Ontario

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August 27, 2019

Ken Hetherington
Manager, Planning Division
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khetherington@peterborough.ca

Dear Mr. Hetherington:

The Ministry of Natural Resources and Forestry (MNRF) has now completed our review of the Nassau Wetland Complex Wetland Evaluation Report, dated April 2019 and prepared by DM Wills for the City of Peterborough (the "Evaluation Report"). The Evaluation Report results in the identification of a new Provincially Significant Wetland (PSW), the Nassau Wetland Complex, located within the City of Peterborough and the Township of Douro-Dummer. The evaluation was conducted according to the Ontario Wetland Evaluation System, which can be accessed at: https://www.ontario.ca/page/wetlands-evaluation.

MNRF is pleased to approve the Evaluation Report subject to the following minor modification:

- Clarifications to the wetland boundary in Lot 6, Con 10, Douro, and Lot 4, Con 11, Douro, which result in a slight change in the total wetland size from 76.25 ha to 81.37 ha.

MNRF has added the new PSW to the Provincial record and the wetland can now be downloaded from Land Information Ontario (LIO) and viewed in Natural Heritage Make a Map here: https://www.ontario.ca/page/make-natural-heritage-area-map. For more information on how to access LIO, please visit: https://www.ontario.ca/page/land-information-ontario. The Provincial record is considered the authoritative source for evaluated wetland data and MNRF will now maintain a wetland file for the Nassau Wetland Complex. MNRF recommends that the Nassau Wetland Complex mapping in LIO be referenced during the review of applications under the *Planning Act* and other applicable legislation. MNRF will be notifying other agencies and landowners of the new mapping shortly. MNRF requests that the City include this approval letter as a cover page to the Evaluation Report when making it available to the public.

MNRF thanks the City for their efforts in undertaking the evaluation. If you have any questions, feel free to contact me or Liz Spang, District Planner, at 705-755-3360.

Best regards,

Deanna Cotter
Resources Management Supervisor
Peterborough District
Ministry of Natural Resources and Forestry
Ph: (705) 755-3293
Deanna.Cotter@ontario.ca

Legend

Nassau Wetland Complex Boundary

Ontario Ministry of Natural Resources and Forestry - Peterborough District

Nassau Wetland Complex

Provincially Significant Wetland

0 0.075 0.15 0.3 0.45 0.6 0.75

Kilometers

August 27. 2019

Ontario

Notes:
Produced by: Ministry of Natural Resources and Forestry, Peterborough District GIS
Map Projection: UTM Zone 17, NAD 83

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry (OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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Print size:
(11" x 17")

Il ne faut pas présumer que cette carte indique précisément les voies et les lieux, ne s'en servir comme guide à la navigation. Le Ministère des Richesses naturelles et des Forêts de l'Ontario (MRNF) n'assume aucune responsabilité quelle qu'elle soit relativement à l'utilisation de cette carte ou de la confiance qui serait mise en celle-ci.

Peterborough District Key Map

= Map detail area

City of Peterborough

Wetland Evaluation Report

Nassau Wetland Complex
City of Peterborough

D.M. Wills Project Number 16-10739

D.M. Wills Associates Limited
Partners in Engineering
Peterborough

Technical Review:

BEACON ENVIRONMENTAL

April 2019
Prepared for:
City of Peterborough

Summary of Revisions

Revision No.	Revision Title	Date of Release	Summary of Revisions
1	First Submission	April 23, 2018	
2	Second Submission	August 31, 2018	
3	Report and Scoring	October 3, 2018	Changes to report and scoring based on comments from Brian Henshaw, Beacon Environmental
4	Report and Scoring	April 02, 2019	Changes to report and scoring based on comments from MNRF

This report/proposal has been formatted considering the requirements of the Accessibility for Ontarians with Disabilities Act.

Statement of Limitations

This Wetland Evaluation Report has been prepared by D.M. Wills Associates Limited with technical support from Beacon Environmental, on behalf of The City of Peterborough to address the requirements of the Otonabee Region Conservation Authority (ORCA) and the Ministry of Natural Resources and Forestry (MNRF).

The purpose of the Wetland Evaluation was to determine the significance of the Nassau Wetland Complex located at the north end of the City of Peterborough. The conclusions and recommendations in this Wetland Evaluation Report are based on available background documentation, discussions with applicable agencies and field investigations completed at the time of preparation.

Any use, which a third party makes of this Wetland Evaluation Report, other than for review by applicable agencies, is the responsibility of such third parties. D.M. Wills Associates Limited accepts no responsibility for damages, if any, suffered by a third party because of decisions made or action taken based on using this Wetland Evaluation Report.

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Figures

Tables

Appendices

Executive Summary

On behalf of the City of Peterborough, this Wetland Evaluation Report has been prepared for the Nassau Wetland Complex (Wetland Complex) at the north end of the city. Initial field investigations were completed within the wetland catchment area in 2016 with subsequent field investigations conducted in 2017 and 2018, including breeding bird assessments, amphibian surveys and the wetland evaluation. Wetland Units were identified and assessed by inferring wetland boundaries through review of aerial photographs and satellite imagery and confirmed during field investigations. The determination of wetland boundaries was based on the presence of accepted wetland flora species representing a minimum of 50% of the cover in the area.

Six contiguous wetland areas comprised the Wetland Complex totaling approximately 76 ha in size. Within the wetland units, eighteen (18) communities with dominant vegetation forms were identified. The total wetland area is characterized with 82% swamp with 18% of the fractional area covered by marsh habitat. Soil composition was found to be 54% sand, 28% silt and 18% mesic. The wetland site type was determined to be Palustrine.

Provincially significant species known to occur within the Wetland Complex include Blandings Turtle (*Emydoidea blandingii*) and Eastern Wood-Pewee (*Contopus virens*).

Based on the results of the wetland evaluation, the Wetland Complex is classified as evaluated provincially significant on the basis that a total score of more than 600 points was achieved. Significance of the Wetland Complex was determined through all aspects of the wetland evaluation including species at risk and provincially significant species as well as the significance for recreational activities, ecosystem study, long-term research and educational purposes.

1.0 Introduction

The City of Peterborough (the City) retained D.M. Wills Associates Limited (Wills) to undertake a Wetland Evaluation of the Nassau Wetland Complex (Wetland Complex) at the north end of the City of Peterborough. The Wetland Evaluation was undertaken by certified wetland evaluators using the Ontario Wetland Evaluation System Southern Manual 3rd Edition, Version 3.3, 2014 (OWES). The purpose of the Wetland Evaluation was to determine the significance of the Wetland Complex.

Initial field investigations were completed within the Wetland Complex on June 3, July 5, July 7, September 1, and September 12, 2016. Subsequent field investigations were conducted on April 20, May 30, June 20, June 22, June 28, July 5, July 6, July 7, July 11, July 13 and October 5 of 2017 and April 24, May 9, May 15, and May 24 of 2018, including breeding bird assessments, amphibian surveys and Wetland Evaluation. Wetland Units were identified and assessed by inferring wetland boundaries through review of aerial photographs and satellite imagery and confirmed during field investigations. The determination of wetland boundaries was based on the presence of accepted wetland flora species representing a minimum of 50% of the cover in the area.

The following sections identify the Evaluation Criteria, Study Area and location, methodology, scoring record, and results of the evaluation, as well as species occurrence lists.

2.0 Evaluation Criteria

The determination of wetland significance is based on the scoring criteria by using the OWES that has been approved by the Ministry of Natural Resources and Forestry (MNRF). For the purposes of this Wetland Evaluation, the Southern Ontario manual includes direction for evaluation of four components of the wetland including biological, social, hydrological and special features. Each component is assigned a numerical score, which cannot exceed 250 points in any category. The overall wetland score is based on a maximum of 1,000 points.

A wetland is classified as provincially significant if it meets either of the following two (2) criteria:

1. The wetland achieves a total score of 600 or more points, or
2. The wetland achieves a score of 200 or more points in either the Biological component or the Special Features component.

3.0 Study Area and Location

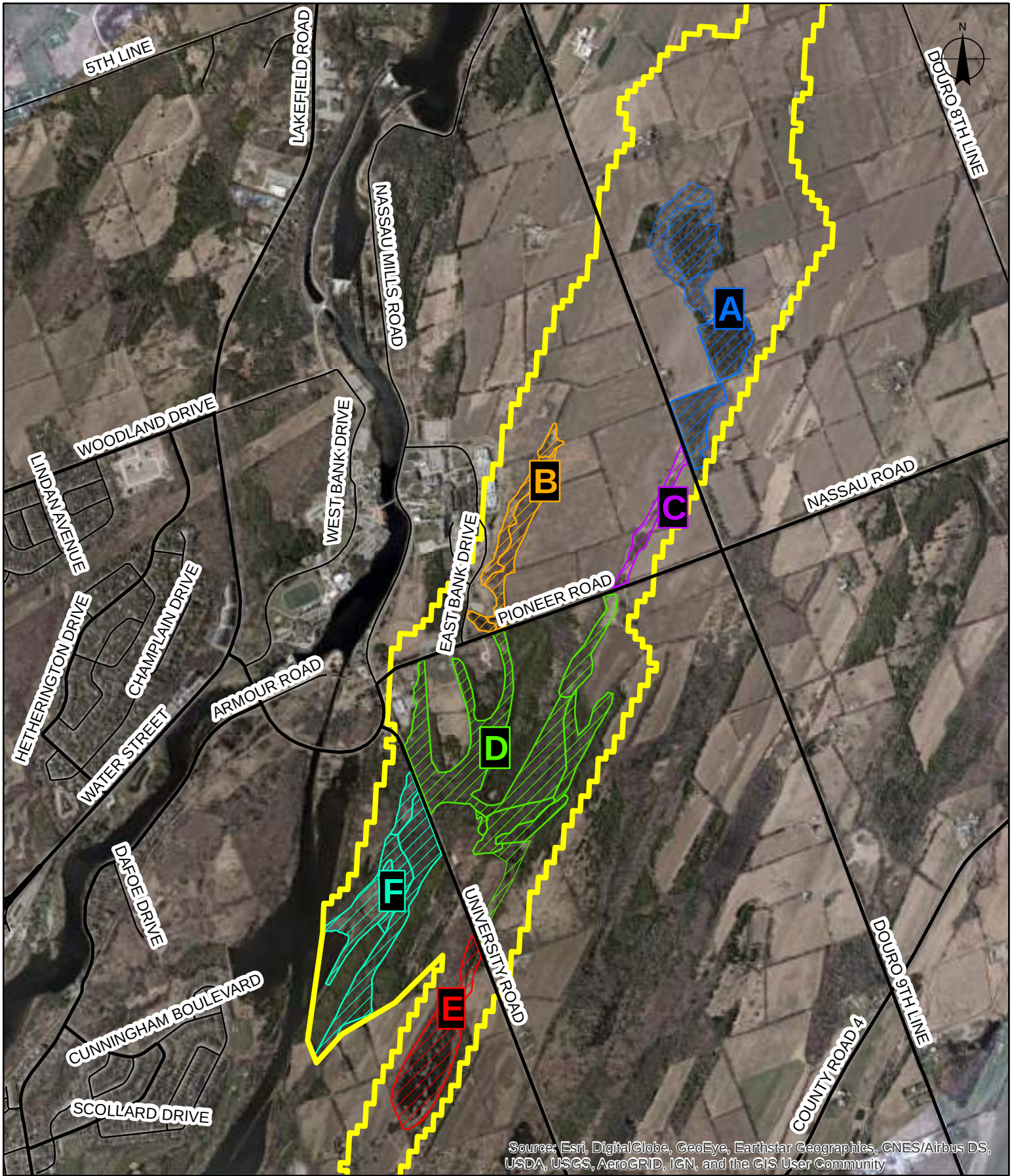
The Wetland Complex is entirely located within the jurisdiction of the Otonabee Region Conservation Authority (ORCA). The Wetland Complex is located within the City of Peterborough and Township of Douro, covering an area of approximately 76.25 ha. Zoning of the Wetland Complex lands is a mix of University / College District, Agricultural and Open Space. The location of the Wetland Complex in a regional context is included in **Figure 1 - Location Plan**.

The Wetland Complex lands are located within the following lots and concessions:

> Lot 7 Concession 10 Douro, Lot 6 Concession 9, Lot 7 Concession 9, Lot 8 Concessions 10, Lot 5 Concession 10, Lot 5 Concession 9, Lot 5 Concession 11, Lot 4 Concession 11, Lot 3 Concession 11, and Lot 2 Concession 11.

Aerial Photographs of the Wetland Complex lands are included in **Appendix A – Arial Photographs.**

The Wetland Complex has been divided into six wetland units with multiple dominant forms as described in **Table 1** – **Wetland Complex Areas and Dominant Vegetation Forms** and identified in **Appendix B** - **Wetland Data Summary Form**. Detailed wetland maps are provided in **Figures 2-7.**



Location Plan

NAD83 UTM Zone 17 North

0 75 150 300 450 600 m

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Legend

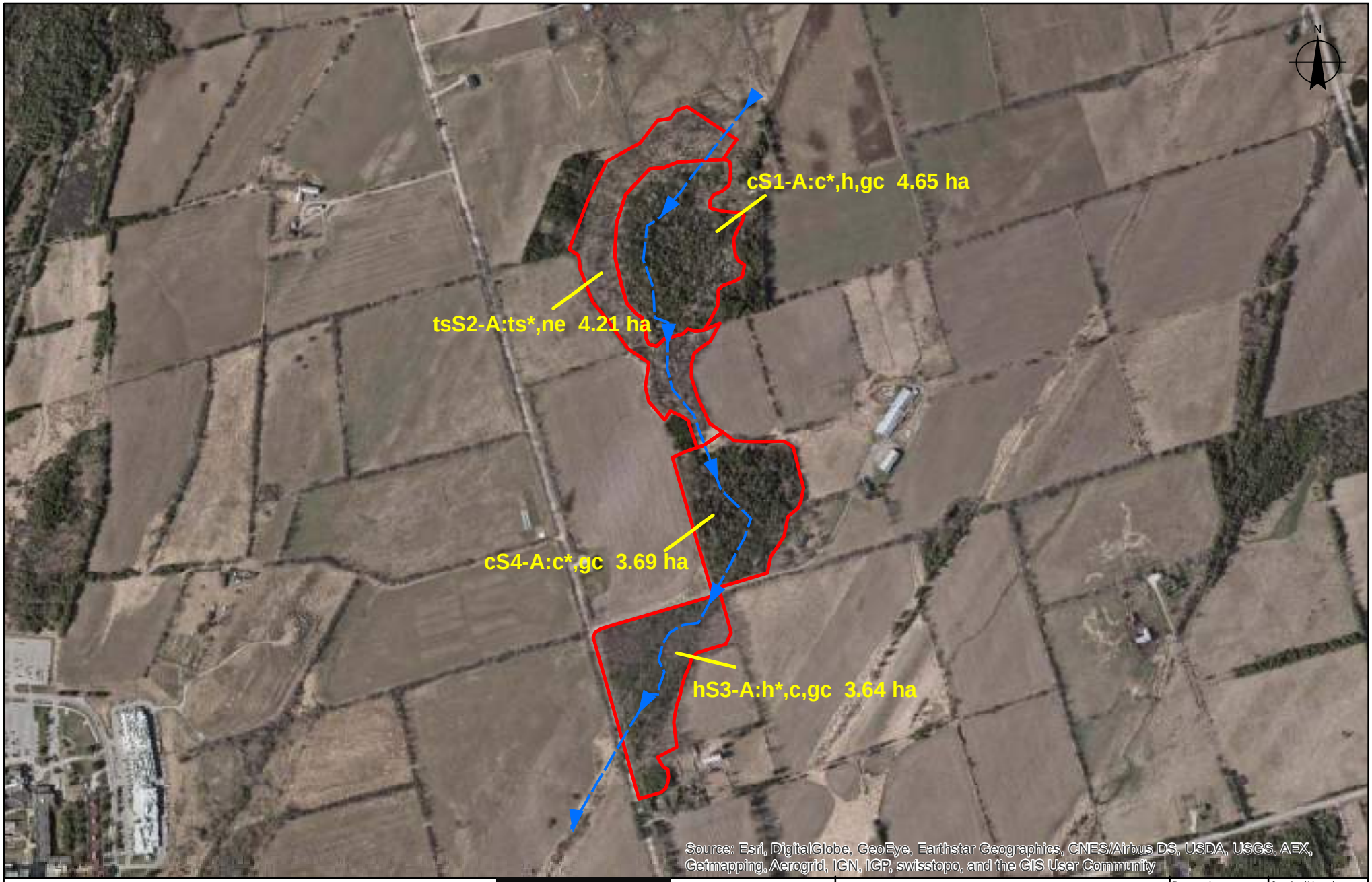
- Arterial
- Local
- Inferred Catchment Area
- Wetland Unit A
- Wetland Unit B
- Wetland Unit C
- Wetland Unit D
- Wetland Unit E
- Wetland Unit F

Drawn by: K.P.	Scale (Horz.) 1:19,575
Checked by: T.J.	
Manager: M.L.	Map Date Feb. 2018
Project No. 10739	Map File No. Figure 1

Table 1 – Wetland Complex Areas and Dominant Vegetation Forms

Map	Polygon Number	Area (ha)	Fractional Area	Soil Type	Wetland Type	Site Type	Vegetation Community	Dominant Form	Vegetation Forms	Number of forms	Polygon Label
A	1	4.65	0.06	Sand	Swamp	Palustrine	S1	c	c,h,gc	3	cS1-A:c*,h,gc
A	2	4.21	0.06	Sand	Swamp	Palustrine	S2	ts	ts,ne	2	tsS2-A:ts*,ne
A	3	3.64	0.05	Sand	Swamp	Palustrine	S3	h	h,c,gc	3	hS3-A:h*,c,gc
A	4	3.69	0.05	Sand	Swamp	Palustrine	S4	c	c,gc	2	cS4-A:c*,gc
B	5	0.37	0.00	Sand	Marsh	Palustrine	M1	gc	gc, ne	2	gcM1-B:gc*,ne
B	6	2.5	0.03	Sand	Swamp	Palustrine	S2	ts	ts,ne	2	tsS2-A:ts*,ne
B	7	3.31	0.04	Sand	Swamp	Palustrine	S5	ts	ts, gc, ne	3	tsS5-B:ts*,gc,ne
B	8	0.5	0.01	Sand	Swamp	Palustrine	S6	ts	ts,h,gc	3	tsS6-B:ts*,h,gc
C	9	2.3	0.03	Sand	Swamp	Palustrine	S7	ne	ne,h,ts,gc	4	neS7-C:ne*,h,ts,gc
D	10	2.51	0.03	Silt	Swamp	Palustrine	S4	c	c,gc	2	cS4-D:c*,gc
D	11	0.25	0.00	Sand	Swamp	Palustrine	S8	c	c	1	cS8-D:c*
D	12	1.39	0.02	Sand	Swamp	Palustrine	S9	c	c,h	2	cS9-D:c*,h

Map	Polygon Number	Area (ha)	Fractional Area	Soil Type	Wetland Type	Site Type	Vegetation Community	Dominant Form	Vegetation Forms	Number of forms	Polygon Label
D	13	16.21	0.21	Silt	Swamp	Palustrine	S10	h	h,ne	2	hS10-D:h*,ne
D	14	2.97	0.04	Sand	Swamp	Palustrine	S11	h	h,c,ts,gc	4	hS11-D:h*,c,ts,gc
D	15	2.47	0.03	Silt	Swamp	Palustrine	S12	ts	ts,gc	2	tsS12-D:ts*,gc
D	16	1.27	0.02	Sand	Swamp	Palustrine	S4	c	c,gc	2	cS4-D:c*,gc
E	17	8.94	0.12	Mesic	Marsh	Palustrine	M2	re	re	1	reM2-E:re*
F	18	7.69	0.10	Sand	Swamp	Palustrine	S13	h	h,gc	2	hS13-F:h*,gc
F	19	1.07	0.01	Mesic	Swamp	Palustrine	S14	ne	ne,ts	2	neS14-F:ne*,ts
F	20	2.26	0.03	Sand	Swamp	Palustrine	S15	h	h,ts,gc	3	hS15-F:h*,ts,gc
F	21	4.05	0.05	Mesic	Marsh	Palustrine	M3	re	re,su	2	reM3-F:re*,su



Wetland Unit A

NAD83 UTM Zone 17 North

0 50 100 200 300 400 500 m

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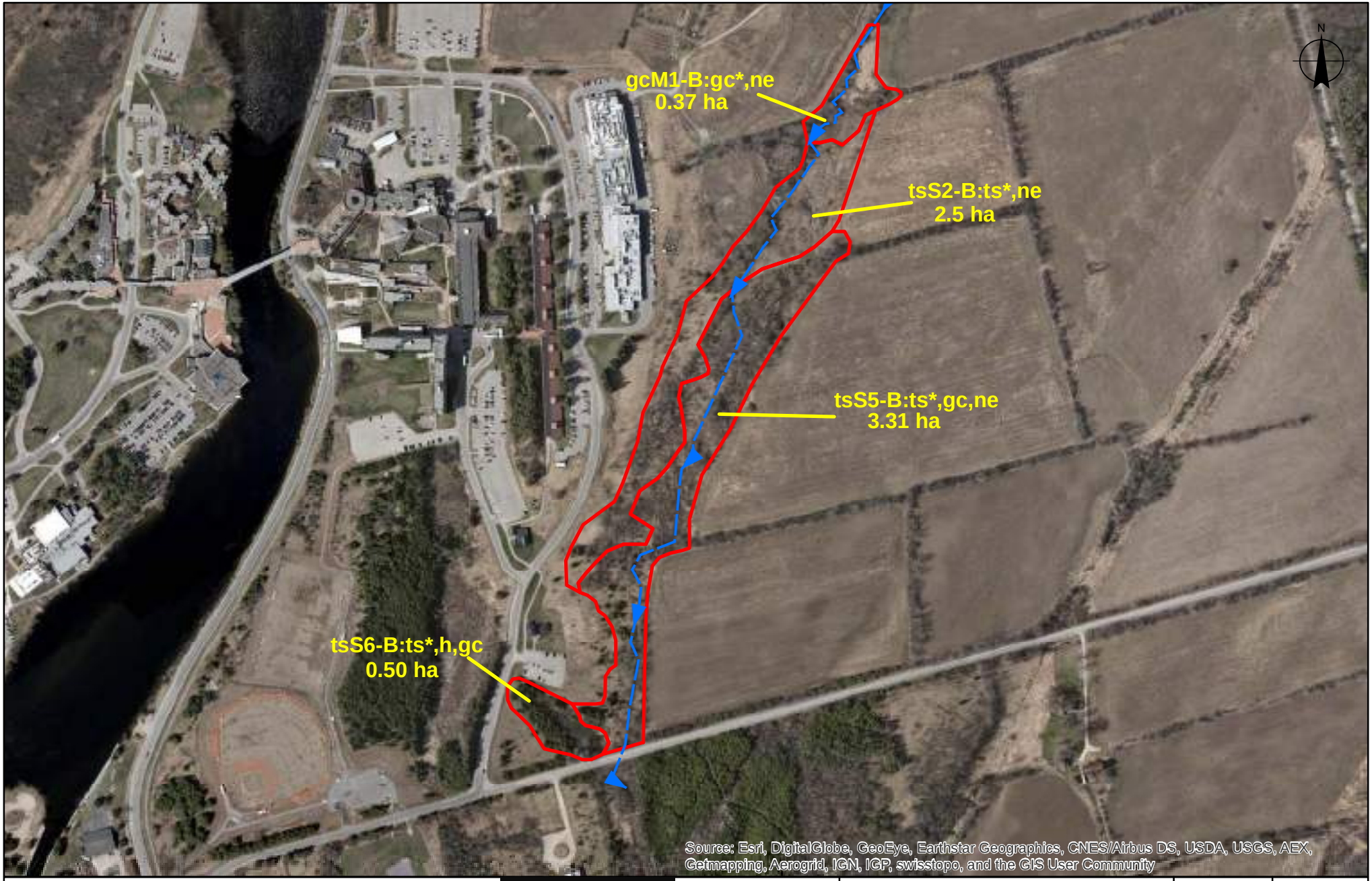
Legend

- Intermittent Water Flow Direction
- Wetland Community Boundary

Drawn by: K.P.	Scale (Horz.) 1:8,338
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No. Figure 2



Wetland Unit B

NAD83 UTM Zone 17 North

0 50 100 200 300 m

WILLS
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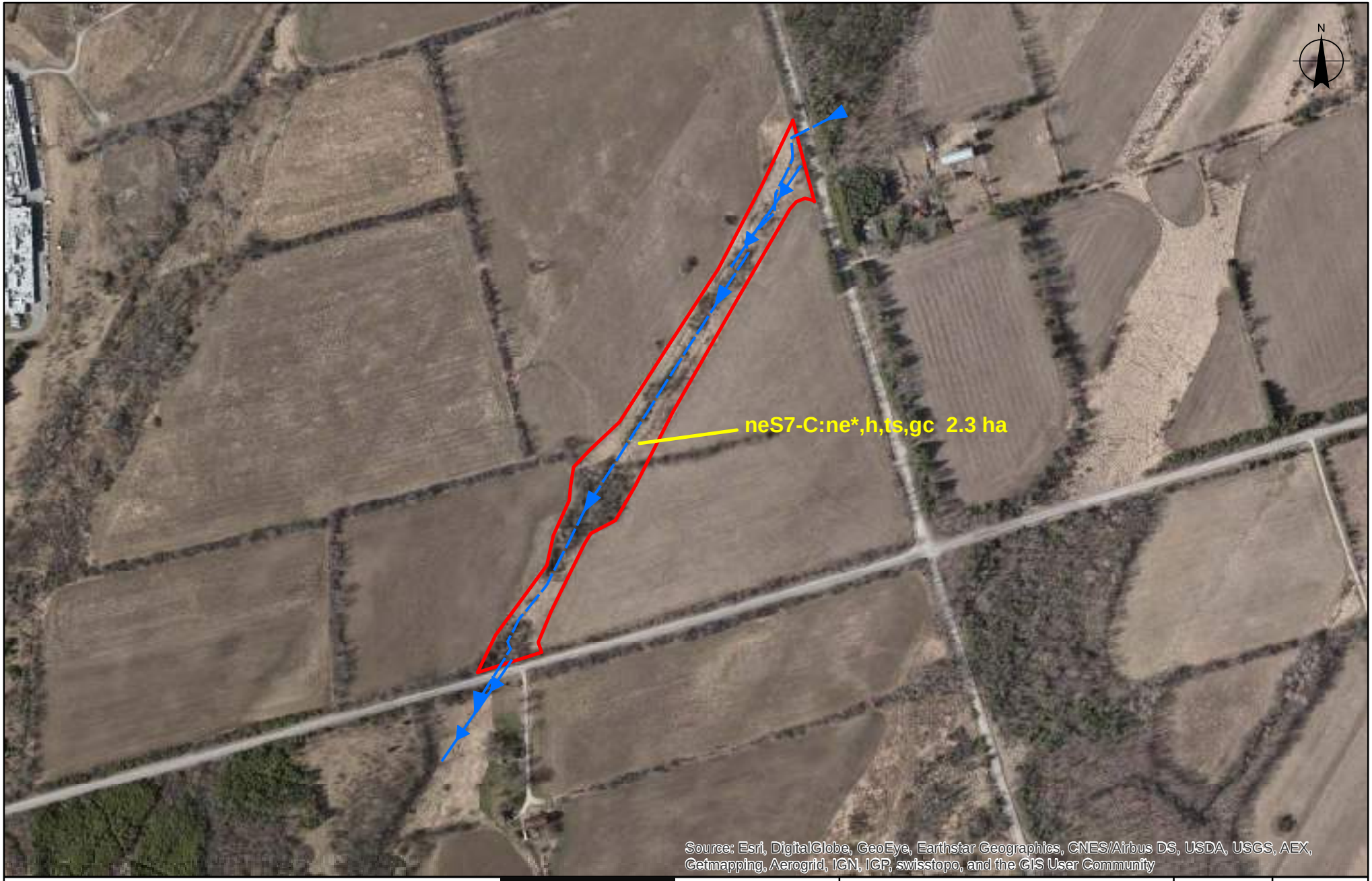
E. wills@dmwills.com

Legend

- Intermittent Water Flow Direction
- Wetland Community Boundary

Drawn by: K.P.	Scale (Horz.) 1:5,558
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No. Figure 3



Wetland Unit C

NAD83 UTM Zone 17 North

0 50 100 200 300 m

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Legend

- Intermittent Water Flow Direction
- Wetland Boundary

Drawn by: K.P.	Scale (Horz.) 1:5,000
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No. Figure 4

Wetland Unit D

NAD83 UTM Zone 17 North

0 50 100 200 300 400 500 600 m

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Legend

- Wetland Community Boundary
- Intermittent Water Flow Direction

Drawn by: K.P.	Scale (Horz.) 1:9,264
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No. Figure 5

Wetland Unit E

NAD83 UTM Zone 17 North

0 50 100 200 300 400 500 m

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Legend

- Wetland Community Boundary
- Intermittent Water Flow Direction

Drawn by: K.P.	Scale (Horz.) 1:7,411
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No. Figure 6

Wetland Unit F

NAD83 UTM Zone 17 North

0 50 100 200 300 400 m

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Legend

- Intermittent Water Flow Direction
- Wetland Community Boundary

Drawn by: K.P.	Scale (Horz.) 1:7,000
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No. Figure 7

4.0 Wetland Evaluation

The Wetland Evaluation was undertaken by certified wetland evaluators using the procedures identified in the OWES. Scoring for the Nassau Wetland Complex considers four main categories:

- Biological - The biological component summarizes ecological and biological values of the wetland.
- Social - The social component evaluates values of the wetland for recreational, economical and educational purposes.
- Hydrological - The hydrological component evaluates flood attenuation and benefits to local water quality.
- Special Features - The special features component includes scoring for significant wildlife, fish habitat, and rare species.
- Extra Information section allows the evaluator an opportunity for reporting additional information including invasive species or other notable species including Osprey (*Pandion haliaetus*).

It is important to note that a wetland evaluation is not a complete inventory of biological or physical features. Wetland community boundaries are based on inferred boundaries obtained through the evaluation of aerial imagery and biological lists. Sample areas within each wetland community are verified during field investigations. It is also possible for wetlands to change and mature over time resulting in either an increase or decrease to wetland size and functions, as well as a change in biological communities, wildlife populations and utilization of the wetland. For this reason, wetland evaluations are considered open files and subject to re-evaluation and score alteration over time.

4.1 Biological Component

The Wetland Complex contains two (2) distinct wetland types including swamp and marsh. Six (6) wetland units comprise the Wetland Complex totaling approximately 76 ha in size. Within the Six (6) wetland units, eighteen (18) communities with dominant vegetation forms were identified. The total Wetland Complex is dominated by 82% swamp with 18% of the fractional area covered by marsh. Soil composition was 54% sand, 28% silt, and 18% mesic. The wetland site type was entirely Palustrine at 100% of the fractional area.

The habitat surrounding the Wetland Complex is dominated by agricultural land and open space with buildings and parking structures located to the northeast.

See **Appendix C – Wetland Evaluation Data and Scoring Record** for scoring records and further information regarding the Biological Component.

4.2 Social Component

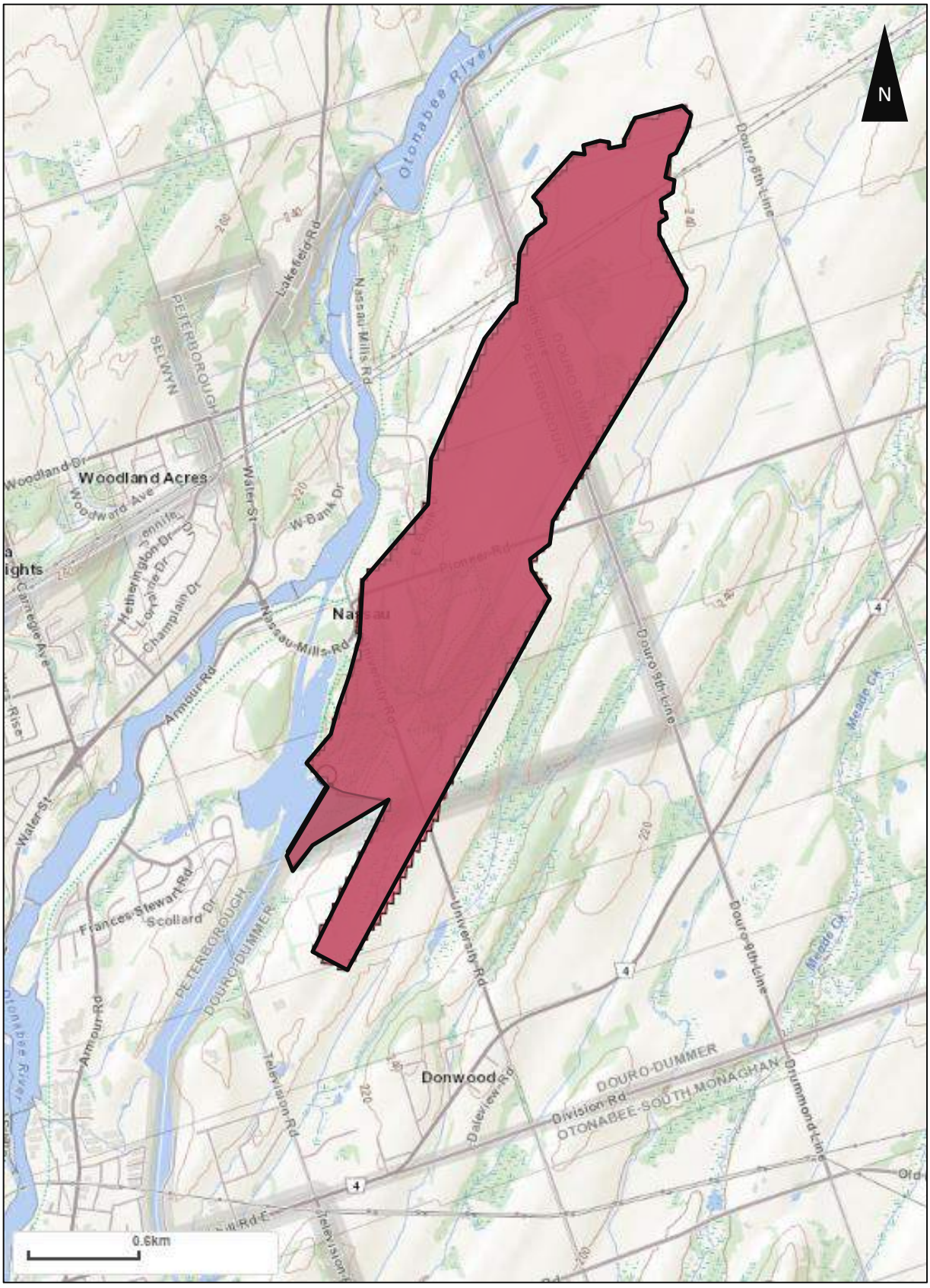
Field observations identified the presence of baitfish, and a number of fur bearing mammals observed through tracks and scat. The Wetland Complex also provides opportunities for nature enjoyment as well as ecosystem study for members of local communities, tourists, students and faculty at Trent University, as well as from the Camp Kawartha Outdoor Education Center. During the majority of the field investigations, the public was observed utilizing walking trails throughout the Wetland Complex and catchment area. A number of ongoing Trent University research projects were identified, including plant growth and forensic science studies.

The Wetland Complex is located within the City of Peterborough and close to nearby communities including Lakefield, with a major community road crossing through the Wetland Complex (Pioneer Road).

See **Appendix C** - **Wetland Evaluation Data and Scoring Record** for scoring records and further information regarding the Social Component.

4.3 Hydrological Component

The six (6) wetland units were identified through a Floodplain Impact Assessment for the surrounding lands (Regulatory Floodplain Impact Assessment Report, February 2018). The catchment area for local tributaries was delineated using ArcGIS 10.3.1 for desktop using the OBM stream network, City of Peterborough contours (0.5 m interval), OBM contours (5.0 m interval) and aerial photography. The catchment area is shown in **Figure 8**.



Wetland Catchment Area

An OWES evaluation for the Trent University Wetland Complex

WILLS

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Drawn By	T.J.	Scale	See Scale Bar
Checked	S.F.	Date	Aug. 2018
Project No.	17-10739	Drawing File No.	Figure 8

Source: Image obtained from Google Earth. Image © 2016 Cnes/Spot Image.

The lands west of East Bank Drive and north of Pioneer Road did not contribute hydrologically to the Wetland Complex. Existing conditions pertaining to the reconstruction of Pioneer Road includes the removal of two (2) cross culverts (Reach 1, approximately 350 m east of Nassau Mills Road and Reach 2, approximately 200 m east of Nassau Mills Road). The cross culvert at the upstream end of Reach 2 has been removed. This culvert conveyed runoff from approximately 1.35 ha of land north of Pioneer Road to the Wetland Complex. The cross culvert at the upstream end of Reach 1 has also been removed. This culvert conveyed runoff from approximately 7.96 ha of land north of Pioneer Road to the tributary that flows south along the eastern edge of the Wetland Complex. These flows have been diverted west to the Otonabee River. The wetland units identified in **Figures 2-7** capture all wetland units within the Wetland Complex and the catchment area.

See **Appendix C - Wetland Evaluation Data and Scoring Record** for scoring records and further information regarding the Hydrological Component.

4.4 Special Features Component

Special features include rare species and important wildlife habitats. Over two (2) years of field investigations, and through review of reference material for the Wetland Complex and surrounding areas, 160 plant species (see **Appendix D – Plant Species Inventory**), 29 fauna species (see **Appendix E – Fauna Inventory**), and 96 avifauna species (see **Appendix F – Avifauna Inventory**) were recorded.

Provincially significant species known to occur within the Wetland Complex included Blandings Turtle (*Emydoidea blandingii*) Eastern Wood-Pewee (*Contopus virens*) and Wood Thrush (*Hylocichla mustelina*).

See **Appendix C - Wetland Evaluation Data and Scoring Record** for scoring records and further information regarding the Special Features Component.

4.5 Extra Information

Non-native invasive species observed within the Wetland Complex include Invasive Phragmites (*Phragmites australis*) and Common Buckthorn (*Rhamnus cathartica*).

The Wetland Complex has been heavily affected south of Pioneer Road on the west side of Wetland Unit D where a former building foundation, large amounts of garbage and debris, as well as fill including concrete, gravel, soil, and large boulders have impacted the wetland unit. Additional areas north of Pioneer Road and east of Trent University have been heavily affected by active agriculture efforts that are encroaching on the Wetland Unit C boundary.

5.0 Wetland Evaluation Score

The scoring of the Wetland Complex can be found below:

Biological Component:	111
Social Component:	183
Hydrological Component:	212
Special Features Component:	250
Total:	**756**

The data scoring record can be found in **Appendix C - Wetland Evaluation Data and Scoring Record**.

6.0 Conclusion

Based on the results of the wetland evaluation, the Wetland Complex is classified as evaluated provincially significant on the basis that a total score of more than 600 points was achieved and more than 200 points was achieved in the Special Features component. Significance of the Wetland Complex was determined through all aspects of the wetland evaluation including species at risk and provincially significant species as well as the significance for recreational activities, ecosystem study, long-term research and educational purposes.

Respectfully Submitted,

Report Author:

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Tel: (705) 742-2297 ext. 236

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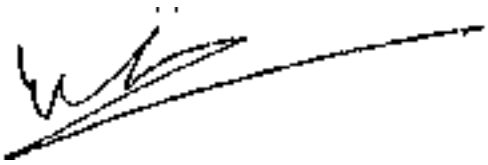
Technical Support and Senior Review:



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7.0 References

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Appendix A

Aerial Photographs

Date of Aerial Photo:
5/10/1929

1929 Aerial Photograph

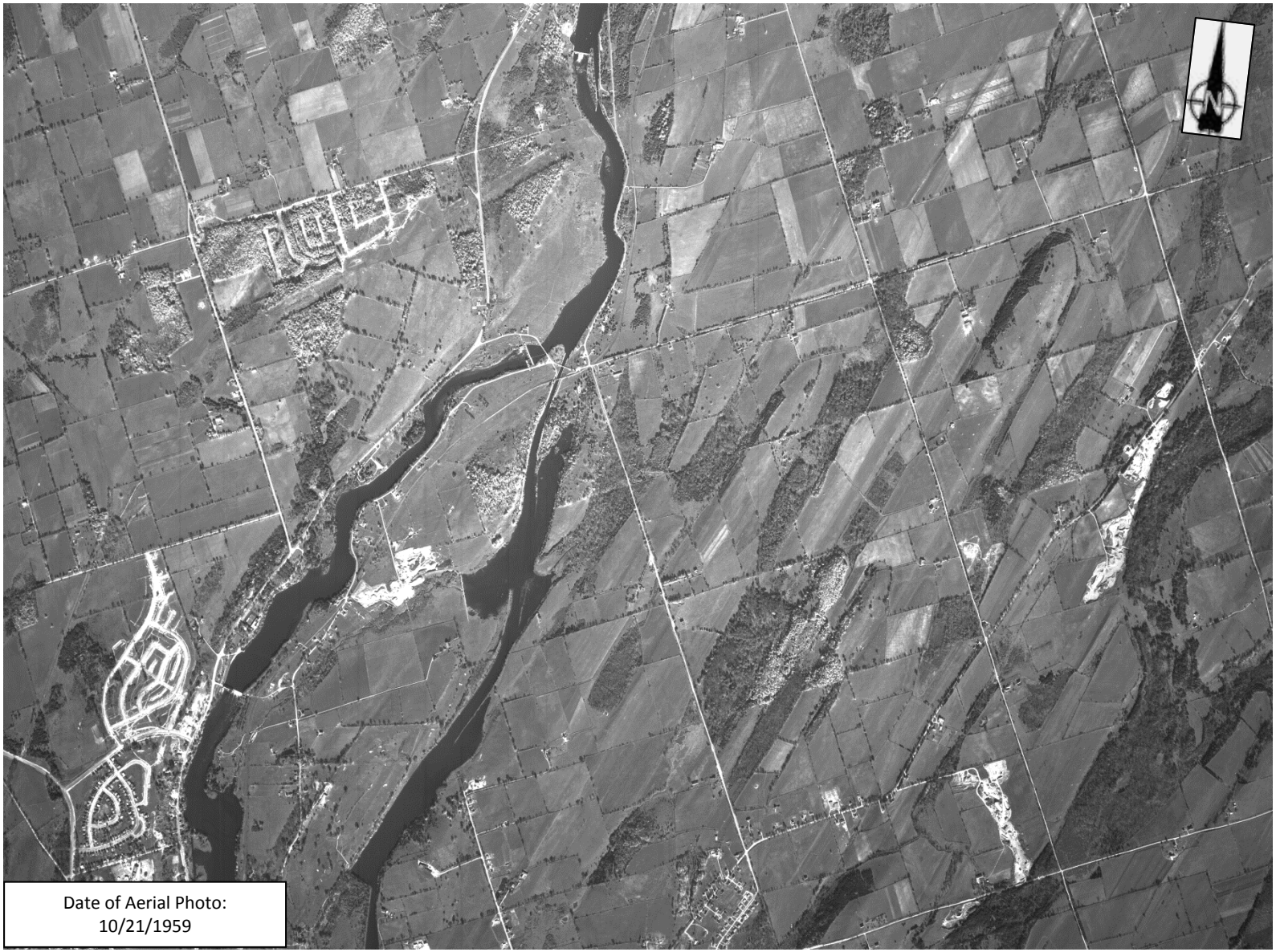
Wetland Evaluation

Source: Image obtained from National Air Photo Library. Imagery Dated 5/10/1929.

D.M. Wills Associates Limited
150 Jameson Drive
Peterborough, Ontario
Canada K9J 0B9

P. 705.742.2297
F. 705.741.2568
E. wills@dmwills.com

Drawn By	KP	Scale	1-20 000
Checked	TJ	Date	Feb. 2018
Project No.	17-10739	Drawing File No.	



Date of Aerial Photo:
10/21/1959

Source: Image obtained from National Air Photo Library. Imagery Dated 10/21/1959.

1959 Aerial Photograph

Wetland Evaluation

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Drawn By	KP	Scale	1-30 000
Checked	TJ	Date	FEB. 2018
Project No.	10739	Drawing File No.	

Date of Aerial Photo:
4/29/1965

Source: Image obtained from National Air Photo Library. Imagery Dated 4/29/1965.

1965 Aerial Photograph

Wetland Complex

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Drawn By	KP	Scale	1-10 000
Checked	TJ	Date	FEB. 2018
Project No.	10739	Drawing File No.	

Date of Aerial Photo:
5/25/1978

1978 Aerial Photograph

Wetland Evaluation

Source: Image obtained from National Air Photo Library. Imagery Dated 5/25/1978.

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150 Jameson Drive
Peterborough, Ontario
Canada K9J 0B9

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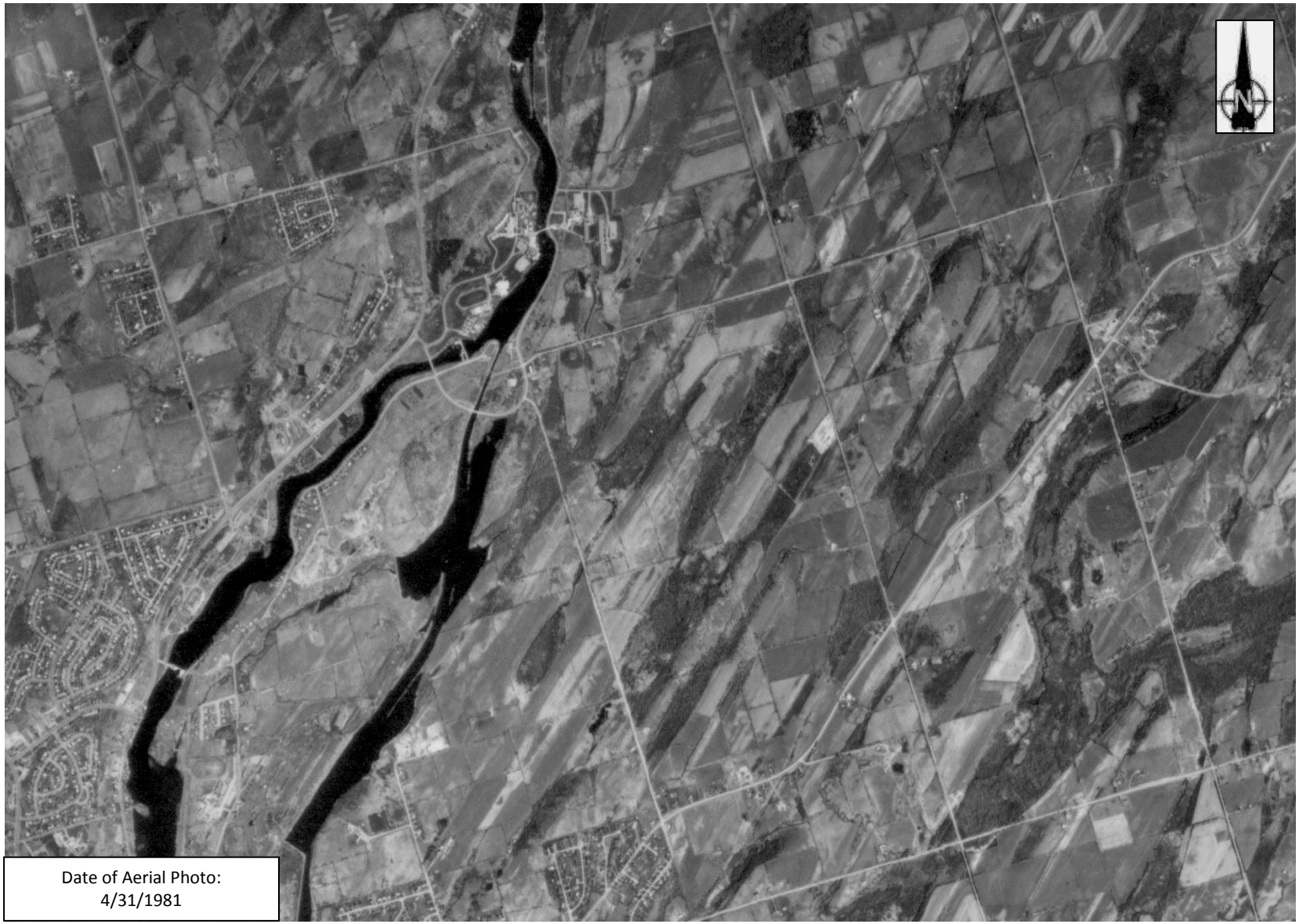
Drawn By	KP	Scale	1-25 000
Checked	TJ	Date	FEB. 2018
Project No.	10739	Drawing File No.	



Date of Aerial Photo:
4/31/1981

1981 Aerial Photograph

Wetland Evaluation

Source: Image obtained from National Air Photo Library. Imagery Dated 4/31/1981.

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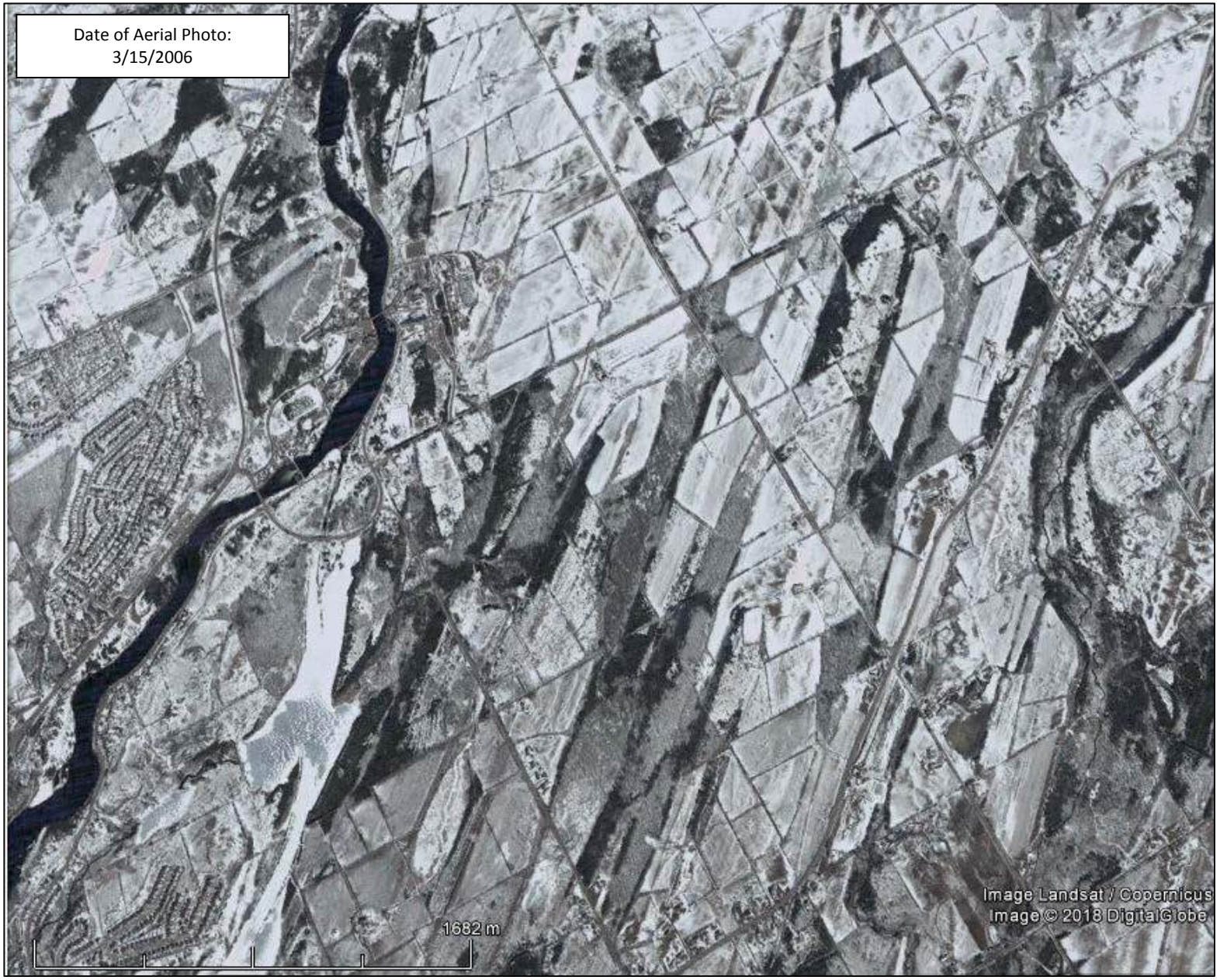
Drawn By	KP	Scale	1-50 000
Checked	TJ	Date	FEB. 2018
Project No.	10739	Drawing File No.	



Source: Image obtained from Google Earth. Image © 2016 DigitalGlobe. Imagery Dated 3/15/2006.

2006 Aerial Photograph

Wetland Evaluation

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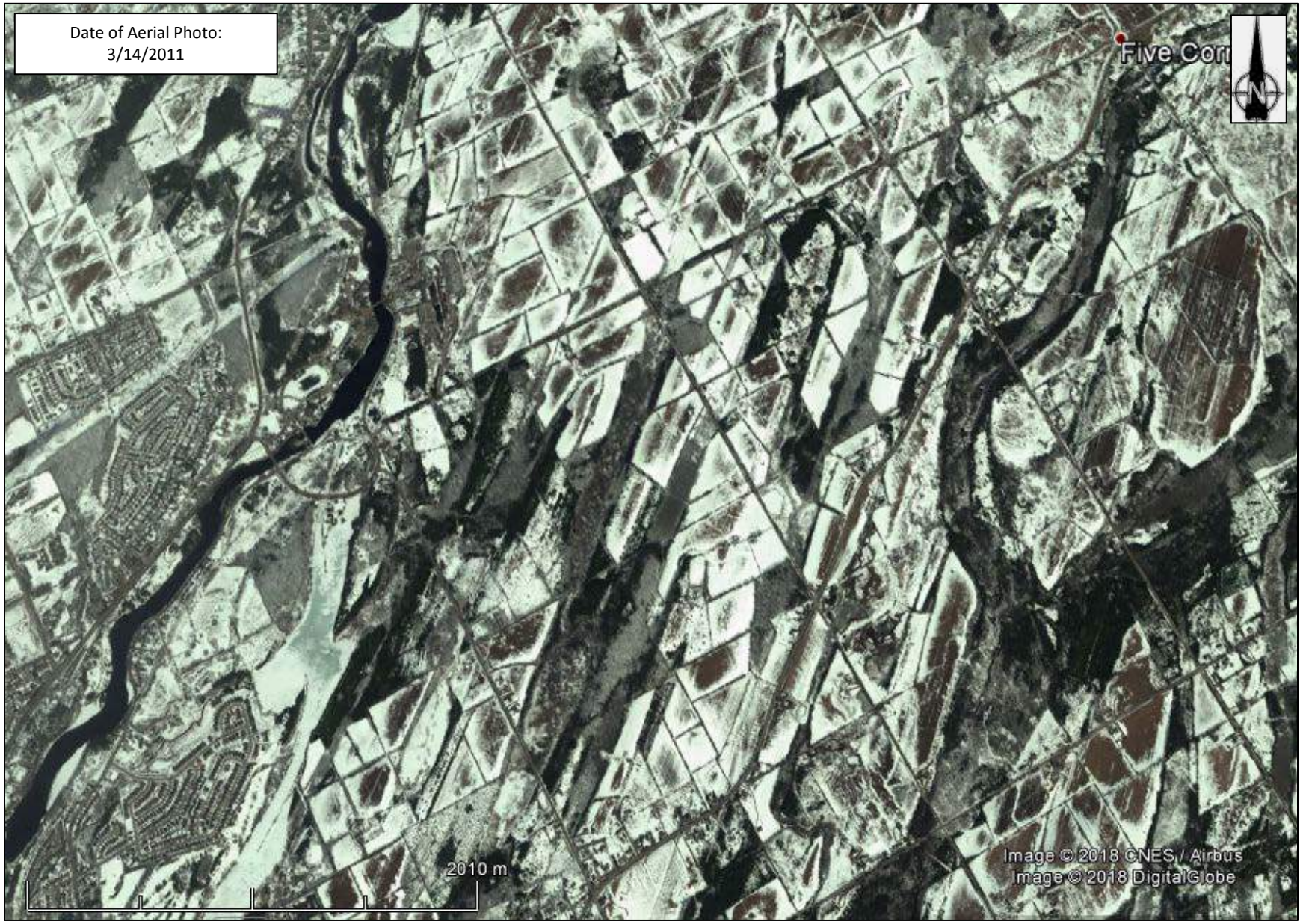
E. wills@dmwills.com

Drawn By	KP	Scale	See Scale Bar
Checked	TJ	Date	FEB. 2018
Project No.	17-10739	Drawing File No.	



Source: Image obtained from Google Earth. Image © 2016 DigitalGlobe. Imagery Dated 3/14/2011.

2011 Aerial Photograph

Wetland Evaluation

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Drawn By	KP	Scale	See Scale Bar
Checked	TJ	Date	FEB. 2018
Project No.	17-10739	Drawing File No.	

Source: Image obtained from Google Earth. Image © 2016 DigitalGlobe. Imagery Dated 4/12/2012.

2012 Aerial Photograph

Wetland Evaluation

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Drawn By	KP	Scale	See Scale Bar
Checked	TJ	Date	FEB. 2018
Project No.	17-10739	Drawing File No.	

2015 Aerial Photograph

Wetland Evaluation

Source: Image obtained from Google Earth. Image © 2016 DigitalGlobe. Imagery Dated 5/22/2015.

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Drawn By	TJ	Scale	See Scale Bar
Checked	BR	Date	FEB. 2018
Project No.	17-10739	Drawing File No.	

Source: Image obtained from Google Earth. ImageLandsat/ Copernicus. Imagery Dated 04/17/2017.

Oct. 2017 Aerial Photograph

Wetland Evaluation

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Drawn By	TJ	Scale	See Scale Bar
Checked	BR	Date	FEB. 2018
Project No.	17-10739	Drawing File No.	

Source: Image obtained from Google Earth. Image © 2016 DigitalGlobe. Imagery Dated 10/23/2014.

Oct. 2014 Aerial Photograph

Wetland Evaluation

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Drawn By	TJ	Scale	See Scale Bar
Checked	BR	Date	FEB. 2018
Project No.	17-10739	Drawing File No.	

Appendix B

Wetland Data Summary Form

Map Code	Field Code	GPS Coordinate	Dominant Form	Forms	# Forms	Dominant Species	Area	% Open Water			Open Water (ha)	Soil (ha)	Site Type	Fish Habitat			
								Low Est.	High Est.	Mean Est.				% Fish Habitat	Area (ha)	Habitat Type	Key Veg Group
cS1-A:c*,h,gc	1	17T 717157mE 4916213mN	c	c,h,gc	3	(Eastern White Cedar)	4.65	-	-	-	-	Sand	Swamp	-	-	-	-
tsS2-A:ts*,ne	2	17T 717150mE 4916441mN	ts	ts,ne	2	(Willow)	4.21	-	-	-	-	Sand	Swamp	-	-	-	-
hS3-A:h*,c,gc	3	17T 717166mE 4915597mN	h	h,c,gc	3	(poplar)	3.64	-	-	-	-	Sand	Swamp	-	-	-	-
cS4-A:c*,gc	4	17T 717296mE 4915847mN	c	c,gc	2	(Eastern White Cedar)	3.69	-	-	-	-	Sand	Swamp	-	-	-	-
gcM1-B:gc*,ne	5	17T 716591mE 4915441mN	gc	gc, ne	2	(hairy willow herb)	0.37	-	-	-	-	Sand	Marsh	-	-	-	-
tsS2-B:ts*,ne	6	17T 716572mE 4915361	ts	ts,ne	2	(buckthorn)	2.5	-	-	-	-	Sand	Swamp	-	-	-	-
tsS5-B:ts*,gc,ne	7	17T 716511mE 4915198mN	ts	ts, gc, ne	3	(dogwood)	3.31	-	-	-	-	Sand	Swamp	-	-	-	-
tsS6-B:ts*,h,gc	8	17T 716340mE 4914765mN	ts	ts,h,gc	3	(speckled alder)	0.5	10	10	10	.050	Sand	Swamp	10	.050	swamp	Reed Canary Grass
neS7-C:ne*,h,ts,gc	9	17T 717023mE 4915225mN	ne	ne,h,ts,gc	4	(Reed Canary Grass)	2.3	10	10	10	.222	Sand	Swamp	10	.222	swamp	Reed Canary Grass
cS4-D:c*,gc	10	17T 716312mE 4913860mN	c	c,gc	2	(white spruce)	2.51	-	-	-	-	Silt	Swamp	-	-	-	-

Map Code	Field Code	GPS Coordinate	Dominant Form	Forms	# Forms	Dominant Species	Area	% Open Water			Open Water (ha)	Soil (ha)	Site Type	Fish Habitat			
								Low Est.	High Est.	Mean Est.				% Fish Habitat	Area (ha)	Habitat Type	Key Veg Group
cS8-D:c*	11	17T 716238mE 4913942mN	c	c	1	(eastern white cedar)	0.25	-	-	-	-	Sand	Swamp	-	-	-	-
cS9-D:c*,h	12	17T 716476mE 4913908mN	c	c,h	2	(eastern white cedar)	1.39	-	-	-	-	Sand	Swamp	-	-	-	-
hS10-D:h*,ne	13	17T 716176mE 4914115mN	h	h,ne	2	(silver maple)	16.21	-	-	-	-	Silt	Swamp	-	-	-	-
hS11-D:h*,c,ts,gc	14	17T 716708mE 4914346mN	h	h,c,ts,gc	4	(Black Ash)	2.97	-	-	-	-	Sand	Swamp	-	-	-	-
tsS12-D:ts*,gc	15	17T 716769mE 4914661mN	ts	ts,gc	2	(grey dogwood)	2.47	-	-	-	-	Silt	Swamp	-	-	-	-
cS4-D:c*,gc	16		c	c,gc	2	(White Spruce)	1.27					Sand	Swamp				
reM2-E:re*	17	17T 716125mE 4912998mN	re	re	1	(cattails)	8.94	75	75	75	6.71	Mesic	Marsh	75	6.71	Low Marsh	Cattails
hS13-F:h*,gc	18		h	h,gc	2	Silver Maple	7.69					Sand	Swamp				
neS14-F:ne*,ts	19	17T 716025mE 4914055mN	ne	ne,ts	2	(reed canary grass)	1.07	10	10	10	.107	Mesic	Swamp	10	.11	swamp	Reed Canary Grass
hS15-F:h*,ts,gc	20	17T 716098mE 4913941mN	h	h,ts,gc	3	(Black Ash / Poplar)	2.26	-	-	-	-	Sand	Swamp	-	-	-	-
reM3-F:re*,su	21	17T 715868mE 4913649mN	re	re,su	2	(cattails)	4.05	20	20	20	.810	Mesic	Marsh	20	.810	Low Marsh	Cattails

Appendix C

Wetland Evaluation Data and Scoring Record

WETLAND EVALUATION DATA AND SCORING RECORD

i) Wetland Name: Nassau Wetland Complex

ii) MNR Administrative Region: Southern Region
MNR District: Peterborough
MNR Area Office: Peterborough

iii) Conservation Authority Jurisdiction: Otonabee Region

iv) County of Regional Municipality: City of Peterborough

v) Township/Geographic Twp and/or Local Municipality: Douro

vi) Lots and Concessions: Douro Township: LT7 Con. 10, LT6 Con. 9, Douro, LT7 Con. 9, Douro, LT8 Con. 10, Douro, LT5 Con. 10, Douro, LT5 Con. 9, Douro, LT5 Con. 11, Douro, LT4 Con. 11, Douro, LT3 Con. 11, Douro, LT2 Con. 11, Douro

vii) Ecodistrict/Ecoregion: 6E

viii) Map and Air Photo References: See Appendix B

a) Latitude: _____ Longitude: _____

b) UTM grid reference:
Zone: _____ Block: _____ E: _____ N: _____

c) National Topographic Series:
Map name(s): Used Land Information Ontario spacial data.

Map number(s): _____

Edition: _____
Scale: _____

d) Aerial photographs:
Date(s) photo taken: _____ Scale: _____
Flight & plate numbers: 1929-05-10(A1054-031_031; 1:20,000) 1963-04-29(A18757_068; 1:10,000) _1959-10-21 (A16868_167; 1:30,000) 1978-05-25(A24864_004; 1:25,000) 1981-04-30(A25686_088; 1:50,000)

e) Ontario Base Map numbers & scale: _____

ix) Wetland Size
(circle appropriate category, a or b)

a) Single contiguous wetland area

Total wetland size = 76.25 hectares

b) Wetland complexed comprised of 6 individual wetlands:

Wetland Unit No. 1 = 16.19 hectares
Wetland Unit No. 2 = 6.68 hectares
Wetland Unit No. 3 = 2.3 hectares
Wetland Unit No. 4 = 27.07 hectares
Wetland Unit No. 5 = 8.94 hectares
Wetland Unit No. 6 = 15.07 hectares
Wetland Unit No. 7 = _____ hectares
Wetland Unit No. 8 = _____ hectares
Wetland Unit No. 9 = _____ hectares
Wetland Unit No.10 = _____ hectares

(Attach additional sheet if necessary)

Total wetland size = 76.25 hectares *(add together size of each unit)*

Documentation requirements for evaluated wetland complexes (attach additional sheet if necessary):

- a statement of rationale for identifying a wetland complex;
- a statement of rationale for identifying any wetland complex less than 2 ha in total size;
- a statement of rationale for any vegetation community less than 0.5 ha in size;
- adherence to the wetland complexing rules (750 m; "watershed rule"; lacustrine wetlands); and
- written documentation of the reasons for including wetland units smaller than 2 ha.

The Wetland Complex consists of six (6) hydrologically connected wetland units separated by less than 750 m. Wetland Units are separated by municipal roadways. Two (2) vegetation community with less than 0.5 ha in size was identified for the following reason:

Map B (gcS5-B:gc*,ne) measured at 0.37ha This vegetation community was dominated by Hairy Willow Herb and was distinctly different from surrounding wetland communities.

Map D (cS9-D:c*) measured at 0.25 ha. This vegetation community was dominated by Eastern White Cedar and was distinctively different than the surrounding wetland communities.

Vegetation Form	FA
h	0.43
c	0.18
dh	
dc	
ts	0.17
ls	
ds	
gc	0.01
m	
ne	0.04
be	
re	0.17
ff	
f	
su	
u	

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 Growing Degree-Days/Soils *(max: 30 pts)*

Refer to page 43 of manual for further explanation.

1. Determine the correct GDD value for your wetland (use Figure 5).
2. Circle the appropriate GDD value from the evaluation table below.
3. Determine the Fractional Area (FA) of the wetland for each soil type.
4. Multiply the fractional area of each soil type by the applicable score-factor in the evaluation table.
5. Sum the scores for each soil type to obtain the final score (maximum score is 30 points).

NOTE: *In wetland complexes the evaluator should aim at determining the fractional area occupied by the categories for the complex as a whole.*

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

Soil Type	FA of wetland in soil type		Enter appropriate score-factor from above table		
Clay/Loam		x	22	=	
Silt/Marl:	0.28	x	18	=	5.04
Limestone:		x	15	=	
Sand:	0.54	x	13	=	7.02
Humic/Mesic:	0.18	x	11	=	1.98
Fibric:		x	9	=	
Granite:		x	7	=	
Total					14.04

GDD/Soils Score *(maximum 30 points)* 14

1.1.2 Wetland Type

(Fractional Areas = area of wetland type/total wetland area)

	Fractional Area		Score
Bog		x 3 =	
Fen		x 6 =	
Swamp	0.82	x 8 =	6.56
Marsh	0.18	x 15 =	2.7
Total	1	=	9.26

Wetland Type Score *(maximum 15 points)* 9

1.1.3 Site Type

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

	Fractional Area		Score
Isolated		x 1 =	
Palustrine (permanent or intermittent flow)	1.0	x 2 =	2.0
Riverine		x 4 =	
Riverine (at rivermouth)		x 5 =	
Lacustrine (at rivermouth)		x 5 =	
Lacustrine (with barrier beach)		x 3 =	
Lacustrine (exposed to lake)		x 2 =	
Total		=	

Site Type Score *(maximum 5 points)* 2

1.2 BIODIVERSITY

1.2.1 Number of Wetland Types

(Check only one)

	One	=	9 points
X	Two	=	13
	Three	=	20
	Four	=	30

Number of Wetland Types Score
(maximum 30 points) _____ 13

1.2.2. Vegetation Communities

Use the data sheet provided in Appendix 4 to record and score vegetation communities (the completed form must be attached to this data record)

Scoring *(circle only one option for each of the columns below):*

Total # of communities with 1-3 forms	
1 =	1.5 pts
2 =	2.5
3 =	3.5
4 =	4.5
5 =	5
6 =	5.5
7 =	6
8 =	6.5
9 =	7
10 =	7.5
11 =	8
+ 0.5 for each additional community	
= 12	

Total # of communities with 4-5 forms	
1 =	2 pts ☐
2 =	3.5
3 =	5
4 =	6.5
5 =	7.5
6 =	8.5
7 =	9.5
8 =	10.5
9 =	11.5
10 =	12.5
11 =	13
+ 0.5 for each additional community	
= 3.5	

Total # of communities with 6 or more forms	
1 =	3 pts
2 =	5
3 =	7
4 =	9
5 =	10.5
6 =	12
7 =	13.5
8 =	15
9 =	16.5
10 =	18
11 =	19
+ 1.0 for each additional community	
=	

Vegetation Communities Score
(maximum 45 points) _____ 15.5

1.2.3 Diversity of Surrounding Habitat

Check all appropriate items. Only habitat within 1.5 km of the wetland boundary and at least 0.5 ha in size are to be scored.

X	row crop
X	pasture
X	abandoned agricultural land
	deciduous forest
X	coniferous forest
X	mixed forest*
	abandoned pits and quarries
X	open lake or deep river
	fence rows with deep cover, or shelterbelts
X	terrain appreciably undulating, hilly or with ravines
X	creek flood plain

** "Mixed forest" is defined as either 25% coniferous trees distributed singly or in clumps in deciduous forest, or 25% deciduous trees distributed singly or in clumps in coniferous forest. Note that Forest Resource Inventory (FRI) maps can be misleading since 25% conifer within a unit could be entirely concentrated around a lake.*

Score 1 point for each feature checked, up to a maximum of 7 points.

Diversity of Surrounding Habitat Score
(maximum 7 points) 7

1.2.4 Proximity to Other Wetlands

Check highest appropriate category. (Note: If the wetland is lacustrine, score option #1 at 8 points).

✓		Points
X	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river within 1.5 km	8
	Hydrologically connected by surface water to other wetlands (same dominant wetland type) within 0.5 km	8
	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river from 1.5 to 4 km away	5
	Hydrologically connected by surface water to other wetlands (same dominant wetland type) from 0.5 to 1.5 km *away*	5
	Within 0.75 km of other wetlands (different dominant wetland type) or open water body, but not hydrologically connected by surface water	5
	Within 1 km of other wetlands, but not hydrologically connected by surface water	2
	No wetland within 1 km	0

Name and distance (from wetland) of wetlands/waterbodies scored above:

Otonabee River is adjacent to the southern portion of Wetland Unit F.

Proximity to other Wetlands Score
(maximum 8 points) 8

1.2.5 Interspersion

Number of Intersections = 85

✓	Number of Intersections *(Check one only)*	Points
	26 or less	= 3
	27 to 40	= 6
	41 to 60	= 9
	61 to 80	= 12
x	81 to 100	= 15
	101 to 125	= 18
	126 to 150	= 21
	151 to 175	= 24
	176 to 200	= 27
	>200	= 30

Interspersion Score *(maximum 30 points)* 15

1.2.6 Open Water Types

NOTE: *this attribute is only to be scored for permanently flooded open water within the wetland (adjacent lakes do not count). Check one option only.*

✓	Open Water Type	Characteristic	Points
	Type 1	Open water occupies < 5 % of wetland area	= 8
	Type 2	Open water occupies 5-25% of wetland (occurring in central area)	= 8
x	Type 3	Open water occupies 5-25% (occurring in various-sized ponds, dense patches of vegetation or vegetation in diffuse stands)	= 14
	Type 4	Open water occupies 26-75% of wetland (occurring in a central area)	= 20
	Type 5	Open water occupies 26-75% of wetlands (small ponds and embayments are common)	= 30
	Type 6	Open water occupies 76%-95% of wetland (occurring in large central area; vegetation is peripheral)	= 8
	Type 7	Open water occupies 76-95% of wetland (vegetation in patches or diffuse open stands)	= 14
	Type 8	Open water occupies more than 95% of wetland area	= 3
	No open water		= 0

Open Water Type Score *(maximum 30 points)* 14

Wetland Interspersion Map

NAD83 UTM Zone 17 North

0 100 200 400 600 800 1,000 1,200 1,400 m

WILLS
25 YEARS STRONG

D.M. Wills Associates Limited
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Legend

- Interspersion
- Inferred Wetland Community Boundary

Drawn by: K.P.	Scale (Horz.) 1:25,000
Checked by: T.J.	
Manager: M.L.	Map Date Sept. 2018
Project No. 10739	Map File No.

1.3 SIZE (BIOLOGICAL COMPONENT)

Total Size of Wetland = 76.25 ha

Sum of scores from Biodiversity Subcomponent

1.2.1
+ 1.2.2
+ 1.2.3
+ 1.2.4
+ 1.2.5
+ 1.2.6

73

Circle the appropriate score from the table below.

Wetland size (ha)	Total Score for Biodiversity Subcomponent									
	<37	37-47	48-60	61-72	73-84	85-96	97-108	109-120	121-132	>132
<20 ha	1	5	7	8	9	17	25	34	43	50
20-40	5	7	8	9	10	19	28	37	46	50
41-60	6	8	9	10	11	21	31	40	49	50
61-80 ✔	7	9	10	11 ☐	13	23	34	43	50	50
81-100	8	10	11	13	15	25	37	46	50	50
101-120	9	11	13	15	18	28	40	49	50	50
121-140	10	13	15	17	21	31	43	50	50	50
141-160	11	15	17	19	23	34	46	50	50	50
161-180	13	17	19	21	25	37	49	50	50	50
181-200	15	19	21	23	28	40	50	50	50	50
201-400	17	21	23	25	31	43	50	50	50	50
401-600	19	23	25	28	34	46	50	50	50	50
601-800	21	25	28	31	37	49	50	50	50	50
801-1000	23	28	31	34	40	50	50	50	50	50
1001-1200	25	31	34	37	43	50	50	50	50	50
1201-1400	28	34	37	40	46	50	50	50	50	50
1401-1600	31	37	40	43	49	50	50	50	50	50
1601-1800	34	40	43	46	50	50	50	50	50	50
1801-2000	37	43	47	49	50	50	50	50	50	50
>2000	40	46	50	50	50	50	50	50	50	50

Size Score (Biological Component) *(maximum 50 points)* 13

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 Wood Products

Check the option that best reflects the total area (ha) of forested wetland (i.e., areas where the dominant vegetation form is h or c). Note that this is the area of all the forested vegetation communities, not total wetland size. Do not include areas where harvest is not permitted. Check only one option.

Area of wetland used for scoring 2.1.1: 46.53

	< 5 ha	=	0 pts
	5 - 25 ha	=	3
X	26 – 50 ha	=	6
	51 – 100 ha	=	9
	101 – 200 ha	=	12
	> 200 ha	=	18

Source of information:

Wood Products Score *(maximum 18 points)* 6

2.1.2 Wild Rice

Check only one.

	Present (min. size 0.5 ha)	=	6 pts
X	Absent	=	0
	Harvest not permitted	=	0

Source of information:

Wild Rice Score *(maximum 6 points)* 0

Source: Field observations between June - September 2016, and June - October 2017.

2.1.3 Commercial Baitfish

Check only one.

X	Present	=	12 pts
	Absent	=	0
	Fishing not permitted	=	0

Source of information:

Commercial Fish Score *(maximum 12 points)* 12

Source: Field observations between June - September 2016, and June - October 2017.

2.1.4 Furbearers

Only species recognized as furbearers under the Fish & Wildlife Conservation Act may be scored here. Score 3 *points for each furbearer species listed, up to a maximum of 12 points. Score 0 points if trapping is prohibited.*

	Name of furbearer	Source of information
1.	Coyote	- > Tracks observed during field investigations
2.	Red Squirrel	- > Tracks observed during field investigations
3.	Raccoon	- > Tracks observed during field investigations
4.	Muskrat	- > Tracks observed during field investigations
5.		
6.		
7.		

Furbearer Score *(maximum 12 points)* 12

2.2 RECREATIONAL ACTIVITIES

Sources of information and reasons for scoring a wetland under high or moderate use below, must be included below.

Circle one score for each of the activities listed. Score is cumulative – add score for hunting, nature enjoyment and fishing together for final score.

Intensity of Use	Type of Wetland-Associated Use: Hunting	Nature Enjoyment/ Ecosystem Study	Fishing
High	40 points	40 points ☐	40 points
Moderate	20	20	20
Low	8	8	8 ☐
Not Possible/ No evidence	0	0	0

Sources of information (include evidence/criteria forming basis for score and any relevant reference used to obtain that information):
- e.g., Hunting scored at 20 points: 3 hunting blinds observed; hunters using area frequently monitored for compliance (source: D. Black, MNR Conservation Officer)

Hunting: Source: Fall 2017 - Spring 2018 2017 Hunting Regulations Summary. Retreived from https://dr6j45jk9xcmk.cloudfront.net/documents/5040/hunt

Nature: Trent University - Morton Family Trail, John de Pencier Trail. Wildlife Sanctuary Trails. Source: Trail Map. Retrieved from http://www.trentu.ca/natureareas/documents/TrailMap

Fishing: During field investigations there was evidence of fishing (i.e. worm containers, line, etc) and evaluator has fished in parts of the area.

Recreational Activities Score *(maximum 80 points)*	36

2.3 LANDSCAPE AESTHETICS

2.3.1 Distinctness

Check only one.

	Clearly Distinct	= 3 pts
X	Indistinct	= 0

Landscape Distinctness Score *(maximum 3 points)* 0

2.3.2 Absence of Human Disturbance

Check only one.

	Human disturbances absent or nearly so	= 7 pts
	One or several localized disturbances	= 4
X	Moderate disturbance; localized water pollution	= 2
	Wetland intact but impairment of ecosystem quality intense in some areas	= 1
	Extreme ecological degradation, or water pollution severe and widespread	= 0

Details regarding type, extent and location of disturbance scored:

Agricultural activities, road usage/runoff, storm water runoff.

Source of information:

Source: Field observations between June- September 2016, and June - October 2017.

Absence of Human Disturbance Score *(maximum 7 points)* 2

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1 Educational Uses

Check highest appropriate category.

x	Frequent	= 20 pts
	Infrequent	= 12
	No visits	= 0

Details regarding the type and frequency of education uses scored above:

Long term studies have taken place as well as undergraduate outdoor class sessions.

Source of information:

Undergraduate classes observed during field investigations between June 2017 and October 2017.

Educational Uses Score *(maximum 20 points)* 20

2.4.2 Facilities and Programs

Check all appropriate options, score highest category checked.

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

Additional Notes/Comments:

Camp Kawartha Outdoor Education Centre.
Trent University.

Source of information:

Source: Field observations between June - September 2016, and June - October 2017.

Facilities and Programs Score *(maximum 8 points)* 8

2.4.3 Research and Studies

Check all that apply; score highest category checked

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

List of reports, publications, research studies etc. scored above:

Source: Wetland Complex Nature Area (WCNA). Retrieved from https://www.trentu.ca/natureareas/documents/MicrosoftWord-WETLANDCOMPLEXNATUREAREA.pdf.

Source: Oldham, M. J. (1999). Checklist of the Vascular Plants of Peterborough County. Natural Heritage Information Centre. Peterborough, Ontario.

Source: Tozer, D. C., Abraham, K. F., & Nol, E. (2006). Improving the accuracy of counts of wetland breeding birds at the point scale. Wetlands, 26(2), 518-527.

Research and Studies Score *(maximum 12 points)* 10

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Name of Settlement: Peterborough - adjacent to Trent University

Distance of wetland from settlement: Within City of Peterborough's borders - on Trent University campus

Population of settlement: 82,000 (2017) (Source: peterborough.ca)

Circle only the highest score applicable

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

Proximity to Human Settlement Score *(maximum 40 points)* 26

2.6 OWNERSHIP

FA of wetland held by or held under a legal contract by a conservation body (as defined by the *Conservation Land Act*) for wetland protection	____ x 10 = ____
FA of wetland occurring in provincially or nationally protected areas (e.g., parks and conservation reserves)	____ x 10 = ____
FA of wetland area in Crown/public ownership, not as above	____ x 8 = ____
FA of wetland area in private ownership, not as above	1.0 x 4 = 4

Source of information:

Source: maps.peterborough.ca/emaps/

Ownership Score *(maximum 10 points)* 4

2.7 SIZE (SOCIAL COMPONENT)

Total Size of Wetland = 76.25 ha Sum of scores from Subcomponents 2.1, 2.2, and 2.5 = 84

Circle the appropriate score from the table below.

	Total for Size Dependent Social Features									
	<31	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	>150
<2 ha	1	2	4	8	10	12	14	14	14	15
2-4	1	2	4	8	12	13	14	14	15	16
5-8	2	2	5	9	13	14	15	15	16	16
9-12	3	3	6	10	14	15	15	16	17	17
13-17	3	4	7	10	14	15	16	16	17	17
18-28	4	5	8	11	15	16	16	17	17	18
29-37	5	7	10	13	16	17	18	18	19	19
38-49	5	7	10	13	16	17	18	18	19	20
50-62	5	8	11	14	17	17	18	19	20	20
63-81	5	8	11	15	17	18	19	20	20	20
82-105	6	9	11	15	18	18	19	20	20	20
106-137	6	9	12	16	18	19	20	20	20	20
138-178	6	9	13	16	18	19	20	20	20	20
179-233	6	9	13	16	18	20	20	20	20	20
234-302	7	9	13	16	18	20	20	20	20	20
303-393	7	9	14	17	18	20	20	20	20	20
394-511	7	10	14	17	18	20	20	20	20	20
512-665	7	10	14	17	18	20	20	20	20	20
666-863	7	10	14	17	19	20	20	20	20	20
864-1123	8	12	15	17	19	20	20	20	20	20
1124-1460	8	12	15	17	19	20	20	20	20	20
1461-1898	8	13	15	18	19	20	20	20	20	20
1899-2467	8	14	16	18	20	20	20	20	20	20
>2467	8	14	16	18	20	20	20	20	20	20

Total Size Score (Social Component) 17

2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE

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

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

2.8.1 Aboriginal Values

X	Significant	= 30 pts
	Not Significant	= 0
X	Unknown	= 0

Additional Comments/Notes:

MNRF records: Curve Lake First Nation letter to Jeff Humble, Director, Planning and Development Services Department, City Hall, Peterborough dated March 7, 2018, "There are Provincially Significant Wetlands in the area as well as some unevaluated wetlands – areas which are of great significance to Anishinaabeg peoples with regard to harvesting foods and medicines, thus must be assessed and protected accordingly."

2.8.2 Cultural Heritage

	Significant	= 30 pts
	Not Significant	= 0
^	Unknown	= 0

Additional Comments/Notes:

Through a preliminary online review of Trent University History Department , Trent -Severn Waterway-National Historic Site, Ministry of Tourism and Culture, and the City of Peterborough Planning Department this evaluation was unable to determine the cultural heritage significance of this wetland complex.

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

3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

Check one of the following four options.

[ ] If wetland is a single contiguous coastal wetland, ➞ score 0 points for this section.

[ ] If all wetland units of a wetland complex are coastal wetland units, ➞ score 0 points for this section.

[ ] If wetland or wetland complex is entirely isolated in site type, ➞ score 100 points automatically.

[x] Wetland not as above – proceed through 'steps' A through L below.

(A) Total wetland area = 76.25 ha

(B) Size of wetland's catchment = 328.1 ha

(C) Size of other detention areas in catchment = 0 ha

(D) Size of 'isolated' portions of wetland = 0 ha (FA = 0)

(E) Size of coastal units of wetland complex = 0 ha (FA = 0)

Points for Isolated Portion of Wetland (if not applicable, enter '0'):
(F) (FA of D) x 100 pts = 0 pts

Points for Coastal Portion(s) of Wetland (if not applicable, enter '0')
(G) (FA of E) x 100 pts = 0 pts

(H) Size of wetland minus the isolated and coastal portions = (A – D – E) = 76.87 ha

(I) Number of points available to score 'rest' of wetland = (100 – F – G) = 100 pts

(J) Total area of upstream detention areas = (A + C) = 76.87 ha

(K) Upstream Detention Factor = ((H/J) x 2) = 1.0 (maximum 1.0)

(L) Attenuation Factor = ((H/B) x 10) = 1.0 (maximum 1.0)

Flood Attenuation Final Score = ([((K + L) /2) x I] + F) = 100

Flood Attenuation Score *(maximum 100 points)*	100

3.2 WATER QUALITY IMPROVEMENT

3.2.1 Short Term Water Quality Improvement

Step 1: Determination of maximum initial score

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

Step 2: Determination of Watershed Improvement Factor (WIF)

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

(FA = area of site type/total area of wetland)

FA of isolated wetland	=	x 0.5 =	
FA of riverine wetland	=	x 1.0 =	
FA of palustrine wetland with no inflow	=	.12 x 0.7 =	0.084
FA of palustrine wetland with inflows	=	.88 x 1.0 =	.88
FA of lacustrine on lake shoreline	=	x 0.2 =	
FA of lacustrine at lake inflow or outflow	=	x 1.0 =	

Sum (*WIF cannot exceed 1.0*) 0.964

Step 3: Determination of Catchment Land Use Factor (LUF)

(Choose the first category that fits upstream land use in the catchment.)

x	Over 50% agricultural and/or urban	= 1.0
	Between 30 and 50% agricultural and/or urban	= 0.8
	Over 50% forested or other natural vegetation	= 0.6

LUF (*maximum 1.0*) 1.0

Step 4: Determination of Pollutant Uptake Factor (PUF)

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

(FA = area of vegetation type/total area of wetland)

FA of wetland with live trees, shrubs, herbs or mosses (c, h, ts, ls, gc, m)	= 0.79 x	0.75	=	0.5925
FA of wetland with emergent, submergent or floating vegetation (re, be, ne, su, f, ff)	= 0.21 x	1.0	=	0.215
FA of wetland with little or no vegetation (u)	= x	0.5	=	

Sum (*PUF cannot exceed 1.0*) 0.803

Step 5: Calculation of final score

[ ]	Wetland on defined 5 major lakes or 5 major rivers	0
[x]	All other wetlands – calculate as follows	
	Initial score	60
	Watershed Improvement Factor (WIF)	0.96
	Land Use Factor (LUF)	1.0
	Pollutant Uptake Factor (PUF)	.803
	Final score: 60 x WIF x LUF x PUF =	46.253

Short Term Water Quality Improvement Score
(maximum 60 points) 46

3.2.2 Long Term Nutrient Trap

Step 1:

[ ]	Wetland on defined 5 major lakes or 5 major rivers = 0 points
[x]	All other wetlands (Proceed to Step 2)

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

[ ]	Wetland located in a river mouth	= 10 pts
[ ]	Wetland is a bog, fen, or swamp with more than 50% of the wetland being covered with organic soil	= 10
[x]	Wetland is a bog, fen, or swamp with less than 50% of the wetland being covered with organic soil	= 3
[ ]	Wetland is a marsh with more than 50% of the wetland covered with organic soil	= 3
[ ]	None of the above	= 0

Long Term Nutrient Trap Score
(maximum 10 points) 3

3.2.3 Groundwater Discharge

Circle the characteristics that best describe the wetland being evaluated and then sum the scores. If the sum exceeds 30 points, assign the maximum score of 30). Note: for wetland type, wetland type scored does not have to the dominant type in the wetland.

Wetland Characteristics	Potential for Discharge		
	None to Little	Some	High
Wetland type	Bog = 0	Swamp/Marsh = 2 ✔	Fen = 5
Topography	Flat/rolling = 0 ✔	Hilly = 2	Steep = 5
Wetland area: Upslope catchment area	Large (>50%) = 0	Moderate (5-50%) = 2 ✔	Small (<5%) = 5
Lagg development	None found = 0 ✔	Minor = 2	Extensive = 5
Seeps	None = 0 ✔	≤ 3 seeps = 2	> 3 seeps = 5
Surface marl deposits	None = 0 ✔	≤ 3 sites = 2	> 3 sites = 5
Iron precipitates	None = 0 ✔	≤ 3 sites = 2	> 3 sites = 5
Located within 1 km of a major aquifer	N/A = 0	N/A = 0	Yes = 10 ☐ No = 0

Additional Comments/Notes:

Groundwater Discharge Score
(maximum 30 points) _____ 4

3.3 CARBON SINK

Check only one of the following:

	Bog, fen or swamp with more than 50% coverage by organic soil	=	5 pts
x	Bog, fen or swamp with between 10 to 50% coverage by organic soil	=	2
	Marsh with more than 50% coverage by organic soil	=	3
	Wetlands not in one of the above categories	=	0

Source of information:

Source: Field observations between June - September 2016, and June - October 2017.

Carbon Sink Score
(maximum 5 points) 2

3.4 SHORELINE EROSION CONTROL

From the wetland vegetation map determine the dominant vegetatino type within the erosion zone for lacustrine and riverine site type areas only. Score according to the factors listed below.

Step 1:

x	Wetland entirely isolated or palustrine	=	0 pts
	Any part of the wetland is riverine or lacustrine	=	Go to step 2

Step 2: *Choose the one characteristic that best describes the shoreline vegetation (see page 109 for description of "shoreline".)*

	Trees and shrubs	=	15 pts
	Emergent vegetation	=	8
	Submergent vegetation	=	6
	Other shoreline vegetation	=	3
	No vegetation	=	0

Shoreline Erosion Control Score
(maximum 15 points) 0

3.5 GROUNDWATER RECHARGE

3.5.1 Site Type

Wetland > 50% lacustrine (by area) or located on one of the five major rivers		= 0 pts	
Wetland not as above. Calculate final score as follows:			
■ FA of isolated or palustrine wetland	=	1.0 x 50 =	50.0
■ FA of riverine wetland	=	0.0 x 20 =	0
■ FA of lacustrine wetland (not dominant site type)	=	x 0 =	0

Groundwater Recharge/Wetland Site Type Score *(maximum 50 points)* 50.0

3.5.2 Soil Recharge Potential

*Circle only one choice that **best** describes the soils in **the area surrounding the wetland** being evaluated (the soils within the wetland are not scored here).*

Dominant Wetland Type	Group A, B, C (sands, gravels, loams)	Group D (clays, substrates in high water tables, shallow substrates over impervious materials such as bedrock)
Lacustrine or major river	0	0
Isolated	10	5
Palustrine	7 ☑	4
Riverine (not on a major river)	5	2

Groundwater Recharge/Wetland Soil Recharge Potential Score *(maximum 10 points)* 7

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 Wetland Types

Ecodistrict	Rarity within the Landscape (4.1.1.1)	Rarity of Wetland Type (4.1.1.2)			
		Marsh	Swamp	Fen	Bog
6E-1	60	40	0	80	80
6E -2	60	40	0	80	80
6E-4	60	40	0	80	80
6E-5	20	40	0	80	80
6E-6	40	20	0	80	80
6E-7	60	10	0	80	80
6E-8 ✔	20 ✔	20 ✔	0 ✔	80	80
6E-9	0	20	0	80	80
6E-10	20	0	20	80	80
6E-11	0	30	0	80	80
6E-12	0	30	0	60	80
6E-13	60	10	0	80	80
6E-14	40	20	0	40	80
6E-15	40	0	0	80	80
6E-16	60	20	0	80	60
6E-17	40	10	0	30	80
7E-1	60	0	60	80	80
7E-2	60	0	0	80	80
7E-3	60	00	0	80	80
7E-4	80	0	0	80	80
7E-5	60	20	0	80	80
7E-6	80	30	0	80	80

4.1.1.1 Rarity within the Landscape

Choose appropriate score from 2nd column above.

Score *(maximum 80 points)* 20

4.1.1.2 Rarity of Wetland Type

Score is cumulative, based on presence/absence. Circle all appropriate scores from above table and sum.

Score *(maximum 80 points)* 20

4.1.2 Species

4.1.2.1 Reproductive Habitat for an Endangered or Threatened Species

Under the "Activity" column, when scoring animal species, record what the animal was doing when observed (e.g., nesting, courtship, singing, etc).

Common Name	Scientific Name	Activity	Date Observed	Info Source
None Observed				Field Investigations

For each species score 250 points. (Score is cumulative, no maximum score)

Additional Notes/Comments:

No species classified as endangered or threatened that utilize the wetland for reproductive habitat within the Study Area were confirmed or documented through background research. See species list Appendix E. No observations of endangered or threatened species were made during the evaluation that meet the criteria set out in the OWES.

Reproductive Habitat for Endangered or Threatened Species *(no maximum)* 0

4.1.2.2 Traditional Migration or Feeding Habitat for an Endangered or Threatened Species

Under the "Activity" column, when scoring animal species, record what the animal was doing when observed (e.g., nesting, courtship, singing, feeding, resting etc). Dates that species has been recorded using the wetland must be included in the table below.

Common Name	Scientific Name	Activity	Dates Observed	Info Source
Blandings Turtle	Emydoidea blandingii	Basking	May-4-2016	MNRF

For one species score 150 points; for each additional species score 75 points. (Score is cumulative)

Additional Notes/Comments:

MNRF - Resubmitted Nassau Wetland Complex Evaluation Review (Pat+File #:PB2018-0438) Correspondence Dated February-13-2019

Traditional Habitat for Endangered or Threatened Species *(no maximum)*	150

4.1.2.3 Provincially Significant Animal Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
Eastern Wood-Pewee	Contopus virens	Auditory	20/06/2017	Field Obs.

Additional Notes/Comments:

Source: Field observations 20/06/2017

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

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

Provincially Significant Animal Species *(no maximum)* _____	50

4.1.2.4 Provincially Significant Plant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
None Found				

Additional Notes/Comments:

Following the criteria from OWES no observations were made

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

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

Provincially Significant Plant Species
(no maximum) _____ 0

4.1.2.5 Regionally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
Fox Grape	Vitis labrusca	N/A	July -2017	Field Obs.

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

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

Regionally Significant Species Score *(no maximum score)* _____ 20

4.1.2.6 Locally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
None observed				Field Investigation

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

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

Locally Significant Species Score *(no maximum score)* _____ 0

4.2 SIGNIFICANT FEATURES AND HABITATS

4.2.1 Colonial Waterbirds

Record all available information. Score the highest applicable category. Include additional information as possible (e.g., nest locations, etc).

Activity	Species	Info Source	Points
Currently nesting			= 50
Known to have nested within the past 5 years			= 25
Active feeding area (great blue heron excluded)			= 15
None known			= 0

Additional Notes/Comments:

No species observed.

Colonial Waterbird Nesting Score *(maximum 50 points)*	0

4.2.2 Winter Cover for Wildlife

Score highest appropriate category. Include rationale/sources of information.

	Provincially significant	= 100 pts
	Significant in Ecoregion	= 50
	Significant in Ecodistrict	= 25
X	Locally significant	= 10
	Little or poor winter cover	= 0

Species/habitat/vegetation community scored *(e.g., winter deer cover in hemlock swamp, S3 and S4b)*:

Through correspondence with MNRF, there may be Significant Wildlife Habitat within the wetland complex. Agricultural lands are adjacent to the wetland complex and are a common area for White-tailed Deer to congregate in the winter. There are significant portions of the wetland complex which has a canopy cover of predominantly coniferous trees which provide cover in the winter for White-tailed Deer.

Source of information:

Source: Field observations between June - September 2016, and June - October 2017.
Source: Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Retrieved from https://dr6j45jk9xcmk.cloudfront.net/documents/4775/schedule-6e-jan-2015-access-ver-final-s.pdf.

Winter Cover for Wildlife Score *(maximum 100 points)*	10

4.2.3 Waterfowl Staging and/or Moulting Areas

Check highest level of significance for both staging and moulting; add scores for staging and for moulting together for final score. However, maximum score for evaluation under this section is 150 points.

	Staging		Moulting	
Nationally/internationally significant		= 150 pts		= 150 pts
Provincially significant		= 100		= 100
Significant in the Ecoregion		= 50		= 50
Significant in Ecodistrict		= 25		= 25
Known to occur		= 10		= 10
Not possible/Unknown	X	= 0	X	= 0

Species/habitat/vegetation community scored *(e.g., approx 20 mallards in W3)*:

Source of information:

Waterfowl Staging/Moulting Score
(maximum 150 points) 0

4.2.4 Waterfowl Breeding

Check highest level of significance.

	Nationally/internationally significant	= 150 pts
	Provincially significant	= 100
	Significant in the Ecoregion	= 50
	Significant in Ecodistrict	= 25
X	Habitat Suitable	= 10
	Habitat not suitable	= 0

Species/habitat/vegetation community scored *(e.g., mallard in W3)*:

Suitable habitat exists.

Source of information:

Source: Field observations between June - September 2016, and June - October 2017.

Waterfowl Breeding Score
(maximum 150 points) 10

4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area

Check highest level of significance.

	Nationally / internationally significant	= 150 pts
	Provincially significant	= 100
	Significant in Ecoregion	= 50
	Significant in Ecodistrict	= 25
	Known to occur	= 10
X	Not possible / Unknown	= 0

Species/habitat/vegetation community scored:

Source of information:

Unknown

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

4.2.6 Fish Habitat

4.2.6.1 Spawning and Nursery Habitat

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

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

7.52 ha (fish habitat App B)

Step 1:

	Fish habitat is not present within the wetland	Go to Step 7, Score 0 points
x	Fish habitat is present within the wetland	Go to Step 2

Step 2: *Choose only one option*

	Significance of the spawning and nursery habitat within the wetland is known	Go to Step 3
x	Significance of the spawning and nursery habitat within the wetland is not known	Go through Steps 4, 5 and 6

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

	Significant in Ecoregion	Go to Step 7, Score 100 points
	Significant in Ecodistrict	Go to Step 7, Score 50 points
	Locally Significant Habitat (5.0+ ha)	Go to Step 7, Score 25 points
	Locally Significant Habitat (<5.0 ha)	Go to Step 7, Score 15 points

Source of information:

Step 4: Low Marsh = the 'permanent' marsh area, from the existing water line out to the outer boundary of the wetland.

	Low marsh not present	Go to Step 5
x	Low marsh present	Continue through Step 4, scoring as noted below

Scoring of Low Marsh:

1. Check the appropriate **Vegetation Group** (see Appendix 7) for each Low Marsh community. (Based on the one most clearly dominant plant species of the dominant form in each Low Marsh vegetation community.)
2. Sum the areas (ha) of the vegetation communities assigned to each **Vegetation Group.**
3. Use these areas to assign an **Area Factor** for each checked **Vegetation Group.**
4. Multiply the **Area Factor** by the **Multiplication Factor** for each row to calculate **Score.**
5. Sum all numbers in Score column to get **Total Score for Low Marsh.**

Scoring for Presence of Key Vegetation Groups – Low Marsh

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (from Table 8)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed	x	07.52	0.4	5	2.0
4	Arrowhead-Pickerelweed				5	
5	Duckweed				2	
6	Smartweed-Waterwillow				6	
7	Waterlily-Lotus				11	
8	Waterweed-Watercress				9	
9	Ribbongrass				10	
10	Coontail-Naiad-Watermilfoil				13	
11	Narrowleaf Pondweed				5	
12	Broadleaf Pondweed				8	
	Total Score for Low Marsh (*maximum 75 points*)					2.0

Continue to Step 5

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

X	High marsh not present	Go to Step 6
	High marsh present	Continue through Step 5, scoring as noted below

Scoring of High Marsh:

1. Check the appropriate **Vegetation Group** (see Appendix 7) for each High Marsh community. (Based on the one most clearly dominant plant species of the dominant form in each High Marsh vegetation community.)
2. Sum the areas (ha) of the vegetation communities assigned to each **Vegetation Group**.
3. Use these areas to assign an **Area Factor** (from Table 8) for each checked **Vegetation Group**.
4. Multiply the **Area Factor** by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for High Marsh.**

Scoring for Presence of Key Vegetation Groups – High Marsh

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (from Table 8)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
	Total Score for High Marsh (*maximum 25 points*)					

Continue to Step 6

Step 6:

	Swamp containing fish habitat not present	Go to Step 7
x	Swamp containing fish habitat present	Continue through Step 6, scoring as follows

Scoring of Swamp:

1. Determine the total area (ha) of seasonally flooded swamp communities within the wetland containing fish habitat and record below.
2. Determine the total area (ha) of permanently flooded swamp communities within the wetland containing fish habitat and record below.
3. Use these areas to assign an **Area Factor** (from Table 8).
4. Multiply the Area Factor by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for Swamp**.

Scoring Swamps for Fish Habitat (Seasonally flooded, Permanently flooded)

Swamp Containing Fish Habitat	Present (check)	Total Area (ha)	Area Factor (from Table 8)	Multiplication Factor	Score
Seasonally Flooded Swamp	X	0.83	0.2	10	2
Permanently Flooded Swamp				10	
			Total Score for Swamp (*maximum 20 points*)		2

Continue to Step 7

Step 7: CALCULATION OF FINAL SCORE

NOTE: Scores for Steps 4, 5 and 6 are only recorded if Steps 1 and 3 have not been scored.

A. Score from Step 1 (Fish habitat not present) = _____
B. Score from Step 3 (significance known) = _____
C. Score from Step 4 (Low Marsh) = 2.0
D. Score from Step 5 (High Marsh) = 46.2
E. Score from Step 6 (Swamp) = 2.0

Calculation of Final Score for Spawning and Nursery Habitat = A or B or Sum of C, D, and E

Score for Spawning and Nursery Habitat *(maximum 100 points)* _____	4

4.2.6.2 Migration and Staging Habitat

Step 1:

	Staging or Migration Habitat is not present in the wetland	Go to Step 4, Score 0 points
X	Staging or Migration Habitat is present in the wetland, significance of the habitat is known	Go to Step 2
	Staging or Migration Habitat is present in the wetland, significance of the habitat is not known	Go to Step 3

Step 2: Select the highest appropriate category below. Ensure that documentation is attached to the data record.

	Significant in Ecoregion	Score 25 points in Step 4
	Significant in Ecodistrict	Score 15 points in Step 4
	Locally Significant	Score 10 points in Step 4
X	Fish staging and/or migration habitat present, but not as above	Score 5 points in Step 4

Source of information:

_____

_____

Step 3: Select the highest appropriate category below based on presence of the designated site type (i.e. does not have to be the dominant site type). Refer to Site Types recorded earlier (section 1.1.3). Attach documentation.

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

Step 4: Enter a score from only one of the three above Steps.

Score for Staging and Migration Habitat *(maximum 25 points)* _____	5

4.3 ECOSYSTEM AGE

		Fractional Area		Score
Bog	=		x 25 =	
Fen, on deeper soils; floating mats or marl	=		x 20 =	
Fen, on limestone rock	=		x 5 =	
Swamp	=	0.82	x 3 =	2.46
Marsh	=	0.18	x 0 =	0
	Total		=	

Ecosystem Age Score *(maximum 25 points)* 2

4.4 GREAT LAKES COASTAL WETLANDS

Choose one only. Only coastal wetland units may be scored.

☐	Wetland < 10 ha	=	10 pts
☐	Wetland 10-50 ha	=	25
☐	Wetland 51-100 ha	=	50
☐	Wetland > 100 ha	=	75

If the wetland is a complex, identify which wetlands units or wetland communities are being scored as coastal:

Great Lakes Coastal Wetland Score *(maximum 75 points)* 0

5.0 DOCUMENTATION OF WETLAND FEATURES NOT INCLUDED IN THE EVALUATION

5.1 INVASIVE SPECIES

Attach documentation of invasive species found in wetland (include location information and a coarse estimate of abundance [F = few, C = fairly common, A = abundant]):

European buckthorn (A) - Source: Field observations between June - September 2016, and June - October 2017.
Found within all five (5) wetland units.

5.2 VERNAL POOLS

Documentation of information on vernal pools encountered during the wetland evaluation but not included as part of the evaluated wetland.

Two (2) small vernal pools observed in the southeast side of Wetland Unit D within the community hS11-D:h*,c,ts,gc.

5.3 SPECIES OF SPECIAL INTEREST

5.3.1 Osprey

Check all that apply:

- [ ] Present and nesting
- [ ] Known to have nested in last 5 years
- [ ] Feeding area for Osprey
- [x] Not as above

5.3.2 Common Loon

Check all that apply:

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

5.4 IMPORTANT DRINKING WATER AREA

Wetland located within:
(check all that apply)

- [ ] Wellhead Protection Area
- [x] Intake Protection Zone
- [ ] Significant Recharge Area
- [ ] Vulnerable Aquifer Area

Source of information:

Source: MOECC. Retrieved from https://www.gisapplication.lrc.gov.on.ca/SourceWaterProtection/Index.html?viewer=SourceWaterProtection.SWPViewer&locale=en-US

Additional Comments:

The wetland complex borders the eastern edge of Zone 2 of the Intake Protection Zone.

5.5 AREA OF WETLAND RESTORATION POTENTIAL

Check all that apply. Attach additional pages if necessary.

X	Area of wetland restoration potential adjacent to evaluated wetland unit(s)
	Area of wetland restoration potential within 750m of evaluated wetland unit(s), but not adjacent
	Area of wetland restoration potential encountered elsewhere
	Area currently functioning as wetland (e.g., showing signs of degradation but still mapped as wetland).
	Adjacent Wetland Unit (if applicable):
	GPS Coordinates of Site:

Description of site (e.g., current land use, wetland characteristics of site, etc) and why it is identified as an area of restoration potential:

The northwest section of hS10-D:h*ne is heavily impacted by adjacent land uses including infilling, excessive amounts of garbage and debris, invasive species, and a lack of hydrological connectivity to the north.

The east side of tsS6-C:ts*,gc,ne has been impacted through active agricultural fields on the wetland area.

Additional Notes/Comments (e.g., adjacent lands, etc)

Maintenance facility and equipment storage are adjacent to hS10-D:h*ne (map D).
Active agricultural area adjacent to tsS6-C:ts*,gc,ne (map C).

General Information

Wetland Evaluator(s)

Name: Tyler R. Jones Affiliation: D.M. Wills Associates Limited

Name: _____ Affiliation: _____

Name: _____ Affiliation: _____

Name: _____ Affiliation: _____

Name: _____ Affiliation: _____

Date(s) wetland visited (in field): (Jun3Jul5,7,Sept1,12,-16)(Apr20,May30,Jun20,22,28,Jul5,6,7,11,13,Oct.5,-17)(Apr24,May9,15,18,24-18)

Date evaluation completed: April 2019

Estimated time devoted to completing the field survey in person hours: 45

Weather Conditions

i) at time of field work: Generally clear and sunny conditions.

ii) summer conditions in general: Unseasonably dry summer in 2016. Average southern Ontario summer in 2017.

WETLAND EVALUATION SCORING RECORD

WETLAND NAME: Nassau Wetland Complex

1.0 BIOLOGICAL COMPONENT

	1.1	PRODUCTIVITY
14	1.1.1	Growing Degree-Days/Soils
9	1.1.2	Wetland Type
2	1.1.3	Site Type
25		
	1.2	BIODIVERSITY
13	1.2.1	Number of Wetland Types
16	1.2.2	Vegetation Communities
7	1.2.3	Diversity of Surrounding Habitat
8	1.2.4	Proximity to Other Wetlands
15	1.2.5	Interspersion
14	1.2.6	Open Water Type
73		
13	1.3	SIZE (Biological Component)
111		TOTAL (Biological Component)

2.0 SOCIAL COMPONENT

	2.1 ECONOMICALLY VALUABLE PRODUCTS
6	2.1.1 Wood Products
0	2.1.2 Wild Rice
12	2.1.3 Commerical Baitfish
12	2.1.4 Furbearers
30	Total for Economically Valuable Products
36	2.2 RECREATIONAL ACTIVITIES
	2.3 LANDSCAPE AESTHETICS
0	2.3.1 Distinctness
2	2.3.2 Absence of Human Disturbance
2	Total for Landscape Aesthetics
	2.4 EDUCATION AND PUBLIC AWARENESS
20	2.4.1 Educational Uses
8	2.4.2 Facilities and Programs
10	2.4.3 Research and Studies
38	Total for Education and Public Awareness
26	2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT
4	2.6 OWNERSHIP
17	2.7 SIZE (Social Component)
	2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE
30	2.8.1 Aboriginal Values
0	2.8.2 Cultural Heritage
183	TOTAL (Social Component)

3.0 HYDROLOGICAL COMPONENT

100	3.1 FLOOD ATTENUATION	
	3.2 WATER QUALITY IMPROVEMENT	
46	3.2.1	Short Term Water Quality Improvement
3	3.2.2	Long Term Nutrient Trap
4	3.2.3	Groundwater Discharge
53	Total for Water Quality Improvement	
2	3.3 CARBON SINK	
0	3.4 SHORELINE EROSION CONTROL	
	3.5 GROUNDWATER RECHARGE	
50	3.5.1	Site Type
7	3.5.2	Soil Recharge Potential
57	Total for Groundwater Recharge	
212	TOTAL (Hydrological Component)	

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 Wetlands

20	4.1.1.1	Rarity within the Landscape
20	4.1.1.2	Rarity of Wetland Type
40		Total for Wetland Rarity

4.1.2 Species

0	4.1.2.1	Reproductive Habitat for an Endangered or Threatened Species
150	4.1.2.2	Traditional Migration or Feeding Habitat for an Endangered or Threatened Species
50	4.1.2.3	Provincially Significant Animal Species
0	4.1.2.4	Provincially Significant Plant Species
20	4.1.2.5	Regionally Significant Species
0	4.1.2.6	Locally Significant Species
220		Total for Species Rarity

4.2 SIGNIFICANT FEATURES AND HABITATS

0	4.2.1	Colonial Waterbirds
10	4.2.2	Winter Cover for Wildlife
0	4.2.3	Waterfowl Staging and/or Moulting Areas
10	4.2.4	Waterfowl Breeding
0	4.2.5	Migratory Passerine, Shorebird or Raptor Stopover Area
	4.2.6	Fish Habitat
4	4.2.6.1	Spawning and Nursery Habitat
5	4.2.6.2	Migration and Staging Habitat
29		Total for Significant Features and Habitats

2 4.3 ECOSYSTEM AGE

0 4.4 GREAT LAKES COASTAL WETLANDS

250 TOTAL FOR SPECIAL FEATURES COMPONENT *(not to exceed 250)*

SUMMARY OF EVALUATION RESULT

Wetland Nassau Wetland Complex

111 1.0 TOTAL FOR BIOLOGICAL COMPONENT

183 2.0 TOTAL FOR SOCIAL COMPONENT

212 3.0 TOTAL FOR HYDROLOGICAL COMPONENT

250 4.0 TOTAL FOR SPECIAL FEATURES COMPONENT

756 TOTAL WETLAND SCORE

FOR MNR USE ONLY

MNR Reviewer (Name & Position)

Reviewer Comments

MNR Approver (Name & Position)

Approval Date

Appendix D

Plant Species Inventory

Common Name	Scientific Name	S Rank	G Rank	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5	Polygon 6	Polygon 7	Polygon 8	Polygon 9	Polygon 10	Polygon 11	Polygon 12	Wills' Observation
Interrupted Fern	*Osmunda claytoniana*	S5	G5	x	x	x	x		x	x			x		x	x
Alternate-leaved Dogwood	*Cornus alternifolia*	S5	G5										x		x	x
American Basswood	*Tilia americana*	S5	G5	x			x								x	x
American Elm	*Ulmus americana*	S5	G5					x	x	x		x	x		x	x
Ash sp.	*Fraxinus sp.*									x						x
Aslike Clover	*Trifolium hybridum*	SNA	GNR					x	x	x		x				x
Wheat Sedge	*Carex atherodes*	S4	G5					x	x			x	x			x
Balsam Poplar	*Populus balsamifera*	S5	G5	x	x	x	x	x	x	x	x	x	x		x	x
Bebb's Willow	*Salix bebbiana*	S5	G5										x			x
Bedstraw	*Galium aparine*	S5	G5					x	x	x	x	x	x		x	x
Bicknell's Geranium	*Geranium bicknellii*	S5	G5										x		x	x
Bindweed	*Convolvulus arvensis*	SNA	GNR					x	x			x				x
Birdsfoot Trefoil	*Lotus corniculatus*	SNA	GNR					x	x	x		x	x		x	x
Bitter Dock	*Rumex obtusifolius*	SNA	GNR										x		x	x
Bittersweet Nightshade	*Solanum dulcamara*	SNA	GNR			x		x	x	x	x	x			x	x
Black Ash	*Fraxinus nigra*	S4	G5	x	x	x	x	x	x	x		x	x		x	x
Black Medick	*Medicago lupulina*	SNA	GNR													x
Black Walnut	*Juglans nigra*	S4?	G5										x		x	x
Black Willow	*Salix nigra*	S4	G5										x		x	x
Bladder Campion	*Silene vulgaris*	SNA	GNR					x	x							x
Bladderwort	*Utricularia vulgaris*	S5	G5													x
Boneset	*Eupatorium perfoliatum*	S5	G5	x	x	x	x	x	x	x		x				x
Broadleaf Cattail	*Typha latifolia*	S5	G5		x			x	x	x	x	x	x		x	x
Broad-leaved Water Plantain	*Alisma triviale*	S5	G5								x					x
Bull Thistle	*Cirsium vulgare*	SNA	GNR					x	x	x		x	x		x	x
Calico Aster	*Symphyotrichum lateriflorum*	S5	G5										x		x	x
Canada Anemone	*Anemone canadensis*	S5	G5					x	x	x	x	x	x		x	x
Canada Bluejoint	*Calamagrostis canadensis*	S5	G5									x	x		x	x
Canada Goldenrod	*Solidago canadensis*	S5	G5					x	x	x		x	x		x	x
Canada Thistle	*Cirsium arvense*	SNA	G5										x		x	x
Chickory	*Cichorium intybus*	SNA	GNR					x	x	x		x	x		x	x
Choke Cherry	*Prunus virginiana*	S5	G5										x		x	x
Coltsfoot	*Tussilago farfara*	SNA	GNR					x	x	x	x	x	x		x	x
Common Burdock	*Arctium sp.*	SNA	GNR	x		x	x						x		x	x
Common Fleabane	*Pulicaria dysenterica*							x	x	x		x				x
Common Milkweed	*Asclepias syriaca*	S5	G5					x	x	x	x	x	x		x	x
Common Mullein	*Verbascum thapsus*	SNA	GNR					x	x	x			x		x	x
Common Speedwell	*Veronica sp.*	SNA	G5										x		x	x
Common St. John's Wort	*Hypericum perforatum*	SNA	GNR					x	x		x		x		x	x
Common Strawberry	*Fragaria vesca*	S5	G5													x
Cow Vetch	*Vicia cracca*	SNA	GNR					x	x	x		x				x
Crack Willow	*Salix fragilis*	SNA	GNR										x		x	x
Creeping Buttercup	*Ranunculus repens*	SNA	GNR										x		x	x
Curly-leaf Dock	*Rumex crispus*	SNA	GNR										x		x	x
Currant sp.	*Ribes sp.*											x				x
Dandelion	*Taraxacum sp.*												x		x	x
Dark-green Rush	*Scirpus atrovirens*	S5	G5						x		x	x				x
Dog Strangling Vine	*Vincetoxicum rossicum*	SNA	GNR					x	x			x				x
Dogwood sp.	*Cornus sp.*				x	x		x	x	x	x	x				x
Eastern Hemlock	*Tsuga canadensis*	S5	G5													x
Eastern Red Cedar	*Juniperus virginiana*	S5	G5										x		x	x
Eastern White Cedar	*Thuja occidentalis*	S5	G5	x		x	x				x		x	x	x	x
European Buckthorn	*Rhamnus cathartica*	SNA	GNR	x	x	x	x	x	x	x		x	x	x	x	x
Field Horsetail	*Equisetum arvense*	S5	G5					x								x
Fox Grape	*Vitis labrusca*	S1	G5									x				x
Foxtail Grasses	*Alopecurus sp.*												x		x	x
Garlic Mustard	*Alliaria petiolata*	SNA	GNR	x	x	x	x						x		x	x
Giant Foxtail	*Setaria faberi*	SNA	GNR										x		x	x
Goat's Beard	*Aruncus dioicus*	SNA	G5					x	x	x		x	x		x	x
Goldenrod sp.	*Solidago sp.*			x	x	x	x	x	x	x	x	x	x		x	x
Gooseberry	*Ribes uva-crispa*	SNA	GNR	x	x	x	x	x	x	x		x				x

Common Name	Scientific Name	S Rank	G Rank	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5	Polygon 6	Polygon 7	Polygon 8	Polygon 9	Polygon 10	Polygon 11	Polygon 12	Wills' Observation
Grass sp.	*Poaceae sp.*							x	x	x	x	x	x		x	x
Gray Dogwood	*Cornus racemosa*	S5	G5	x		x	x	x	x	x		x	x		x	x
Green Ash	*Fraxinus pennsylvanica*	S4	G5					x	x	x		x	x		x	x
Ground Knotweed	*Fallopia japonica*							x	x	x		x				x
Hairy Willow Herb	*Epilobium hirsutum*	SNA	GNR					x								x
Heal-All	*Prunella vulgaris*	S5	G5					x	x	x		x	x		x	x
Heath Aster	*Symphyotrichum ericoides*	S5	G5			x	x						x		x	x
Highbush Cranberry	*Viburnum trilobum*	S5	G5T5										x		x	x
Hop Sedge	*Carex lupulilina*	S5	G5					x	x	x	x	x				x
Horsetail sp.	*Equisetum sp.*			x	x	x	x	x	x	x	x	x	x		x	x
Juniper	*Juniperus sp.*								x	x						x
Knapweed	*Centaurea sp.*								x	x		x				x
Lady Fern	*Athyrium filix-femina*	S5	G5	x		x	x									x
Largetooth Aspen	*Populus grandidentata*	S5	G5										x		x	x
Manitoba Maple	*Acer negundo*	S5	G5					x	x	x		x	x		x	x
Marsh Cinquefoil	*Comarum palustre*	S5	G5								x					x
Marsh Marigold	*Caltha palustris*	S5	G5					x	x	x		x	x			x
Morrow's Honeysuckle	*Lonicera morrowii*	SNA	GNR										x		x	x
Moss sp.	Bryophyta							x	x	x	x	x				x
Narrowleaf Cattail	*Typha angustifolia*	SNA	GR										x		x	x
New England Aster	*Symphyotrichum novae-angliae*	S5	G5										x		x	x
Orchard Grass	*Dactylis glomerata*	SNA	GNR										x		x	x
Ostrich Fern	*Matteuccia struthiopteris*	S5	G5	x	x	x	x									x
Oxeye Daisy	*Leucanthemum vulgare*	SNA	GNR					x	x	x		x	x		x	x
Poison Ivy	*Toxicodendron radicans*	S5	G5	x	x	x	x	x	x	x	x	x	x		x	x
Poplar sp.	*Populus sp.*							x	x	x		x				x
Purple-stemmed Aster	*Symphyotrichum puniceum*	S5	G5										x		x	x
Queen Anne's Lace	*Daucus carota*	SNA	GNR					x	x	x		x	x		x	x
Red Clover	*Trifolium pratense*	SNA	GNR					x	x	x		x	x		x	x
Red Maple	*Acer rubrum*	S5	G5										x		x	x
Red Osier Dogwood	*Cornus sericea*	S5	G5		x	x	x	x	x	x		x	x		x	x
Red Raspberry	*Rubus idaeus*	S5	G5										x		x	x
Reed Canary Grass	*Phalaris arundinacea*	S5	G5	x	x	x	x	x	x	x	x	x	x		x	x
Riverbank Grape	*Vitis riparia*	S5	G5	x	x	x	x	x	x	x	x	x	x	x	x	x
Rough-fruited Cinquefoil	*Potentilla recta*	SNA	GNR					x	x	x		x	x		x	x
Sandbar Willow	*Salix interior*	S5	GNR										x		x	x
Sedge sp.	*Carex sp.*					x		x	x	x	x	x	x		x	x
Sensitive Fern	*Onoclea sensibilis*	S5	G5	x	x	x	x						x		x	x
Sheep's Sorrel	*Rumex acetosella*	SNA	GNR										x		x	x
Silky Dogwood	*Cornus amomum*												x		x	x
Silver Maple	*Acer saccharinum*	S5	G5	x	x	x	x	x	x	x		x	x		x	x
Skunk Cabbage	*Symplocarpus foetidus*	S5	G5	x	x	x	x									x
Slender Willow	*Salix petiolaris*	S5	G5	x	x	x	x	x	x	x		x	x		x	x
Smooth Brome	*Bromus inermis*	SNA	G5										x		x	x
Solomon Seal	*Polygonatum sp.*			x	x	x	x									x
Sow Thistle	*Sonchus sp.*							x	x	x		x				x
Speckled Alder	*Alnus incana*	S5	G5					x	x	x	x	x				x
Spiny-leaved Sow Thistle	*Sonchus asper*	SNA	GNR										x		x	x
Spotted Jewelweed	*Impatiens capensis*	S5	G5	x	x	x	x	x	x	x		x	x		x	x
Spotted Joe-pye Weed	*Eutrochium maculatum*	S5	G5					x	x	x		x	x		x	x
Staghorn Sumac	*Rhus typhina*	S5	G5										x		x	x
Stinging Nettle	*Urtica dioica*	S5	G5			x										x
Sugar Maple	*Acer saccharum*	S5	G5			x		x	x	x			x		x	x
Swamp Milkweed	*Asclepias incarnata*	S5	G5					x	x	x	x	x				x
Swamp Red Currant	*Ribes triste*	S5	G5			x										x
Swamp White Oak	*Quercus bicolor*	S4	G5										x		x	x
Sweet Gale	*Myrica gale*	S5	G5					x	x	x		x	x		x	x
Tall Buttercup	*Ranunculus acris*	SNA	G5					x				x	x		x	x
Tall White Aster	*Doellingeria umbellata*	S5	G5										x		x	x
Tamarack	*Larix laricina*	S5	G5													x
Tansy	*Tanacetum vulgare*	SNA	GNR					x	x	x	x	x				x
Tartarian Honeysuckle	*Lonicera tatarica*	SNA	GNR										x		x	x

Common Name	Scientific Name	S Rank	G Rank	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5	Polygon 6	Polygon 7	Polygon 8	Polygon 9	Polygon 10	Polygon 11	Polygon 12	Wills' Observation
Thistle sp.	*Cirsium sp.*							x								x
Timothy Grass	*Phleum pratense*	SNA	GNR									x				x
Trembling Aspen	*Populus tremuloides*	S5	G5					x	x	x		x	x		x	x
Trillium sp.	*Trillium sp.*			x		x	x									x
Twigrush	*Machaerina rubiginosa*												x		x	x
Viper's Bugloss	*Echium vulgare*	SNA	GNR					x	x	x	x	x	x		x	x
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	G5	x	x	x	x	x	x	x	x	x	x		x	x
Water Horsetail	*Equisetum fluviatile*	S5	G5													x
Watershield	*Brasenia schreberi*	S5	G5													x
White Ash	*Fraxinus americana*	S4	G5			x							x		x	x
White Birch	*Betula papyrifera*	S5	G5										x		x	x
White Oak	*Quercus alba*	S5	G5			x										x
White Poplar	*Populus alba*	SNA	G5										x		x	x
White Spruce	*Picea glauca*	S5	G5			x							x		x	x
White Sweet Clover	*Melilotus albus*	SNA	G5										x		x	x
White Willow	*Salix alba*	SNA	G5										x		x	x
Wild Cucumber	*Cucumis anguria*			x	x	x	x									x
Spearmint	*Mentha spicata*	SNA	GNR					x	x	x	x	x				x
Wild Strawberry	*Fragaria vesca*	S5	G5					x	x	x						x
Willow sp.	*Salix sp.*				x			x	x	x	x	x	x		x	x
Wood Lilly	*Lilium philadelphicum*	S5	G5					x	x	x		x				x
Woodland Strawberry	*Fragaria vesca*	S5	G5					x	x	x		x	x		x	x
Wormseed Mustard	*Erysimum cheiranthoides*	S5	G5										x		x	x
Yarrow	*Achillea millefolium*	SNA	G5					x	x	x	x	x				x
Yellow Birch	*Betula alleghaniensis*	S5	G5	x		x	x									x
Yellow Dock	*Rumex crispus*	SNA	GNR					x	x	x		x				x
Yellow Hawkweed	*Hieracium caespitosum*												x		x	x
Yellow Hop Clover	*Trifolium aureum*	SNA	GNR					x	x			x				x
Yellow Rocket	*Barbarea vulgaris*	SNA	GNR					x	x	x		x	x		x	x

Common Name	Scientific Name	S Rank	G Rank	Polygon 13	Polygon 14	Polygon 15	Polygon 16	Polygon 17	Polygon 18	Polygon 19	Polygon 20	Polygon 21	Wills' Observation
Interrupted Fern	*Osmunda claytoniana*	S5	G5	x	x	x	x		x		x		x
Alternate-leaved Dogwood	*Cornus alternifolia*	S5	G5	x	x	x			x		x		x
American Basswood	*Tilia americana*	S5	G5	x	x	x	x		x		x		x
American Elm	*Ulmus americana*	S5	G5	x	x	x				x			x
Ash sp.	*Fraxinus sp.*												x
Aslike Clover	*Trifolium hybridum*	SNA	GNR										x
Wheat Sedge	*Carex atherodes*	S4	G5	x	x	x		x		x		x	x
Balsam Poplar	*Populus balsamifera*	S5	G5	x	x	x	x		x		x		x
Bebb's Willow	*Salix bebbiana*	S5	G5	x	x	x							x
Bedstraw	*Galium aparine*	S5	G5	x	x	x		x	x	x	x	x	x
Bicknell's Geranium	*Geranium bicknellii*	S5	G5	x	x	x							x
Bindweed	*Convolvulus arvensis*	SNA	GNR										x
Birdsfoot Trefoil	*Lotus corniculatus*	SNA	GNR	x	x	x							x
Bitter Dock	*Rumex obtusifolius*	SNA	GNR	x	x	x							x
Bittersweet Nightshade	*Solanum dulcamara*	SNA	GNR	x	x	x		x	x	x	x	x	x
Black Ash	*Fraxinus nigra*	S4	G5	x	x	x	x	x	x	x	x	x	x
Black Medick	*Medicago lupulina*	SNA	GNR										x
Black Walnut	*Juglans nigra*	S4?	G5	x	x	x							x
Black Willow	*Salix nigra*	S4	G5	x	x	x							x
Bladder Campion	*Silene vulgaris*	SNA	GNR										x
Bladderwort	*Utricularia vulgaris*	S5	G5					x					x
Boneset	*Eupatorium perfoliatum*	S5	G5				x	x	x	x	x	x	x
Broadleaf Cattail	*Typha latifolia*	S5	G5	x	x	x		x	x	x	x	x	x
Broad-leaved Water Plantain	*Alisma triviale*	S5	G5										x
Bull Thistle	*Cirsium vulgare*	SNA	GNR	x	x	x							x
Calico Aster	*Symphyotrichum lateriflorum*	S5	G5	x	x	x							x
Canada Anemone	*Anemone canadensis*	S5	G5	x	x	x			x				x
Canada Bluejoint	*Calamagrostis canadensis*	S5	G5	x	x	x							x
Canada Goldenrod	*Solidago canadensis*	S5	G5	x	x	x							x
Canada Thistle	*Cirsium arvense*	SNA	G5	x	x	x							x
Chickory	*Cichorium intybus*	SNA	GNR	x	x	x							x
Choke Cherry	*Prunus virginiana*	S5	G5	x	x	x							x
Coltsfoot	*Tussilago farfara*	SNA	GNR	x	x	x						x	x
Common Burdock	*Arctium sp.*	SNA	GNR	x	x	x	x						x
Common Fleabane	*Pulicaria dysenterica*												x
Common Milkweed	*Asclepias syriaca*	S5	G5	x	x	x							x
Common Mullein	*Verbascum thapsus*	SNA	GNR	x	x	x						x	x
Common Speedwell	*Veronica sp.*	SNA	G5	x	x	x							x
Common St. John's Wort	*Hypericum perforatum*	SNA	GNR	x	x	x							x
Common Strawberry	*Fragaria vesca*	S5	G5		x	x							x
Cow Vetch	*Vicia cracca*	SNA	GNR										x
Crack Willow	*Salix fragilis*	SNA	GNR	x	x	x							x
Creeping Buttercup	*Ranunculus repens*	SNA	GNR	x	x	x							x
Curly-leaf Dock	*Rumex crispus*	SNA	GNR	x	x	x							x
Currant sp.	*Ribes sp.*				x	x			x		x		x
Dandelion	*Taraxacum sp.*			x	x	x							x
Dark-green Rush	*Scirpus atrovirens*	S5	G5					x		x	x	x	x
Dog Strangling Vine	*Vincetoxicum rossicum*	SNA	GNR										x
Dogwood sp.	*Cornus sp.*								x	x			x
Eastern Hemlock	*Tsuga canadensis*	S5	G5		x								x
Eastern Red Cedar	*Juniperus virginiana*	S5	G5	x	x	x							x
Eastern White Cedar	*Thuja occidentalis*	S5	G5		x	x	x	x	x	x	x	x	x
European Buckthorn	*Rhamnus cathartica*	SNA	GNR	x	x	x	x	x	x	x	x	x	x
Field Horsetail	*Equisetum arvense*	S5	G5	x	x								x
Fox Grape	*Vitis labrusca*	S1	G5										x
Foxtail Grasses	*Alopecurus sp.*			x	x	x							x
Garlic Mustard	*Alliaria petiolata*	SNA	GNR	x	x	x	x						x
Giant Foxtail	*Setaria faberi*	SNA	GNR	x	x	x							x
Goat's Beard	*Aruncus dioicus*	SNA	G5	x	x	x							x
Goldenrod sp.	*Solidago sp.*			x	x	x	x	x	x	x	x	x	x
Gooseberry	*Ribes uva-crispa*	SNA	GNR				x						x

Common Name	Scientific Name	S Rank	G Rank	Polygon 13	Polygon 14	Polygon 15	Polygon 16	Polygon 17	Polygon 18	Polygon 19	Polygon 20	Polygon 21	Wills' Observation
Grass sp.	*Poaceae sp.*			x	x	x							x
Gray Dogwood	*Cornus racemosa*	S5	G5	x	x	x	x		x	x	x		x
Green Ash	*Fraxinus pennsylvanica*	S4	G5	x	x	x							x
Ground Knotweed	*Fallopia japonica*												x
Hairy Willow Herb	*Epilobium hirsutum*	SNA	GNR	x						x			x
Heal-All	*Prunella vulgaris*	S5	G5	x	x	x							x
Heath Aster	*Symphyotrichum ericoides*	S5	G5	x	x	x	x		x		x		x
Highbush Cranberry	*Viburnum trilobum*	S5	G5T5	x	x	x							x
Hop Sedge	*Carex lupulina*	S5	G5					x	x	x	x	x	x
Horsetail sp.	*Equisetum sp.*			x	x	x	x	x	x	x	x	x	x
Juniper	*Juniperus sp.*												x
Knapweed	*Centaurea sp.*												x
Lady Fern	*Athyrium filix-femina*	S5	G5		x		x						x
Largetooth Aspen	*Populus grandidentata*	S5	G5	x	x	x							x
Manitoba Maple	*Acer negundo*	S5	G5	x	x	x			x		x		x
Marsh Cinquefoil	*Comarum palustre*	S5	G5										x
Marsh Marigold	*Caltha palustris*	S5	G5						x				x
Morrow's Honeysuckle	*Lonicera morrowii*	SNA	GNR	x	x	x							x
Moss sp.	Bryophyta												x
Narrowleaf Cattail	*Typha angustifolia*	SNA	GR	x	x	x							x
New England Aster	*Symphyotrichum novae-angliae*	S5	G5	x	x	x			x		x		x
Orchard Grass	*Dactylis glomerata*	SNA	GNR	x	x	x							x
Ostrich Fern	*Matteuccia struthiopteris*	S5	G5				x						x
Oxeye Daisy	*Leucanthemum vulgare*	SNA	GNR	x	x	x							x
Poison Ivy	*Toxicodendron radicans*	S5	G5	x	x	x	x		x		x		x
Poplar sp.	*Populus sp.*												x
Purple-stemmed Aster	*Symphyotrichum puniceum*	S5	G5	x	x	x							x
Queen Anne's Lace	*Daucus carota*	SNA	GNR	x	x	x							x
Red Clover	*Trifolium pratense*	SNA	GNR	x	x	x							x
Red Maple	*Acer rubrum*	S5	G5	x	x	x							x
Red Osier Dogwood	*Cornus sericea*	S5	G5	x	x	x	x				x		x
Red Raspberry	*Rubus idaeus*	S5	G5	x	x	x							x
Reed Canary Grass	*Phalaris arundinacea*	S5	G5	x	x	x	x	x	x	x	x	x	x
Riverbank Grape	*Vitis riparia*	S5	G5	x	x	x	x						x
Rough-fruited Cinquefoil	*Potentilla recta*	SNA	GNR	x	x	x							x
Sandbar Willow	*Salix interior*	S5	GNR	x	x	x							x
Sedge sp.	*Carex sp.*			x	x	x				x	x		x
Sensitive Fern	*Onoclea sensibilis*	S5	G5	x	x	x	x	x	x	x	x	x	x
Sheep's Sorrel	*Rumex acetosella*	SNA	GNR	x	x	x							x
Silky Dogwood	*Cornus amomum*			x	x	x							x
Silver Maple	*Acer saccharinum*	S5	G5	x	x	x	x	x	x	x	x	x	x
Skunk Cabbage	*Symplocarpus foetidus*	S5	G5				x						x
Slender Willow	*Salix petiolaris*	S5	G5	x	x	x	x						x
Smooth Brome	*Bromus inermis*	SNA	G5	x	x	x							x
Solomon Seal	*Polygonatum sp.*						x						x
Sow Thistle	*Sonchus sp.*												x
Speckled Alder	*Alnus incana*	S5	G5			x							x
Spiny-leaved Sow Thistle	*Sonchus asper*	SNA	GNR	x	x	x							x
Spotted Jewelweed	*Impatiens capensis*	S5	G5	x	x	x	x	x	x	x	x	x	x
Spotted Joe-pye Weed	*Eutrochium maculatum*	S5	G5	x	x	x					x		x
Staghorn Sumac	*Rhus typhina*	S5	G5	x	x	x							x
Stinging Nettle	*Urtica dioica*	S5	G5						x		x		x
Sugar Maple	*Acer saccharum*	S5	G5	x	x	x							x
Swamp Milkweed	*Asclepias incarnata*	S5	G5										x
Swamp Red Currant	*Ribes triste*	S5	G5	x									x
Swamp White Oak	*Quercus bicolor*	S4	G5	x	x	x							x
Sweet Gale	*Myrica gale*	S5	G5	x	x	x		x		x		x	x
Tall Buttercup	*Ranunculus acris*	SNA	G5	x	x	x							x
Tall White Aster	*Doellingeria umbellata*	S5	G5	x	x	x							x
Tamarack	*Larix laricina*	S5	G5									x	x
Tansy	*Tanacetum vulgare*	SNA	GNR										x
Tartarian Honeysuckle	*Lonicera tatarica*	SNA	GNR	x	x	x							x

Common Name	Scientific Name	S Rank	G Rank	Polygon 13	Polygon 14	Polygon 15	Polygon 16	Polygon 17	Polygon 18	Polygon 19	Polygon 20	Polygon 21	Wills' Observation
Thistle sp.	*Cirsium sp.*									x			x
Timothy Grass	*Phleum pratense*	SNA	GNR										x
Trembling Aspen	*Populus tremuloides*	S5	G5	x	x	x		x	x	x	x	x	x
Trillium sp.	*Trillium sp.*						x						x
Twigrush	*Machaerina rubiginosa*			x	x	x							x
Viper's Bugloss	*Echium vulgare*	SNA	GNR	x	x	x							x
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	G5	x	x	x	x		x				x
Water Horsetail	*Equisetum fluviatile*	S5	G5						x		x		x
Watershield	*Brasenia schreberi*	S5	G5					x					x
White Ash	*Fraxinus americana*	S4	G5	x	x	x							x
White Birch	*Betula papyrifera*	S5	G5	x	x	x			x		x		x
White Oak	*Quercus alba*	S5	G5						x		x		x
White Poplar	*Populus alba*	SNA	G5	x	x	x							x
White Spruce	*Picea glauca*	S5	G5	x	x	x			x		x		x
White Sweet Clover	*Melilotus albus*	SNA	G5	x	x	x							x
White Willow	*Salix alba*	SNA	G5	x	x	x							x
Wild Cucumber	*Cucumis anguria*						x		x		x		x
Spearmint	*Mentha spicata*	SNA	GNR	x		x							x
Wild Strawberry	*Fragaria vesca*	S5	G5										x
Willow sp.	*Salix sp.*			x	x	x					x	x	x
Wood Lilly	*Lilium philadelphicum*	S5	G5										x
Woodland Strawberry	*Fragaria vesca*	S5	G5	x	x	x			x		x		x
Wormseed Mustard	*Erysimum cheiranthoides*	S5	G5	x	x	x							x
Yarrow	*Achillea millefolium*	SNA	G5										x
Yellow Birch	*Betula alleghaniensis*	S5	G5				x						x
Yellow Dock	*Rumex crispus*	SNA	GNR										x
Yellow Hawkweed	*Hieracium caespitosum*			x	x	x							x
Yellow Hop Clover	*Trifolium aureum*	SNA	GNR										x
Yellow Rocket	*Barbarea vulgaris*	SNA	GNR	x	x	x							x

Appendix E

Fauna Inventory

Species	Scientific Name	Wills	NHIC	Trent University Nature Area[1]
White Tailed Deer	*Odocoileus virginianus*			X
Red Fox	*Vulpes vulpes*			X
Coyote	*Canis latrans*			X
Little Brown Bat	*Myotis lucifugus*			X
Eastern Cottontail	*Sylvilagus floridanus*			X
Groundhog	*Marmota monax*			X
Eastern Chipmunk	*Tamias striatus*			X
Gray Squirrel	*Sciurus carolinensis*			X
Red Squirrel	*Sciurus vulgaris*			X
Deer Mouse	*Peromyscus maniculatus*			X
Muskrat	*Ondatra zibethicus*			X
American Beaver	*Castor canadensis*			X
Meadow Vole	*Microtus pennsylvanicus*			X
Meadow Jumping Mouse	*Zapus hudsonius*			X
American Porcupine	*Erethizon dorsatum*			X
Raccoon	*Procyon lotor*			X
American Mink	*Neovison vison*			X
Lilypad Clubtail	*Arigomphus furcifer*		X	
Northern Leopard Frog	*Lithobates pipiens*	X		X
American Toad	*Anaxyrus americanus*	X		X
Chorus Frog	*Pseudacris triseriata*	X		X
Gray Treefrog	*Hyla versicolor*	X		X
Blue Spotted salamander	*Ambystoma laterale*			X
Green Frog	*Rana clamitans*			X
Spring Peeper	*Pseudacris crucifer*			X
Striped Chorus Frog	*Pseudacris triseriata*			X
Wood Frog	*Lithobates sylvaticus*			X
American Bullfrog	*Lithobates catesbeianus*	X		
Eastern Milksnake	*Lampropeltis triangulum*		X	

[4]Trent University Nature Area data includes species observations from upland areas and cannot be used when scoring under the Ontario Wetland Evaluation System (OWES). Only species that can be confirmed within the wetland boundary are permissible in the OWES and must meet specific criteria such as full references for reports; full references for non-report information (e.g. Rare Breeding Bird Program), including source name, position, date and record; Photographs that accurately show identifying features of the rare species; the scientific names of species scored in the following sections, especially with regards to plant or invertebrate species, must be recorded in the data record. Names should follow NHIC nomenclature; full reference for any verified Element Occurrence (or any species) in the NHIC's EO database; and numerous other established criterion.

Appendix F

Avifauna Inventory

Common Name	Scientific Name	SARO[1] Status	COSEWIC[2] Status	OBBA[3] Public Data Records	Ebirds Data Record	Wills Observation Records	Trent University Nature Area[4]	NHIC
American Crow	*Corvus brachyrhynchos*			Co	X	X	X	
American Goldfinch	*Spinus tristis*			Pr	X	X	X	
American Redstart	*Setophaga ruticilla*			Co	X	X	X	
American Robin	*Turdus migratorius*			Co	X	X	X	
American Woodcock	*Scolopax minor*			Po	X	X	X	
Baltimore Oriole	*Icterus galbula*			Pr	X		X	
Bank Swallow	*Riparia riparia*	THR	THR	Po	X			
Barn Swallow	*Hirundo rustica*	THR	THR	Co	X		X	
Barred Owl	*Strix varia*						X	
Belted Kingfisher	*Megaceryle alcyon*						X	
Black-and-white Warbler	*Mniotilta varia*			Co	X		X	
Black-billed Cuckoo	*Coccyzus erythropthalmus*			Po	X		X	
Black-capped Chickadee	*Poecile atricapillus*			Co	X	X	X	
Black-throated Blue Warbler	*Setophaga caerulescens*			Pr	X			
Blue Jay	*Cyanocitta cristata*			Co	X	X	X	
Blue-winged Warbler	*Vermivora cyanoptera*			Po	X			
Brown Creeper	*Certhia americana*			Co	X		X	
Brown Thrasher	*Toxostoma rufum*			Co	X		X	
Brown-headed Cowbird	*Molothrus ater*			Co	X	X	X	
Canada Goose	*Branta canadensis*			Co	X	X		
Cedar Waxwing	*Bombycilla cedrorum*			Pr	X	X	X	
Chimney Swift	*Chaetura pelagica*	THR	THR	Pr	X			
Chipping Sparrow	*Spizella passerina*			Co	X	X	X	

Common Name	Scientific Name	SARO[1] Status	COSEWIC[2] Status	OBBA[3] Public Data Records	Ebirds Data Record	Wills Observation Records	Trent University Nature Area[4]	NHIC
Common Grackle	*Quiscalus quiscula*			Co	X	X	X	
Common Raven	*Corvus corax*			Co	X			
Common Snipe	*Gallinago gallinago*					X	X	
Common Yellowthroat	*Geothlypis trichas*			Co	X	X	X	
Cooper's Hawk	*Accipiter cooperii*			Pr	X		X	
Dark-eyed Junco	*Junco hyemalis*				X			
Downy Woodpecker	*Picoides pubescens*			Pr	X	X	X	
Eastern Bluebird	*Sialia sialis*			Co	X			
Eastern Kingbird	*Tyrannus tyrannus*			Co	X	X	X	
Eastern Meadowlark	*Sturnella magna*	THR	THR				X	X
Eastern Phoebe	*Sayornis phoebe*			Co	X	X	X	
Eastern Wood-pewee	*Contopus virens*	SC	SC	Pr	X	X	X	X
European Starling	*Sturnus vulgaris*			Co	X	X	X	
Field Sparrow	*Spizella pusilla*			Pr	X	X	X	
Golden-crowned Kinglet	*Regulus satrapa*				X			
Gray Catbird	*Dumetella carolinensis*			Co	X	X	X	
Great Blue Heron	*Ardea herodias*			Po	X	X	X	
Great Crested Flycatcher	*Myiarchus crinitus*			Pr	X	X		
Great Horned Owl	*Bubo virginianus*			Pr	X		X	
Green-Backed Heron	*Butorides virescens*						X	
Hairy Woodpecker	*Picoides villosus*			Co	x	X	X	
Hermit Thrush	*Catharus guttatus*			Pr	x		X	
Hooded Merganser	*Lophodytes cucullatus*				x			
House Finch	*Haemorhous mexicanus*			Po		x		
House Sparrow	*Passer domesticus*			Co	x			

Common Name	Scientific Name	SARO[1] Status	COSEWIC[2] Status	OBBA[3] Public Data Records	Ebirds Data Record	Wills Observation Records	Trent University Nature Area[4]	NHIC
House Wren	*Troglodytes aedon*			Co	x	X	X	
Killdeer	*Charadrius vociferus*			Co	x		X	
Least Flycatcher	*Empidonax minimus*			Pr	x		X	
Magnolia Warbler	*Setophaga magnolia*			Pr	x			
Mallard	*Anas platyrhynchos*			Co	x		X	
Merlin	*Falco columbarius*				x			
Mourning Dove	*Zenaida macroura*			Co	x	X	X	
Nashville Warbler	*Oreothlypis ruficapilla*			Pr	x			
Northern Cardinal	*Cardinalis cardinalis*			Po	x	X	X	
Northern Flicker	*Colaptes auratus*			Co	x	x	X	
Northern Harrier	*Circus cyaneus*			Co	x		X	
Northern Parula	*Setophaga americana*				x			
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*			Co	x			
Northern Waterthrush	*Parkesia noveboracensis*			Co	x			
Osprey	*Pandion haliaetus*			Co	x			
Ovenbird	*Seiurus aurocapilla*			Pr	x	x	X	
Pileated Woodpecker	*Dryocopus pileatus*			Co	x	x	X	
Red-bellied Woodpecker	*Melanerpes carolinus*				x			
Red-eyed Vireo	*Vireo olivaceus*			Co	x	x	X	
Red-tailed Hawk	*Buteo jamaicensis*			Pr	x		X	
Red-winged Blackbird	*Agelaius phoeniceus*			Co	x	x	X	
Ring-billed Gull	*Larus delawarensis*				x			
Rock Pigeon	*Columba livia*			Pr	x	X		
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			Pr	x	x	X	

Common Name	Scientific Name	SARO[1] Status	COSEWIC[2] Status	OBBA[3] Public Data Records	Ebirds Data Record	Wills Observation Records	Trent University Nature Area[4]	NHIC
Ruby-crowned Kinglet	*Regulus calendula*				x			
Ruffed Grouse	*Bonasa umbellus*			Co	x	X	X	
Savannah Sparrow	*Passerculus sandwichensis*			Pr	x		X	
Scarlet Tanager	*Piranga olivacea*						X	
Sharp-shinned Hawk	*Accipiter striatus*			Po	x			
Song Sparrow	*Melospiza melodia*			Co	x	x	X	
Spotted Sandpipper	*Arctitis macularis*						X	
Swamp Sparrow	*Melospiza georgiana*			Co	x	x	X	
Tree Swallow	*Tachycineta bicolor*			Co	x	x	X	
Turkey Vulture	*Cathartes aura*			Pr	x			
Upland Sandpiper	*Bartramia longicauda*						X	
Veery	*Catharus fuscescens*			Pr	x		X	
Vesper Sparrow	*Pooecetes gramineus*			Pr	x		X	
Warbling Vireo	*Vireo gilvus*			Pr	x	x	X	
White-breasted Nuthatch	*Sitta carolinensis*			Co	x		X	
White-throated Sparrow	*Zonotrichia albicollis*			Pr	X	X	X	
Wild Turkey	*Meleagris gallopavo*			Co	x			
Winter Wren	*Troglodytes hiemalis*			Pr	x			
Wood Duck	*Aix sponsa*			Co	x			
Wood Thrush	*Hylocichla mustelina*	SC	THR	Pr	x	X		X
Yellow Warbler	*Setophaga petechia*			Co	x	x	X	
Yellow-bellied Sapsucker	*Sphyrapicus varius*			Co	x	x	X	
Yellow-billed Cuckoo	Coccyzus americanus						X	
Yellow-rumped Warbler	*Setophaga coronata*			Pr	x			

[1]SARO – Species at Risk Ontario [2]COSEWIC – Committee on the Status of Endangered Wildlife in Canada [3]OBBA – Ontario Breeding Bird Atlas

[4]Trent University Nature Area data includes species observations from upland areas and cannot be used when scoring under the Ontario Wetland Evaluation System (OWES). Only species that can be confirmed within the wetland boundary are permissible in the OWES and must meet specific criteria such as full references for reports; full references for non-report information (e.g. Rare Breeding Bird Program), including source name, position, date and record; Photographs that accurately show identifying features of the rare species; the scientific names of species scored in the following sections, especially with regards to plant or invertebrate species, must be recorded in the data record. Names should follow NHIC nomenclature; full reference for any verified Element Occurrence (or any species) in the NHIC's EO database; and numerous other established criterion.

Appendix G

Photographic Record

Photographic Log

Client Name: City of Peterborough	**Site Location: Wetland Complex**

- Photos from Polygon 1 and 2 not obtained due to lack of property owner permission to access site.

Photo Number: 1
Date: July 06, 2018
Direction Photo Taken: North
Description: Polygon 3

Photo Number: 2
Date: July 06, 2018
Direction Photo Taken: West
Description: Polygon 3

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 3
Date: July 07, 2017
Direction Photo Taken: West
Description: Polygon 4

Photo Number: 4
Date: July 07, 2017
Direction Photo Taken: North
Description: Polygon 4

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 5
Date: July 11, 2018
Direction Photo Taken: West
Description: Polygon 5

Photo Number: 6
Date: July 11, 2018
Direction Photo Taken: North
Description: Polygon 5

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 7
Date: July 11, 2017
Direction Photo Taken: North
Description: Polygon 6

Photo Number: 8
Date: July 11, 2017
Direction Photo Taken: South
Description: Polygon 6

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 9
Date: July 11, 2017
Direction Photo Taken: West
Description: Polygon 7

Photo Number: 10
Date: July 11, 2017
Direction Photo Taken: West
Description: Polygon 7

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 11
Date: July 11, 2017
Direction Photo Taken: West
Description: Polygon 8

Photo Number: 12
Date: July 11, 2017
Direction Photo Taken: East
Description: Polygon 8

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 13
Date: July 11, 2018
Direction Photo Taken: Southwest
Description: Polygon 9

Photo Number: 14
Date: July 11, 2018
Direction Photo Taken: Northeast
Description: Polygon 9

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 15
Date: July 13, 2017
Direction Photo Taken: Northeast
Description: Polygon 10

Photo Number: 16
Date: July 13, 2017
Direction Photo Taken: Southwest
Description: Polygon 10

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 17
Date: July 11, 2018
Direction Photo Taken: East
Description: Polygon 11

Photo Number: 18
Date: July 11, 2018
Direction Photo Taken: West
Description: Polygon 11

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 19
Date: July 13, 2017
Direction Photo Taken: Southeast
Description: Polygon 12

Photo Number: 20
Date: July 13, 2017
Direction Photo Taken: North
Description: Polygon 12

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 21
Date: July 13, 2018
Direction Photo Taken: Northwest
Description: Polygon 13

Photo Number: 22
Date: July 13, 2018
Direction Photo Taken: North
Description: Polygon 13

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 23
Date: July 11, 2018
Direction Photo Taken: Northeast
Description: Polygon 14

Photo Number: 24
Date: July 11, 2018
Direction Photo Taken: Northeast
Description: Polygon 14

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 25
Date: July 11, 2018
Direction Photo Taken: West
Description: Polygon 15

Photo Number: 26
Date: July 11, 2018
Direction Photo Taken: Southwest
Description: Polygon 15

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 27
Date: July 06, 2018
Direction Photo Taken: Southwest
Description: Polygon 17

Photo Number: 28
Date: July 06, 2018
Direction Photo Taken: Southwest
Description: Polygon 17

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 29
Date: July 13, 2018
Direction Photo Taken: Southwest
Description: Polygon 19

Photo Number: 30
Date: Click here for date
Direction Photo Taken:
Description: Polygon 19

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 31
Date: October 05, 2017
Direction Photo Taken: North
Description: Polygon 20

Photo Number: 32
Date: October 05, 2017
Direction Photo Taken: East
Description: Polygon 20

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com

Photo Number: 33
Date: June 28, 2017
Direction Photo Taken: South
Description: Polygon 21

Photo Number: 34
Date: June 28, 2017
Direction Photo Taken: West
Description: Polygon 21

D.M. Wills Associates Limited
150 Jameson Drive, Peterborough, Ontario, Canada K9J 0B9
P. 705.742.2297 **F**. 705.748.9944 **E**. wills@dmwills.com