Survival and Tracking courses: Tom Brown School, New Jersey

CORE COMPETENCIES

- Avian surveying and monitoring
- Wildlife tracking
- Bird-banding
- Recording bird songs
- Birding tourleader

RELEVANT INDUSTRY EXPERIENCE

- Over 5100 bird species observed in over 60 countries
- Avian surveys, censuses, expeditions and migration monitoring
- Preparation of technical reports, journal articles and a book for bird studies
- Publication of several photos in books and journals

MEMBERSHIPS AND ASSOCIATIONS

- Board of Directors: Pelee Island Bird Observatory (banding station)
- Board of Directors: Wilds of Pelee Island
- Ontario Field Ornithologists member
- Explorers Club fellow

Yves Scholten, H.B.Sc.

Terrestrial/Wetland Ecologist



BIOGRAPHY

Yves Scholten is a Biologist with a strong background in Terrestrial Ecology. He joined M.K. Ince and Associates Ltd. (MKI) in the spring of 2011 and is presently involved in ELC, wetland assessments, and wildlife habitat surveys as part of pre-construction Environmental Assessment, Natural Heritage reporting and the new REA processes for over a dozen commercial scale wind power projects in Ontario.

Since joining MKI, Yves has been involved in all aspects of the development and implementation of Natural Heritage Assessments, surveying for wind energy projects across Ontario. Tasks ranged from the development of survey protocols to the coordination of field biologists, participation in public consultations and the logistics of handling multiple projects with large and complex data sets. Most recently he has been involved in the analysis, research and writing of natural heritage reports for numerous projects and the development of new and improved designs for future projects based on the continuously evolving knowledge base being developed for the REA process.

Before joining M.K.I., Yves completed a Bachelor of Science at the University of Toronto, with majors in Biology and Environmental Science, including research papers, which developed his research skills, speaking and technical writing abilities. Following the completion of his degree, he has worked for the Ontario Ministry of Health conducting environmental microbiological assays, the Universities of McMaster and Toronto in a joint seabird population ecology study, and assisted with zooplankton population research in central and southern Ontario lakes for the University of Toronto's Aquatic Ecology lab. These various aspects of Biology together with work on numerous projects in ELC, wetland assessment (OWES), botany, and wildlife surveys have helped Yves hone a broad perspective and deep passion in ecological assessments.

When he has spare time, Yves likes to get out on the water using the wind to power a sailboat on Lake Simcoe, the Great Lakes or the Atlantic.

EXPERIENCE

- Laboratory and field research experience in Ontario ministries and university zoology departments.
- Ornithology, avian ecology and behavioural studies including biometrics, bird banding and radio-telemetry tracking.
- Terrestrial and wetland ecology experience in ELC, EA, wildlife habitat and wetland assessments in 14 central and southern Ontario counties/municipalities.
- Data analysis and writing of pre-construction natural heritage survey reports for fifteen commercial-scale wind energy projects.
- Vascular plant, avian, herpetofaunal, mammal (including bats) and arthropod species identification and survey protocols.
- Participation in Public Consultation meetings.

EDUCATION

- B.Sc.(hons.) in Biology and Environmental Science, University of Toronto, 1994.

PROFESSIONAL CERTIFICATIONS & AFFILIATIONS

- Water Management and Wetland Restoration Certification (WMWRC), OMNR/Univ. of Guelph, 2012
- Ontario Wetland Evaluation System (OWES), 2011
- Principles of Ecological Land Classification (ELC), 2010
- Ontario Field Ornithologists
- Hamilton Naturalists' Club
- Bird Studies Canada
- Head of the Lake Land Trust – Sanctuary Land Steward
- Lone Pine Marsh Sanctuary Land Trust
- Field Botanists of Ontario

PROJECT EXPERIENCE

- Natural Heritage surveys, ELC, Wetland Assessments, wildlife studies, ecological consultation and REA reporting for fifteen Ontario Wind Energy projects.
- Yarmouth ELC Surveyor, Catfish Creek Cons. Auth.
- Terrestrial Ecologist, Byng Island Vegetation Survey, Grand River Conservation Auth.
- Terrestrial Biologist, Earthquest Environmental Consultants. ELC and SAR surveys.
- Seabird Population Ecology, Univ's. of Toronto and McMaster, ecological studies on Herring Gulls and Caspian Terns.

PRIOR WORK / VOLUNTEER EXPERIENCE

- Environmental Microbiology, Ontario Ministry of Health
- Aquatic Ecology Technician, University of Toronto
- Bird Bander (Passerines), Ruthven Bird Observatory, Haldimand ON

Appendix E

Pre-construction Field Survey Methods

Memo**Stantec**

To: Heather Riddell (MNR)
Amy Cameron (MNR)

From: Katherine St. James
Stantec Guelph

File: 160960778

Date: September 14, 2012

**Reference: Port Ryerse
Pre-construction Field Survey Methods: Landbird Migratory
Stopover Area and Bald Eagle Winter Perching Habitat**

As part of the Environmental Impact Study for the Port Ryerse Wind Project, two candidate significant wildlife habitats will be treated as significant, with mitigation commitments contingent on the results of pre-construction surveys. This process is required due to timelines for this project, and it follows the Natural Heritage Assessment Guide, Appendix D (MNR 2011).

Stantec Consulting Inc. will be carrying out the pre-construction field surveys for these two habitats in the fall/winter 2012 and spring 2013. The following memo details the methods proposed for these two types of candidate significant wildlife habitats.

Landbird Migratory Stopover Area

This habitat is greater than 5 hectares, located within 5 km of Lake Erie, and contains a variety of habitats including forest, plantation, and agriculture. These attributes contribute to the potential for this habitat to be used by migratory landbirds as a resting and foraging stopover area (MNR 2012). This habitat is shown on the attached figure.

In order to evaluate the significance of this feature, the following methods are proposed.

Monitoring Frequency and Timing:

The candidate woodlot will be surveyed twice weekly for a total of 20 visits in the fall 2012 and 20 visits in the spring 2013. The first visit in the fall will begin in mid-August and will continue through late October. The first visit in the spring will begin in mid-March and will continue through late March. Visits should begin approximately at sunrise and extend no more than 4 hours after sunrise. Severe weather events will be avoided, which would include high winds and/or heavy

precipitation, to minimize any survey bias associated with variability in weather conditions.

Survey Methods:

Survey methods consist of slowly walking linear transects through and along the edges of the habitat. The pre-selected transect routes are shown on the attached figure and attempt to capture the range of habitats available in this woodlot. The transect routes will be flagged and delineated in the field using handheld GPS units on the first field visit. All surveys will be conducted between sunrise and 4 hours after sunrise.

Due to the complex boundary and size of this feature, timing constraints do not allow for point counts to be included in the methods. The linear transects proposed are judged to be sufficient to adequately assess the significance of this feature.

Data Collection:

Observers will record the following information: date, names of observers, time (start and end for each transect), duration of time it took to walk the transect, weather conditions (temperature, % cloud cover, Beaufort wind scale, visibility, precipitation), GPS track of each transect, species observed, total number of individuals of each species, behavior (foraging, mobbing, migration, flying, perching, perched on ground, swimming), and height category (using woodlot or fly-over). Although these surveys are targeting landbirds, all bird observations will be recorded. All birds documented as flyovers or otherwise not using the woodland as a stopover habitat will be clearly indicated at the time of observation. Any birds observed to be using the woodlot while the observer is traveling between transects will also be recorded.

Criteria for Significance:

The criteria for determining the significance of this habitat are described in the Draft Significant Wildlife Habitat Ecoregion 7E Criteria Schedule (MNR 2012). They are described as the use of woodlot by >200 birds/day and with >35 species with at least 10 bird species recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. If this habitat meets these criteria, mitigation proposed in the EIS will be required.

Bald Eagle Winter Perching Habitat

One immature and two adult bald eagles (*Haliaeetus leucocephalus*) were observed perched on a white pine (*Pinus strobus*) along the shore of Lake Erie, located approximately 230 m southeast of T4, in winter 2011. This tree is part of the woodlot community which is located within 120 m of the Project Location. No nest or nesting behaviour was observed and no adults were observed during breeding season (March to August), consequently this site does not meet the criteria for a candidate Bald Eagle and Osprey Nesting, Foraging and Perching

Habitat (OMNR, 2012); however, it is considered candidate significant wildlife habitat for bald eagle as a species of conservation concern.

The presence of a bald eagle using this perching tree annually would make this habitat significant. Methods proposed follow the 'behavioural study' guidelines provided in the December 2011 *Bird and Bird Habitats: Guidelines for Wind Power Projects* (MNR 2011). The habitat would then be delineated based on the behavior of observed bald eagles: the areas used by the bald eagles for perching plus the surrounding vegetation community(ies) (determined by Ecological Land Classification), protecting the habitat function and form, will then constitute the significant habitat.

Monitoring Frequency and Timing:

The candidate perching tree will be surveyed three times in winter 2012, which will consist of one visit every three weeks beginning in mid-December. Visits will include a 3-hour survey between 11am and 2pm, focused on this tree and the surrounding habitat. Weather conditions will influence the timing of the visits, as severe weather and poor visibility conditions will be avoided.

Survey Methods:

A 3-hour survey focused on the perching tree and surrounding habitat will be conducted from a nearby vantage point. The observer will remain in or near the vehicle in order to reduce stress on any perched bald eagles. Binoculars will be used for observations.

Data Collection:

Observers will record the following information: date, names of observers, time (start and end for each survey), weather conditions (temperature, % cloud cover, Beaufort wind scale, visibility, precipitation), GPS point of observation, species observed, behavior (foraging, mobbing, migration, flying, perching, perched on ground, swimming), number of passes, height category (using tree/woodlot or fly-over), flight direction, direction, and distance from user. Although these surveys are targeting bald eagles, all bird observations will be recorded.

Criteria for Significance:

This type of habitat is not described specifically in the Draft Significant Wildlife Habitat Ecoregion 7E Criteria Schedule, but is related directly to bald eagle, a species of conservation concern. The criteria used will be the annual use of perching habitat. Annual use will be deemed to be proven with two consecutive years of observed use. If this habitat meets this criterion, the mitigation proposed in the EIS will be required.

Stantec

September 27, 2012

Page 4 of 4

Katherine St. James

Terrestrial Ecologist

katherine.stjames@stantec.com

From: Riddell, Heather (MNR) <Heather.Riddell@ontario.ca>
Sent: Wednesday, September 26, 2012 3:39 PM
To: St.James, Katherine
Cc: Cameron, Amy (MNR); Charlton, David; Taylor, Andrew
Subject: RE: Port Ryerse NHA

Hi Katherine,

I've reviewed the changes – thanks for addressing our comments.

We are now satisfied with the proposed survey protocol for Bald Eagle Winter Perching Habitat and Landbird Migratory Stopover Area identified within 120 m of the project location for Port Ryerse Wind Project.

Cheers,
Heather

Heather Riddell
Renewable Energy Planning Ecologist
705-755-5596

From: St.James, Katherine [mailto:Katherine.StJames@stantec.com]
Sent: September 25, 2012 4:13 PM
To: Riddell, Heather (MNR)
Cc: Cameron, Amy (MNR); Charlton, David; Taylor, Andrew
Subject: RE: Port Ryerse NHA

Hi Heather,

Thanks so much for getting back to us so quickly. I've tracked changes based on your comments below with regards to bald eagle habitat. Please let me us know if these changes are satisfactory.

Thanks!
Katherine

From: Riddell, Heather (MNR) [mailto:Heather.Riddell@ontario.ca]
Sent: Friday, September 21, 2012 11:06 AM
To: St.James, Katherine
Cc: Cameron, Amy (MNR); Charlton, David; Taylor, Andrew
Subject: RE: Port Ryerse NHA

Hi Katherine,

I reviewed the protocol submitted for surveying landbird migratory stopover area and bald eagle winter perching habitat on September 14th. David Charlton also sent me the figure on September 18th.

We have no comments on the landbird migratory stopover area protocol – well done!

Here are a couple comments regarding Bald Eagle Winter Perching habitat:

* The protocol should outline how the habitat will be delineated. For this project, we previously recommended that a survey of behaviour would be useful to delineate the habitat, as it would confirm the areas used by Bald Eagle (i.e. Behavioural Study as per Appendix A, pg 17 of the December 2011 Bird Guidelines). The area of the habitat should be delineated to the finest ELC

scale that protects the habitat form and function.

* As for the last paragraph regarding Criteria for Significance, to clarify, there are no specific criteria in the Draft Significant Wildlife Habitat Ecoregion 7E Criteria Schedule for this habitat type. This is because this habitat is considered under the category of 'Species of Conservation Concern', rather than under 'Bald Eagle and Osprey Nesting, Foraging and Perching Habitat'. REOT staff provided guidance for this project based on recommendations that were gathered from various MNR biologists. The note regarding annual use being one criterion for determining significance is appropriate in this case; however, it is generally unrelated to the criteria outlined for any habitat types in the Criteria Schedule. It was our recommendation for this project that an additional year of survey occur to determine annual use and also to determine flight path in order to fully delineate the habitat.

Please feel free to call if you have any questions.

Regards,
Heather

Heather Riddell
Renewable Energy Planning Ecologist
705-755-5596

From: St.James, Katherine [mailto:Katherine.StJames@stantec.com]
Sent: September 14, 2012 10:34 AM
To: Riddell, Heather (MNR)
Cc: Cameron, Amy (MNR); Charlton, David; Taylor, Andrew
Subject: RE: Port Ryerse NHA

Hi Heather,

Please find attached our survey protocols for the candidate landbird migratory stopover area and bald eagle winter perching habitat found at the proposed Port Ryerse Wind Farm.

I apologize for the fact that these methods are getting to you after the start of the landbird migratory surveys – the switch over to Stantec was tight timing with the start of the landbird migration season. We did start surveys on Aug 22, 2012 to ensure we caught the beginning.

I am on holidays next week so please let David Charlton know if you have comments to address (but you can keep me in the correspondence).

Thank you!
Katherine

From: Riddell, Heather (MNR) [mailto:Heather.Riddell@ontario.ca]
Sent: Wednesday, September 12, 2012 3:21 PM
To: St.James, Katherine
Cc: Christiansen, Fiona; Cameron, Amy (MNR)
Subject: RE: Port Ryerse NHA

Hi Katherine,

Nice hearing from you and I'm looking forward to working with you as well in your new role at Stantec!

The correspondence regarding Bald Eagle habitat and Landbird Migratory Stopover habitat is some of the main guidance we provided for this file. I don't think there's anything else major to share.

Amy Cameron is your main contact for the NHA and EIS, so when you submit the report in October, please be sure to send it to Amy – she'll make sure it gets reviewed by one of our NHA reviewers. I will be your main APRD contact for the Species at Risk Report and Petroleum reporting, but I could end up being one of the NHA reviewers, depending on how the work gets distributed.

Let us know if you need us to take a look at any survey protocols or work plans for the work Stantec is completing for either the NHA/EIS or Species at Risk report. And if you have any other questions, feel free to contact Amy and me.

Cheers,
Heather

Heather Riddell
Renewable Energy Planning Ecologist
705-755-5596

From: St.James, Katherine [mailto:Katherine.StJames@stantec.com]
Sent: September 12, 2012 2:46 PM
To: Riddell, Heather (MNR)
Cc: Christiansen, Fiona
Subject: Port Ryerse NHA

Hi Heather,

So since I've seen you last I've moved to Stantec, if you are wondering about the new email address! I hope things are going well for you and you've had a good summer.

I wanted to keep you in the loop about the Port Ryerse NHA (if you aren't already) – Stantec will be taking the information that MKInce has prepared and re-formatting it to our standard, and submitting the NHA by Oct 6th.

I have received correspondence between you and MKInce regarding bald eagle winter habitat and landbird migratory stopover habitat – pre-construction surveys which Stantec is completing this fall/winter/spring. If you think there is any additional correspondence which I need to be aware of, please let me know.

I look forward to working with you again!

Katherine St.James
Stantec
70 Southgate Drive Suite 1
Guelph ON N1G 4P5
Ph: (519) 836-6050
Fx: (519) 836-2493
katherine.stjames@stantec.com
stantec.com

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