Wetland Delineation and Evaluation and Discussion of Clearing Activities

0 David Manchester Road

Part of Lot 2, Concession 4

City of Ottawa

July 27, 2023

Prepared By:

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1.0. Introduction

Harmesh Chander and Ram Dayal Chander have retained BCH Environmental Consulting Inc. to undertake a Wetland Evaluation and Delineation of portions of the Provincially Significant Goulbourn Wetland Complex within portions of 0 David Manchester Road, Part of Lot 2, Concession 4, City of Ottawa in response to recent clearing activities. The Wetland Evaluation was undertaken by a certified wetland evaluator using the Ontario Wetland Evaluation System Southern Manual 4th Edition, 2022.

The purpose of the Wetland Delineation and Evaluation was to determine the significance of the Wetland Complex onsite and to review the boundary. Studies completed included 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, and the presence of hydric or nearly hydric soil.

It is important to note that Wetland Complexes and Complexing wetlands are no longer a component of The Wetland Evaluation (Consultation on the proposed changes to the OWES took place from October 25, 2022 to November 24, 2022). This report will reflect that.

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

1.1. Methods and Collection of Information

Potential Species in the general area were identified from Ministry of Natural Resources and Forestry databases, the Department of Fisheries and Ocean databases, the Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas, iNaturalist and the Global Biodiversity Information Facility.

See Table 1 for a summary of field surveys of the site and adjacent lands. Staff qualifications are available in Appendix F.

TABLE 1: Summary of Field Surveys

DATE	TIME	AIR TEMP. (°C)	WIND (Beaufort Scale)	CLOUD COVER / PRECIPITATION	STAFF
April 20, 2023	2030h-2045h	8	Light Air	Overcast	C. Fontaine
April 26, 2023	1030h-1415h	9	Light Air	Overcast	S.St.Pierre C.Fontaine
May 19, 2023	0630h-0715h	7	Light Air	Clear Skies	C.Fontaine
May 25, 2023	2100h-2115h	15	No Wind	Clear Skies	C.Fontaine
June 2, 2023	0730h-0805h	27	Light Air	30-40% Cloud Cover	S.St.Pierre C.Fontaine
June 16, 2023	2120h-2130h	18-19	Light Breeze	Overcast	C.Fontaine
June 19, 2023	0810h-0840h	16	Light Breeze	80% Cloud Cover	C.Fontaine

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Wetland communities were described utilising the Ontario Wetland Evaluation System Southern Manual (MNRF 2022). Addtionally, delineation utilises the same methods.

A breeding bird survey was completed following the methods prescribed in the Ontario Breeding Bird Atlas: Guide for Participants (OBBA 2001).

An amphibian survey was completed following the methods prescribed in the Marsh Monitoring Program (MMP 2008).

Soil sampling and analysis followed the methods described in the Field Manual for Describing Soils in Ontario, 4th Edition (OCSRE 1993)

Observed species were recorded for each individual community. The plants utilized in the descriptions are the most abundant specimens observed. A complete observed species list is provided in Appendix D. Plants that could not be identified in the field were collected for a more detailed examination. Nomenclature used in this report follows the Southern Ontario Vascular Plant List (Bradley, 2013) which aligns with the Integrated Taxonomic Information System (ITIS).

2.0. Study Area and Location

The wetland in question has been identified as being within the Provincially Significant Goulbourn Wetland Complex (Dillon Consulting 2016). As per the current OWES assessment practices, the wetland present within the subject lands will no longer be complexed with the surrounding wetlands. Figure 1 shows the portions of the Goulbourn Wetland Complex that will be actively assessed within this report.

This portion of the PSW is entirely located within the jurisdiction of the Mississippi Valley Conservation Authority (MVCA). The wetland that was assessed is within the City of Ottawa, covering an area of approximately 41.5 ha. The location of the Wetland in a regional context is included in Figure 1. The entire wetland in question is located within portions of the following lots and concessions: Lot 1 Concession 4, Lot 2 Concession 5, Lot 1 Concession 5, Lot 2 Concessions 4, Lot 3 Concession 4, and Lot 4 Concession 4. Due to private property and lack of permission this study is limited to the subject lands and portions of the wetlands that could be accessed (Table 2; 0 David Manchester Road, Part of Lot 2, Concession 4). Portions of the subject lands are designated as Rural and Environmental Protection (EPS). All revised boundary delineation and wetland assessment will be limited to the subject lands and the portions that access could be achieved (Table 2), with the assessment of the wetland outside of that area limited to satellite imagery.

The wetland consisted of one wetland units with multiple dominant forms as described in Table 2 – Wetland Complex Areas and Dominant Vegetation Forms and identified in Appendix B - Wetland Data Summary Form. Detailed wetland maps are provided in Figure 1. Within the subject lands where clearing has taken place the Dominant Vegetation Forms were inferred from remnant vegetation, adjacent communities, and satellite imagery.

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Table 2: Wetland Areas and Dominate Vegetation Forms

Wetland Unit	Polygon Number	Area (ha)	Fractional Area	Soil Type	Wetland Type	Site Type	Dominant Form	Vegetation Form	Number of Forms	Polygone Label	Source
A	S1	0.6	0.01	Loam	Swamp	Palustrine	ts	ts	?	tsS1-A:ts*	LIO, Satellite Imagery
A	S2	10.3	0.24	Mesic	Swamp	Palustrine	ts	ts, ne, re	3	tsS2-A:ts*ne,re	Field Visit
A	S3	1.0	0.02	Mesic	Swamp	Palustrine	ts	ts, ne, re	3	tsS3-A:ts*ne,re	Field Visit
A	M1	0.9	0.02	Mesic	Marsh	Palustrine	re	re	?	reM1-A:re*	LIO, Satellite Imagery
A	M2	0.7	0.02	Loam	Marsh	Palustrine	re	re, ts	2	reM2-A:re*ts	Field Visit
A	S4	2.4	0.06	Mesic	Swamp	Palustrine	h	h, ts, ne	3	hS4-A:h* ts. ne	Field Visit
A	S5	2.6	0.06	Loam/Mesic	Swamp	Palustrine	h	h, rs, ne	3	hS5-A:h* ts. ne	Field Visit
A	S6	2.3	0.06	Loam	Swamp	Palustrine	h	h	?	hS6-A:h*	LIO, Satellite Imagery
A	S7	5.2	0.13	Loam	Swamp	Palustrine	h	h	?	hS7-A:h*	LIO, Satellite Imagery
A	S8	1.8	0.04	Mesic	Swamp	Palustrine	h	h	?	hS8-A:h*	LIO, Satellite Imagery
A	S9	1.6	0.04	Mesic/Loam	Swamp	Palustrine	h	h, ts, ne	3	hS9-A:h* ts. ne	Field Visit
A	S10	6.6	0.16	Loam	Swamp	Palustrine	c	c, h, ts, m	4	cS10-A:c* h,ts,m	Field Visit
A	S11	1.1	0.03	Loam	Swamp	Palustrine	c	c	?	cS11-A:c*	LIO, Satellite Imagery
A	S12	0.7	0.02	Loam	Swamp	Palustrine	c	c	?	cS12-A:c*	LIO, Satellite Imagery
A	S13	3.7	0.09	Loam	Swamp	Palustrine	c	c	1	cS13 - A:c	Field Visit

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3.0. Delineation

The determination of wetland boundaries was based on the presence of accepted wetland flora species (remnant and inferred) representing a minimum of 50% of the cover in the area, and the presence of hydric or nearly hydric soil. Results of the soils analysis are present in table 3. Figure 1 depicts the delineation of the wetland within the subject lands completed during the field visits vs the original delineation which was done by satellite imagery by Dillon Consulting (2016).

Table 3 - Soil Samples (Effective Layer Highlighted)

SITE	SAMPLE DEPTH (cm)	DEPTH TO MOTTLING (cm)	DEPTH TO GLEY (cm)	HORIZON	DEPTH OF HORIZON (cm)	SOIL TYPE	MOISTURE REGIME
1	50	NOT OBSERVED	36	A	0	SILT LOAM	VERY MOIST (6)
				B	23	LOAMY VERY FINE SAND	
2	47	NOT OBSERVED	NOT OBSERVED	A	0	LOAM	FRESH (2)
				B	26	LOAMY VERY FINE SAND	
3	26	NOT OBSERVED	5	A	0	CLAY LOAM	MOIST (5)
4	60	NOT OBSERVED	55	A	0	SILT LOAM	MODERATLY MOIST (4)
				B	16	SILTY CLAY	
5	96	NOT OBSERVED	NOT OBSERVED	A	0	VERY FINE SANDY LOAM	FRESH (2)
				B	13	LOAMY VERY FINE SAND	

The Ontario Wetland Evaluation System (OMNR 2022) classifies wetlands as those areas with hydric soils, which have a Moisture Regime of 6 or higher, and nearly hydric soils, which have a Moisture Regime of 5. Hydric Soil and nearly hydric soil were found within the following sampling locations: 1 and 3.

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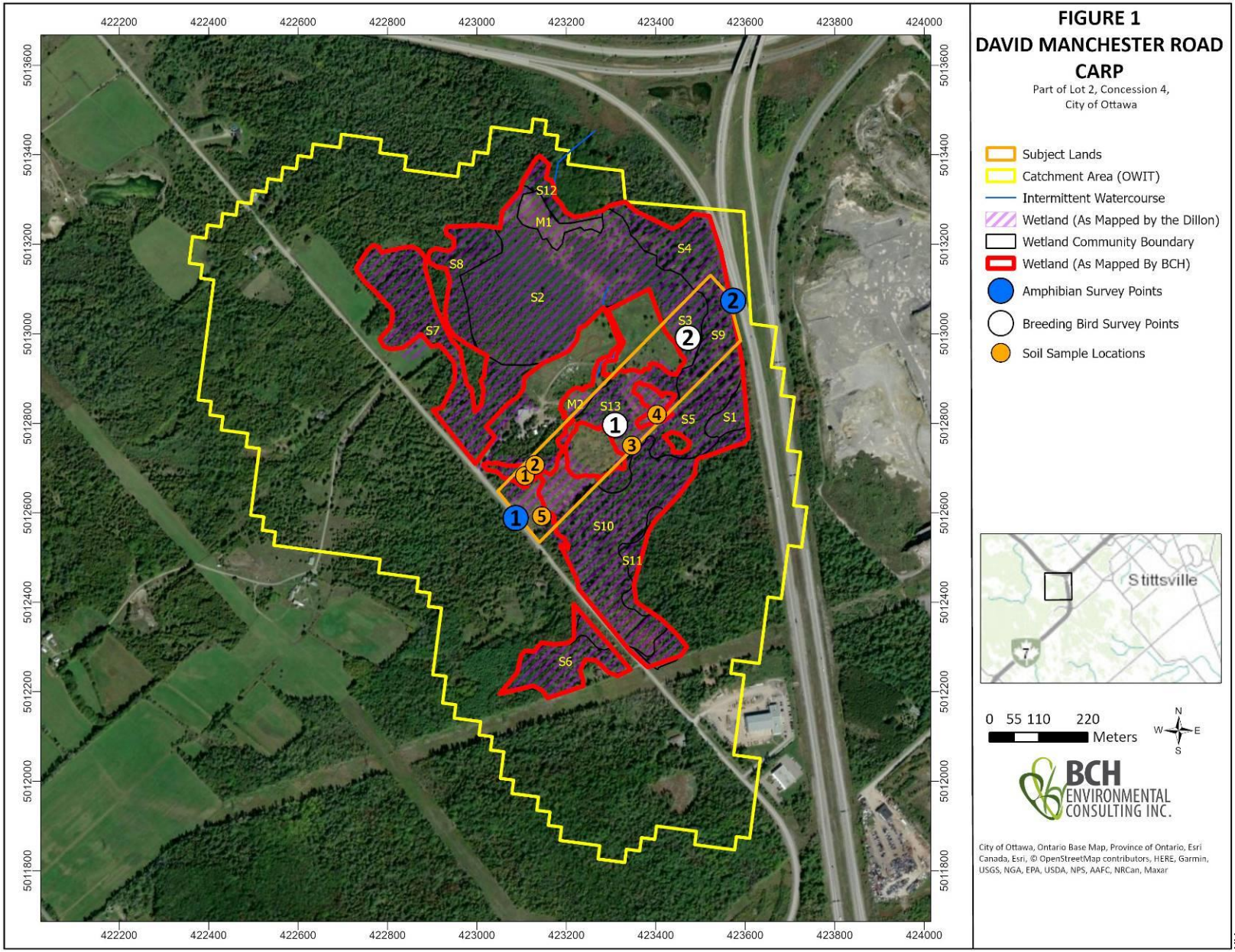

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4.0. Evaluation Criteria

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.

5.0. Wetland Evaluation

The Wetland Evaluation was undertaken by certified wetland evaluator using the procedures identified in the OWES. Scoring for this wetland 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, economic 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.

It is important to note that a wetland evaluation is not a complete inventory of biological or physical features. Wetland community boundaries outside of the subject lands are based on inferred boundaries obtained through the evaluation of aerial imagery, biological lists, Mississippi Valley Conservation Authority, Land Information Ontario, and the Goulbourn Wetland Complex Re-delineation of Wetland Summary Report (Dylan Consulting). Wetland community boundaries within the subject lands are based on works completed by BCH Environmental Consulting during the 2023 season. Within the subject lands 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.

5.1. Biological Component

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The Wetland contains two (2) distinct wetland types including swamp and marsh. One wetland unit was identified totaling approximately 41.5 ha in size. Within this wetland, thirteen communities with dominant vegetation forms were identified. The total Wetland Complex is dominated by 96% swamp with 4% of the fractional area covered by marsh. As per the agricultural information atlas soil composition was 58% loam, and 42% mesic. The wetland site type was entirely Palustrine at 100% of the fractional area.

The habitat surrounding the wetland is dominated by forest, highway, open space, and quarry.

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

5.2. Social Component

Field observations identified the presence of baitfish, and a number of fur bearing mammals observed through tracks and scat. The Wetland does not provide opportunities for nature enjoyment as well as ecosystem study for members of local communities, tourists, schools. During the entirety of the field investigations no other people were observed utilising the wetland. No research projects were identified as occurring within this wetland.

The Wetland is located within the City of Ottawa and close to nearby communities including Carp and Stittsville. Highway 7 is present along the western border of the wetland.

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

5.3. Hydrological Component

The wetland units were identified through the Goulbourn Wetland Complex Re-delineation of Wetland Summary Report (Dylan Consulting). The catchment area for local tributaries was delineated using Ontario Watershed Information Tool (MRNF). The catchment area is shown in Figure 3.

The lands west of East of Highway 7 and North of Highway 417 did not contribute hydrologically to the wetland. This wetland outflows to another wetland north of Hwy 417 that connects to a tributary of the Carp River. The wetland to the north of HWY 417 did not contribute hydrologically to this wetland (downstream), but the wetland in this report does contribute to the wetland to the north.

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

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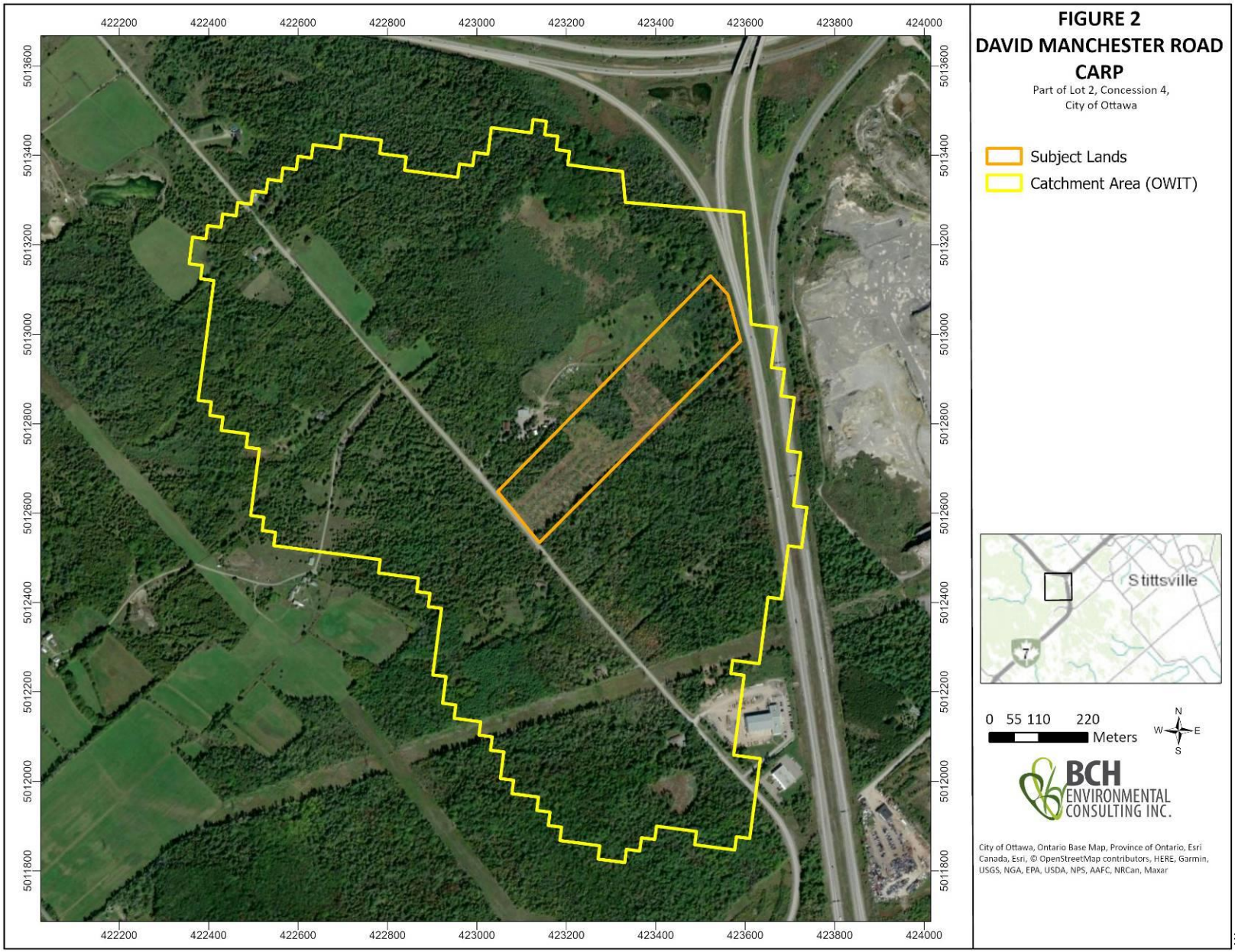

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5.4. Special Features Component

Special features include rare species and important wildlife habitats. 3 breeding bird visits were completed along with 3 amphibian surveys, field vegetation surveys and through review of reference material for the subject lands and surrounding areas, 73 plant species, 11 fauna species, and 28 avifauna species (see Appendix D – Observed Species) were recorded.

Provincially significant species known to occur within the Wetland included Blanding's Turtle and Snapping Turtle (NHIC and INaturalist).

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

5.4.1. Breeding Bird Survey

A breeding bird survey was completed to assess the potential for species of at risk and of species concern utilising the subject lands. The surveys consisted of two stations along with walking through the area. Surveys were completed on May 16, 2023; May 31, 2023 and June 18, 2023. During the 3 visits. 2 listening stations were established (10 minutes at each station). No species at risk or of concern were heard or observed. Species heard or observed either nesting or displaying nesting behaviour within the subject lands include American Robin, Black-capped Chickadee, Black-and-White Warbler, Blue Jay, Song Sparrow, Swamp Sparrow, Northern Waterthrush, Common Yellowthroat and Red-winged Blackbird.

5.4.2. Amphibian Survey

An amphibian survey was completed on April 20, 2023; May 25, 2023 and June 16, 2023 to assess the potential for species of at risk and of species concern utilising the subject lands along with determining the potential for significant wildlife habitat. During the 3 visits. 2 listening stations were established (3 minutes at each station). No species at risk or of concern were heard or observed. During the surveys Chorus Frogs (full chorus), Spring Peepers (full chorus), and Wood Frogs (4 individuals) were heard calling from within the site. As per the criteria for significant wildlife habitat (OMRF 2015), the onsite wetland does constitute significant wildlife habitat (Amphibian Breeding Habitat).

6.0. Wetland Evaluation Score

The scoring of the Wetland Complex can be found below:

- Biological Component: 102
- Social Component: 106
- Hydrological Component: 187
- Special Features Component: 155
- Total: 550

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

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7.0. Conclusion

Based on the results of the wetland evaluation, the Wetland is classified as evaluated non-provincially significant on the basis that a total score of more than 600 points wasn't achieved (total score of 558) and less than 200 points was achieved in the Biological component (110) and the Special Features component (155). Significance of the Wetland Complex was determined through all aspects of the wetland evaluation.

Prior to this evaluation the wetland was a PSW (Goulbourn Wetland Complex), the updated wetland evaluation now shows that this wetland as non-provincially significant.

Within the subject lands (9.98ha) prior to delineation and evaluation contained approximately 7.47ha of wetland, after the delineation and evaluation presented in this report it contained approximately 6.10ha of wetland. Under the old delineation (Dillon Consulting 2016) approximately 3.73 ha of wetland habitat was cleared, the updated delineation corrects this number to 2.67 ha of wetland habitat that has been cleared within the subject lands (Figure 3).

To conclude this report, it is the professional opinion of the authors that the portion of wetland evaluated should no longer be considered provincially significant and that the updated delineation shows that the actual amount of wetland habitat cleared was most likely 2.67 ha.

Thank you for the opportunity to work with you. If you have any questions or comments please do not hesitate to contact our office.

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Cody Fontaine, Wildlife Technologist

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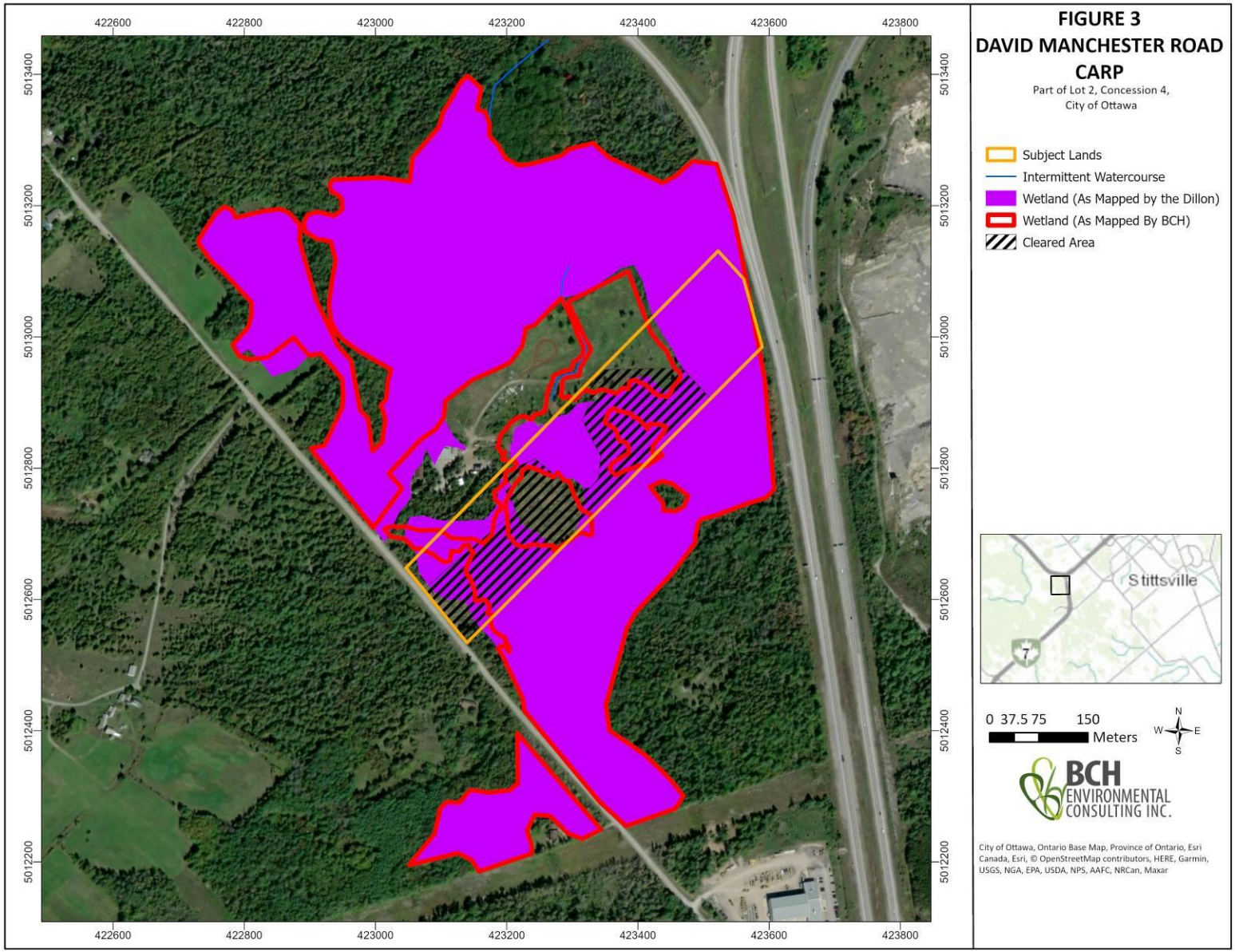

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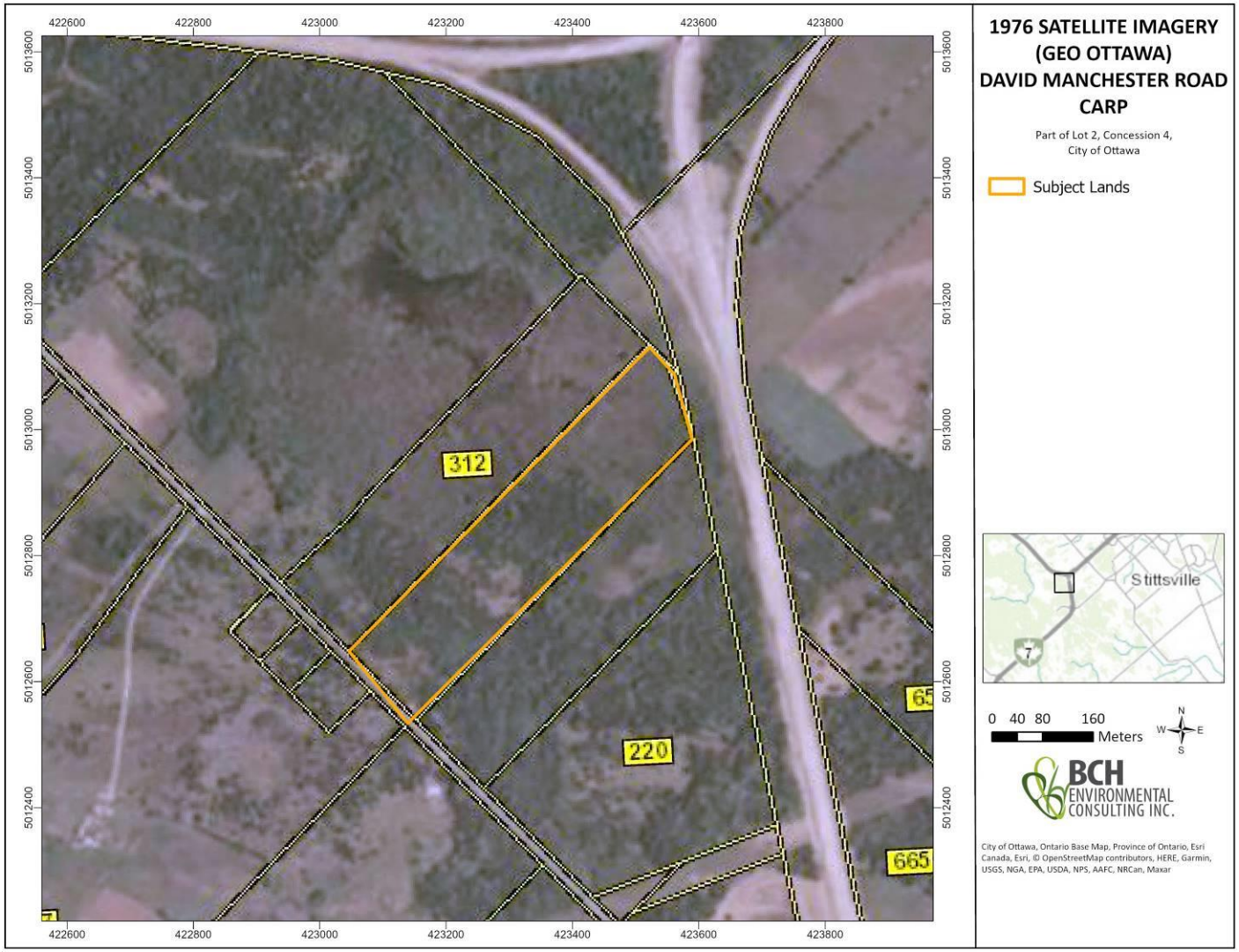
APPENDIX A – HISTORICAL IMAGERY



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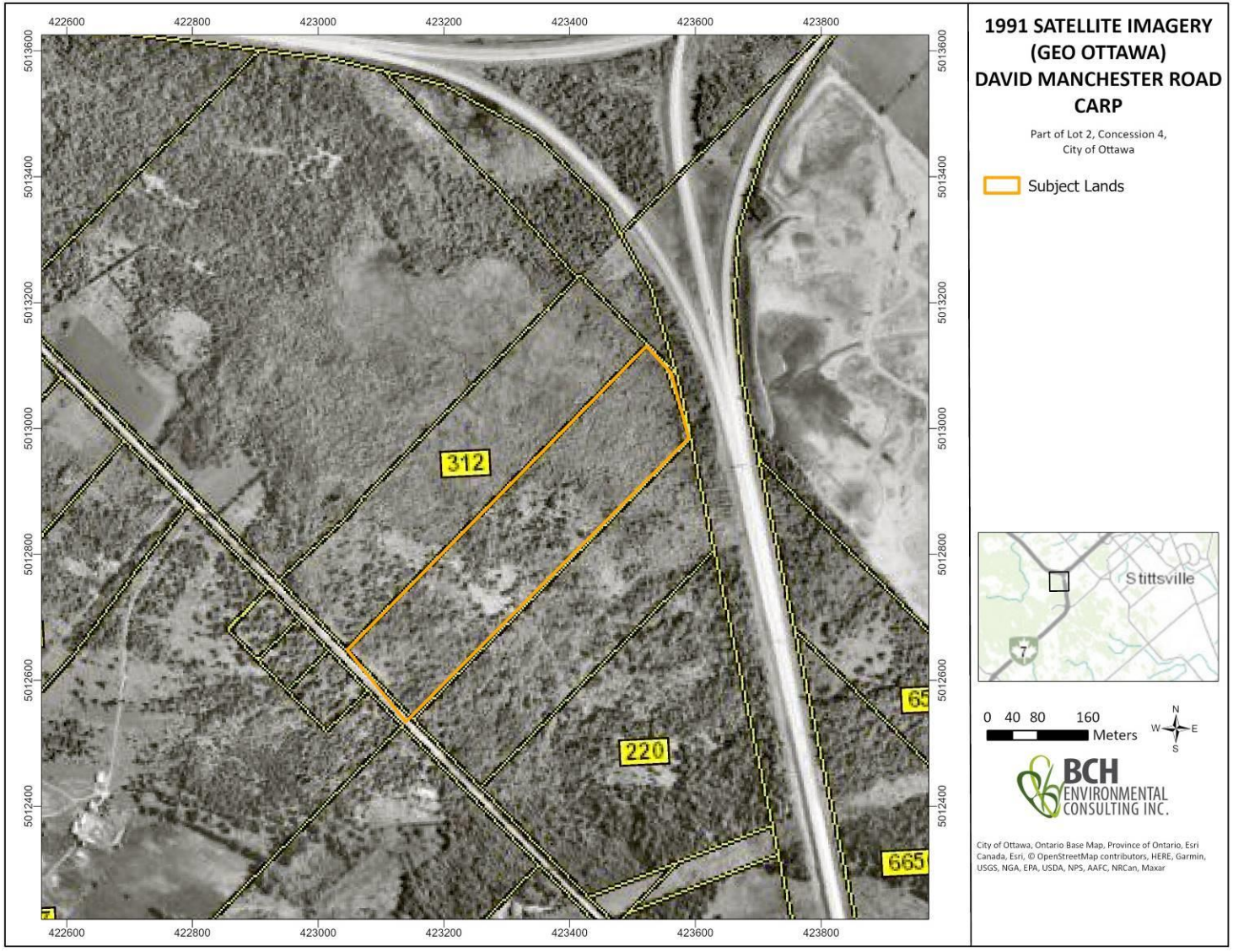

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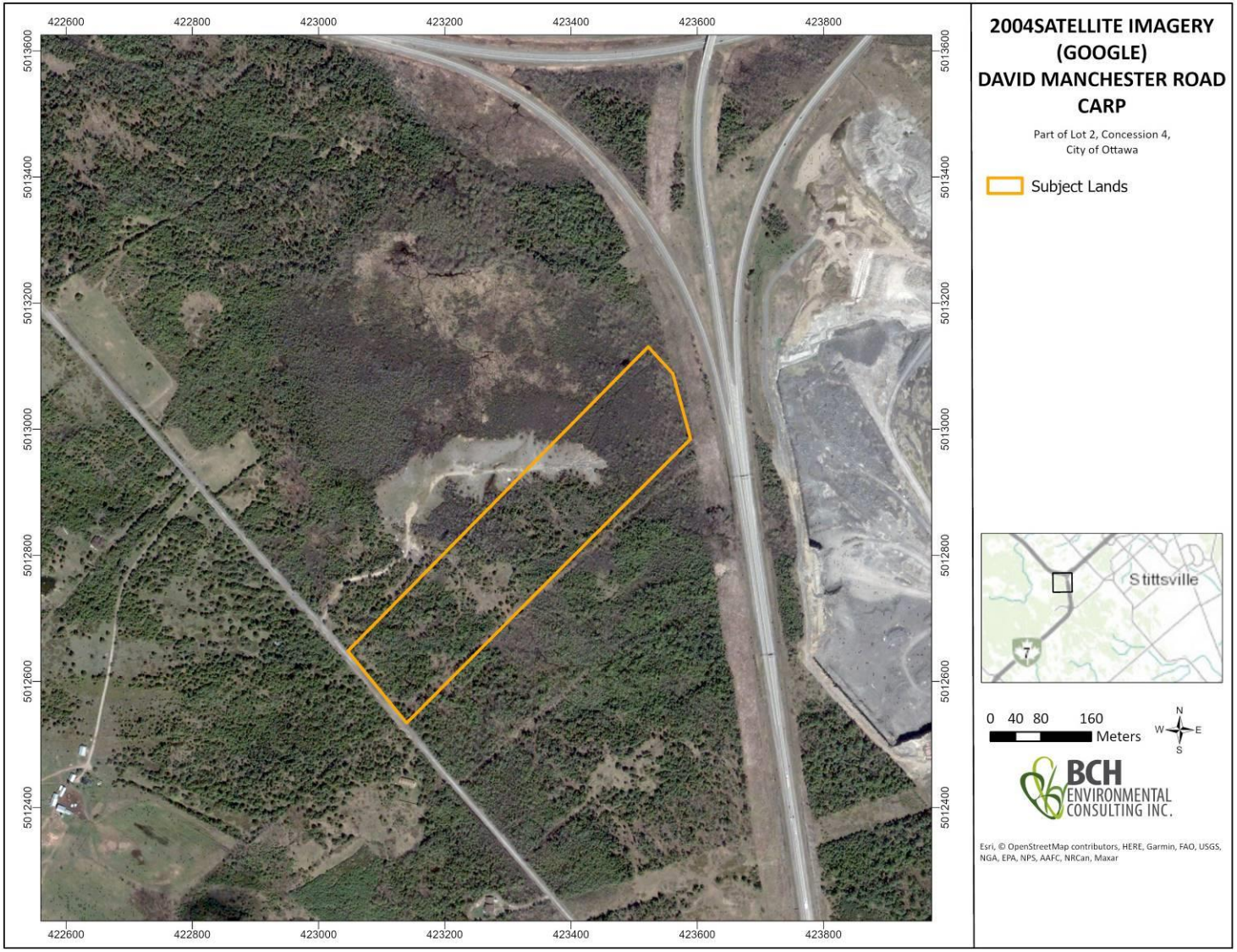

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APPENDIX B – WETLAND DATA SUMMARY FORM

***Soils were classified by utilising the Agricultural Information Atlas online tool.**

Map Code	Field Code	GPS Coordinate	Dominant Form	Forms	# Forms	Dominant Species	Area	% Open Water			Open Water (ha)	Soil*	Site Type	Fish Habitat			
								Low Est.	High Est.	Mean Est.				% Fish Habitat	Area (ha)	Habitat Type	Key Veg. Group
S1	tsS1-A:ts*	18 T 423569 5012813	ts	ts	-	-	0.6	-	-	-	-	Loam	Swamp	-	-	-	-
S2	tsS2-A:ts*ne,re	18 T 423156 5013094	ts	ts, ne, re	3	speckled alder / willows	10.3	10	30	20	2.06	Mesic	Swamp	30	3.09	Swamp	willow
S3	tsS3-A:ts*ne,re	18 T 423472 5013026	ts	ts, ne, re	3	speckled alder / willows	1	-	-	-	-	Mesic	Swamp	-	-	-	-
M1	reM1-A:re*	18 T 423150 5013253	re	re	-	-	0.9	-	-	-	-	Mesic	Marsh	-	-	-	-
M2	reM2-A:re*ts	18 T 423233 5012857	re	re, ts	2	cattail	0.7	30	60	45	0.315	Loam	Marsh	60	0.42	Marsh	cattail
S4	hS4-A:h* ts. ne	18 T 423445 5013198	h	h, ts, ne	3	trembling aspen/ red maple	2.4	-	-	-	-	Mesic	Swamp	-	-	-	-
S5	hS5-A:h* ts. ne	18 T 423478 5012804	h	h, rs, ne	3	trembling aspen/ red maple	2.6	-	-	-	-	Loam/Mesic	Swamp	-	-	-	-

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Map Code	Field Code	GPS Coordinate	Dominant Form	Forms	# Forms	Dominant Species	Area	% Open Water			Open Water (ha)	Soil*	Site Type	Fish Habitat			
								Low Est.	High Est.	Mean Est.				% Fish Habitat	Area (ha)	Habitat Type	Key Veg. Group
S6	hS6-A:h*	18 T 423205 5012271	h	h	-	-	2.3	-	-	-	-	Loam	Swamp	-	-	-	-
S7	hS7-A:h*	18 T 422864 5013074	h	h	-	-	5.2	-	-	-	-	Loam	Swamp	-	-	-	-
S8	hS8-A:h*	18 T 422968 5013179	h	h	-	-	1.8	-	-	-	-	Mesic	Swamp	-	-	-	-
S9	hS9-A:h* ts. ne	18 T 423537 5012988	h	h, ts, ne	3	trembling aspen/ red maple	1.6	-	-	-	-	Mesic/Loam	Swamp	-	-	-	-
S10	cS10-A:c* h,ts,m	18 T 423345 5012617	c	c, h, ts, m	4	white cedar	6.6	-	-	-	-	Loam	Swamp	-	-	-	-
S11	cS11-A:c*	18 T 423372 5012538	c	c	-	-	1.1	-	-	-	-	Loam	Swamp	-	-	-	-
S12	cS12-A:c*	18 T 423159 5013313	c	c	-	-	0.7	-	-	-	-	Loam	Swamp	-	-	-	-
S13	cS13 - A:c	18 T 423316 5012824	c	c	-	-	3.7	-	-	-	-	Loam/Mesic	Swamp	-	-	-	-

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APPENDIX C

–WETLAND EVALUATION DATA AND SCORING RECORD

WETLAND EVALUATION DATA

AND SCORING RECORD

Wetland Name: Portions of the Goulbourn Wetland Complex

Geographic Location (municipality, lot/concession, etc):

0 David Manchester Road, Part of Lot 2, Concession 4, City of Ottawa

Map / Photo Locational Reference (e.g., latitude/longitude, NTS map, UTM):

45°15'52.56"N 75°58'37.36"W

Eco-District: 6E-12

Wetland Size (hectares): 41.5 ha

Southern OWES 4

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Vegetation Form	FA
h	0.38
c	0.29
dh	
dc	
ts	0.29
ls	
ds	
gc	
m	
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1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

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

Refer to page 36 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).

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	0.58	x 18	= 10
Silt/Marl:		x	=
Limestone:		x	=
Sand:		x	=
Humic/Mesic:	0.42	x 9	= 4
Fibric:		x	=
Granite:		x	=
Total			14

As observed in Appedix B of the accompanying report mutiple communities contained both Loam and Mesic soils. For the purpose of scoring the soils boundarie were determine utilising the Agricultural Information Atlas online tool, and the Fractional Areas are taken from that.

The communities where both were present the boundary was determine and the Fractional Areas of soils type where measure independant of the wetland community/form

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

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1.1.2 Wetland Type

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

	Fractional Area		Score
Bog		x 3 =	
Fen		x 6 =	
Swamp	0.96	x 8 =	7.6
Marsh	0.04	x 15 =	0.6
Total		=	

Wetland Type Score *(maximum 15 points)* 8

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	x 2 =	2
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		=	2

Site Type Score *(maximum 5 points)* 2

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1.2 BIODIVERSITY

1.2.1 Number of Wetland Types

(Check only one)

	One	=	9 points
✓	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		Total # of communities with 4-5 forms		Total # of communities with 6 or more forms	
1 =	1.5 pts	(1) =	2 pts	1 =	3 pts
2 =	2.5	2 =	3.5	2 =	5
3 =	3.5	3 =	5	3 =	7
4 =	4.5	4 =	6.5	4 =	9
5 =	5	5 =	7.5	5 =	10.5
6 =	5.5	6 =	8.5	6 =	12
7 =	6	7 =	9.5	7 =	13.5
8 =	6.5	8 =	10.5	8 =	15
9 =	7	9 =	11.5	9 =	16.5
10 =	7.5	10 =	12.5	10 =	18
11 =	8	11 =	13	11 =	19
+ 0.5 *for each additional community* =	10	+ 0.5 *for each additional community* =		+ 1.0 *for each additional community* =	

Vegetation Communities Score
(maximum 45 points) 12

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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.

	row crop
✓	pasture
✓	abandoned agricultural land
✓	deciduous forest
✓	coniferous forest
✓	mixed forest*
	abandoned pits and quarries
	open lake or deep river
	fence rows with deep cover, or shelterbelts
	terrain appreciably undulating, hilly or with ravines
✓	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) _ 6

1.2.4 Proximity to Other Wetlands

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

✓		Points
✓	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:
Other Portions of the Goulbourn Wetland Complex through the Goulbourn Wetland Complex Approximatly 1km

Proximity to other Wetlands Score
(maximum 8 points) 8

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1.2.5 Interspersion

Number of Intersections = 131

✓	Number of Intersections *(Check one only)*	Points
	26 or less	= 3
	27 to 40	= 6
	41 to 60	= 9
	61 to 80	= 12
	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)* 21

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
	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)* 8

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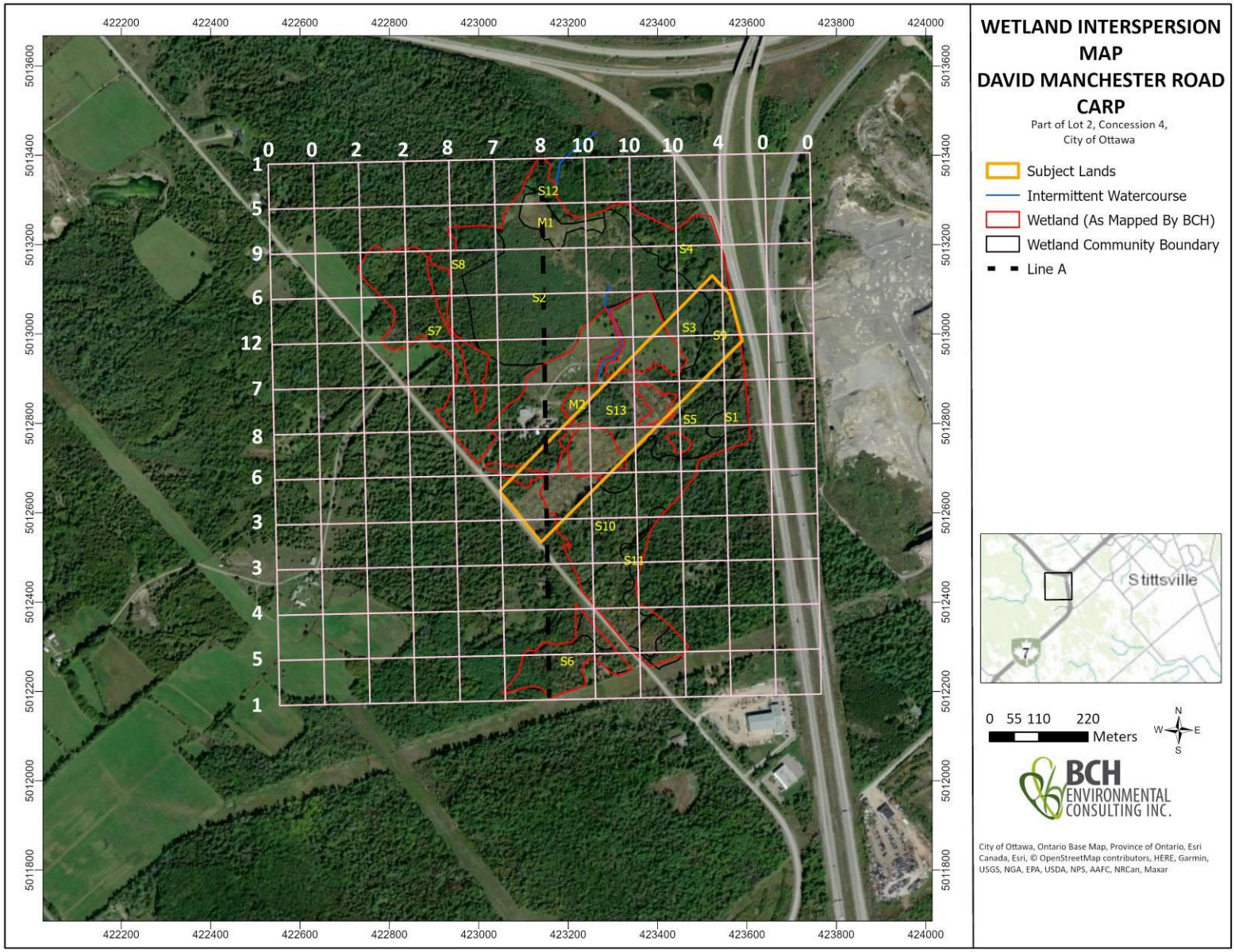

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1.3 SIZE (BIOLOGICAL COMPONENT)

Total Size of Wetland = 41.5 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

68

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) 10

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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: 28 ha

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

Source of information:
Field Visit, Satellite Imagery, LIO

Wood Products Score *(maximum 18 points)* 6

2.1.2 Wild Rice

Check only one.

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

Source of information:
Field Visit

Wild Rice Score *(maximum 6 points)* 0

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2.1.3 Commercial Baitfish

Check only one.

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

Source of information:
Field Visit

Commercial Fish Score *(maximum 12 points)* 12

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.	Beaver	Field Visit
2.	Coyote	Field Visit
3.	Muskrat	Field Visit
4.	Raccon	Field Visit
5.	Red Squirrel	Field Visit
6.		

Furbearer Score *(maximum 12 points)* 12

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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	

Sources of information (include evidence/criteria forming basis for score and any relevant reference used to obtain that information):

Hunting: Private Land, No Evidence of Hunting Observed During Field Visit

Nature: Private Land, No Evidence of this Observed During Field Visit

Fishing: No viable lakes/rivers/stream for fishing (field visit)

Recreational Activities Score
(maximum 80 points) 24

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2.3 LANDSCAPE AESTHETICS

2.3.1 Distinctness

Check only one.

	Clearly Distinct	=	3 pts
✓	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
	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:
Clearing of Wetland has occured, portions were clearing in 2004 and more clearing tool place in 2021

Source of information:
GeoOttawa, Google, ArcGIS

Absence of Human Disturbance Score
(maximum 7 points) 1

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2.4.3 Research and Studies

Check all that apply; score highest category checked.

	Long term research has been done	=	12 pts
	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:

Protecting Goulbourn Wetland Complex https://www.wildlifeinfo.ca/goulbourn-wetlands.html

GOULBOURN WETLAND COMPLEX Re-delineation of Wetland Summary Report

Wild Stittsville

Research and Studies Score
(maximum 12 points) 5

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Name of Settlement: Stittsville (Ottawa)

Distance of wetland from settlement: 950m

Population of settlement: 48,990 (Source: City of Ottawa)

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	(28)	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

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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	0 x 10 = ____
FA of wetland occurring in provincially or nationally protected areas (e.g., parks and conservation reserves)	0 x 10 = ____
FA of wetland area in Crown/public ownership, not as above	0 x 8 = ____
FA of wetland area in private ownership, not as above	1 x 4 = 4

Source of information:
LIO, FIELD VISIT, GEOOttawa

Ownership Score *(maximum 10 points)* 4

2.7 SIZE (SOCIAL COMPONENT)

Total Size of Wetland = 41.5 ha Sum of scores from Subcomponents 2.1, 2.2, and 2.5 = 80

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) 16

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3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

Check one of the following options.

☐	If wetland is a coastal wetland, ➡ score 0 points for this section.
☐	If wetland is entirely isolated in site type, ➡ score 100 points automatically.
✓	Wetland not as above – proceed through 'steps' A through F below.

(A) Total wetland area = 41.5 ha

(B) Size of wetland's catchment = 146.70 ha

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

(D) Total area of upstream detention areas = {A + C } = 41.5 ha

(E) Upstream Detention Factor = {(A/D) x 2} = 1 (maximum 1.0)

(F) Attenuation Factor = {(A/B) x 10} = 1 (maximum 1.0)

Flood Attenuation Final Score = {(E + F) /2) x 100 = 100

Flood Attenuation Score *(maximum 100 points)* 100

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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)
✓	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	=	x 0.7 =	0.7
FA of palustrine wetland with inflows	=	x 1.0 =	
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*) 0.7

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

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

	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)* 0.6

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)	= x	0.75 =	0.72
FA of wetland with emergent, submergent or floating vegetation (re, be, ne, su, f, ff)	= x	1.0 =	0.04
FA of wetland with little or no vegetation (u)	= x	0.5 =	

Sum (*PUF cannot exceed 1.0*) 0.76

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Step 5: Calculation of final score

	Wetland on defined 5 major lakes or 5 major rivers	0
✓	All other wetlands – calculate as follows	
	Initial score	60
	Watershed Improvement Factor (WIF)	0.7
	Land Use Factor (LUF)	0.6
	Pollutant Uptake Factor (PUF)	0.76
	Final score: 60 x WIF x LUF x PUF =	19

Short Term Water Quality Improvement Score
(maximum 60 points) 19

✓

3.2.2 Long Term Nutrient Trap

Step 1:

	Wetland on defined 5 major lakes or 5 major rivers = 0 points
✓	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
✓	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

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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) 6

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3.3 CARBON SINK

Check only one of the following:

	Bog, fen or swamp with more than 50% coverage by organic soil	=	5 pts
✓	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:
LIO, Agricultural Information Atlas, Field Visit

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:

	Wetland entirely isolated or palustrine	=	0 pts
	Any part of the wetland is riverine or lac[illegible]e	=	Go to st[illegible]

Step 2: *Choose the one characteristic that best describ[illegible] sh[illegible]e vegetation (see page 109 for description of "shoreline".)*

	Trees and shrubs	=	1[illegible]
	Emergent vegetation	=	8
	Submergent vegetation	=	6
	Other shoreline vegetation	=	3
	No vegetation	=	0

Shoreline Erosion Control Score
(maximum 15 points) _____

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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	=	x 50 =	50
■ FA of riverine wetland	=	x 20 =	
■ FA of lacustrine wetland (not dominant site type)	=	x 0 =	

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

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

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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)* 0

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)* 30

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4.1.2 Species

4.1.2.1 Provincially Significant Animal Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
Snapping Turtle	Chelydra serpentina	N/A	N/A	NHIC / INATURALIST
Blanding's Turtle	Emydoidea blandingi	N/A	N/A	INATURALIST

Additional Notes/Comments:

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) 80

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4.1.2.3 Regionally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
Western Chorus Frog	Pseudacris triseriata	calling/breeding	April 20, 2023	Field Observation

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

4.1.2.4 Locally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source
None Observed				

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

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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		LIO, NHIC, FIELD VISITS	= 0

Additional Notes/Comments:

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
	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)*:

Coniferous forest are not dense enought to provided suitable cover. Marsh habitat is limited in size and also appears in a mosaic with tall shrubs (limiting the amount of good cover). Wetland present appear to lack depth. Additionally habitat is fracmented by residential dwelling and roads and highways

Source of information:
SWHG, LIO, NHCI, FIELD VISITS

Winter Cover for Wildlife Score
(maximum 100 points) 0

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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	= 0	= 0

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

Source of information:
Field Visit

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
✓	Habitat Suitable	= 10
	Habitat not suitable	= 0

Species/habitat/vegetation community scored *(e.g., mallard in W3)*:
Mallard /Marsh/ S2, S3, M1, M2

Source of information:
Field Visits

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
✓	Not possible / Unknown	= 0

Species/habitat/vegetation community scored:

Source of information:
Field Visits, Bird Surveys

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

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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

Step 1:

☐	Fish habitat is not present within the wetland	Go to Step 7, Score 0 points
✓	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
✓	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
☐	Low marsh present	Continue through Step 4, scoring as noted below

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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** (from Table 7) 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 7)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
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*)					

Continue to Step 5

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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.

☐	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 7) 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 7)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed	✓	1.6	0.2	5	1
4	Arrowhead-Pickerelweed				5	
	Total Score for High Marsh (*maximum 25 points*)					1

Continue to Step 6

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Step 6:

☐	Swamp containing fish habitat not present	Go to Step 7
✓	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 7).
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 7)	Multiplication Factor	Score
Seasonally Flooded Swamp				10	
Permanently Flooded Swamp	✓	11.9	0.6	10	6
		Total Score for Swamp (*maximum 20 points*)			6

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) = 0
D. Score from Step 5 (High Marsh) = 1
E. Score from Step 6 (Swamp) = 6

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) 7

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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
☐	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
☐	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

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4.3 ECOSYSTEM AGE

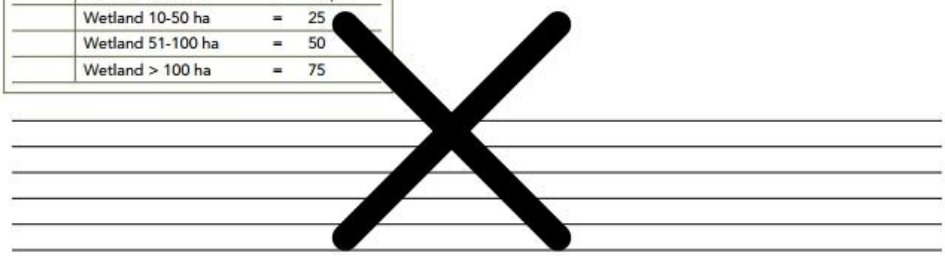
		Fractional Area		Score
Bog	=		x 25 =	
Fen, on deeper soils; floating mats or marl	=		x 20 =	
Fen, on limestone rock	=		x 5 =	
Swamp	=	0.96	x 3 =	2.88
Marsh	=	0.04	x 0 =	0
		Total	=	

Ecosystem Age Score *(maximum 25 points)* 3

4.4 GREAT LAKES COASTAL WETLANDS

Choose one only.

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



Great Lakes Coastal Wetland Score
(maximum 75 points) _____

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BCH ENVIRONMENTAL CONSULTING INC.

GENERAL INFORMATION

Wetland Evaluator(s)

Name: Shaun St.Pierre Affiliation: BCH Environmental Consulting Inc.

Signature: [signature]

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Name: ______ Affiliation: ______

Signature: ______

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

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Signature: ______

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Date(s) wetland visited (in field): See Table Below

Date evaluation completed: June 21, 2023

Estimated time devoted to completing the field survey in person hours: 9

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Weather Conditions

i) at time of field work: See Table Below

ii) summer conditions in general: See Table Below

DATE	TIME	AIR TEMP. (°C)	WIND (Beaufort Scale)	CLOUD COVER / PRECIPITATION	STAFF
April 20, 2023	2030h-2045h	8	Light Air	Overcast	C. Fontaine
April 26, 2023	1030h-1415h	9	Light Air	Overcast	S.St.Pierre C.Fontaine
May 19, 2023	0630h-0715h	7	Light Air	Clear Skies	C.Fontaine
May 25, 2023	2100h-2115h	15	No Wind	Clear Skies	C.Fontaine
June 2, 2023	0730h-0805h	27	Light Air	30-40% Cloud Cover	S.St.Pierre C.Fontaine
June 16, 2023	2120h-2130h	18-19	Light Breeze	Overcast	C.Fontaine
June 19, 2023	0810h-0840h	16	Light Breeze	80% Cloud Cover	C.Fontaine

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WETLAND EVALUATION SCORING RECORD

WETLAND NAME: Portions of the Goulbourn Wetland Complex

1.0 BIOLOGICAL COMPONENT

	1.1 PRODUCTIVITY
14	1.1.1 Growing Degree-Days/Soils
8	1.1.2 Wetland Type
2	1.1.3 Site Type
24	
	1.2 BIODIVERSITY
13	1.2.1 Number of Wetland Types
12	1.2.2 Vegetation Communities
6	1.2.3 Diversity of Surrounding Habitat
8	1.2.4 Proximity to Other Wetlands
21	1.2.5 Interspersion
8	1.2.6 Open Water Type
68	
10	1.3 SIZE (Biological Component)
102	TOTAL (Biological Component)

Southern OWES 4

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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
24	2.2 RECREATIONAL ACTIVITIES
	2.3 LANDSCAPE AESTHETICS
0	2.3.1 Distinctness
1	2.3.2 Absence of Human Disturbance
1	Total for Landscape Aesthetics
	2.4 EDUCATION AND PUBLIC AWARENESS
0	2.4.1 Educational Uses
0	2.4.2 Facilities and Programs
5	2.4.3 Research and Studies
5	Total for Education and Public Awareness
26	2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT
4	2.6 OWNERSHIP
16	2.7 SIZE (Social Component)
	2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE
0	2.8.1 Aboriginal Values
0	2.8.2 Cultural Heritage
106	TOTAL (Social Component)

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3.0 HYDROLOGICAL COMPONENT

100	3.1 FLOOD ATTENUATION	
	3.2 WATER QUALITY IMPROVEMENT	
19	3.2.1	Short Term Water Quality Improvement
3	3.2.2	Long Term Nutrient Trap
6	3.2.3	Groundwater Discharge
28	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	
187	TOTAL (Hydrological Component)	

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4.0 SPECIAL FEATURES COMPONENT

	4.1 RARITY
	4.1.1 Wetlands
0	4.1.1.1 Rarity within the Landscape
30	4.1.1.2 Rarity of Wetland Type
30	Total for Wetland Rarity
	4.1.2 Species
80	4.1.2.1 Provincially Significant Animals
0	4.1.2.2 Provincially Significant Plants
20	4.1.2.3 Regionally Significant Species
0	4.1.2.4 Locally Significant Species
100	Total for Species Rarity
	4.2 SIGNIFICANT FEATURES AND HABITATS
0	4.2.1 Colonial Waterbirds
0	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
7	4.2.6.1 Spawning and Nursery Habitat
5	4.2.6.2 Migration and Staging Habitat
22	Total for Significant Features and Habitats
3	4.3 ECOSYSTEM AGE
0	4.4 GREAT LAKES COASTAL WETLANDS
155	TOTAL FOR SPECIAL FEATURES COMPONENT (*not to exceed 250*)

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SUMMARY OF EVALUATION RESULT

Wetland Portions of the Goulbourn Wetland Complex

102	1.0 TOTAL FOR BIOLOGICAL COMPONENT
106	2.0 TOTAL FOR SOCIAL COMPONENT
187	3.0 TOTAL FOR HYDROLOGICAL COMPONENT
155	4.0 TOTAL FOR SPECIAL FEATURES COMPONENT
550	TOTAL WETLAND SCORE

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APPENDIX D –OBSERVED SPECIES

Common Name	Scientific Name	SRank	Provincial Status (SARO)	Federal Status (SARA)	FIELD OBS.	INATURALIST	NHIC
Field Horsetail	*Equisetum arvense*	S5			x		
Water Horsetail	*Equisetum fluviatile*	S5			x		
Bracken Fern	*Pteridium aquilinum*	S5			x		
Sensitive Fern	*Onoclea sensibilis*	S5			x		
Marsh Fern	*Thelypteris palustris*	S5			x		
Balsam Fir	*Abies balsamea*	S5			x		
White Spruce	*Picea glauca*	S5			x		
Eastern White Pine	*Pinus strobus*	S5			x		
Eastern White Cedar	*Thuja occidentalis*	S5			x		
Narrowleaf Cattail	*Typha angustifolia*	SNA			x		
Broad-leaved Cattail	*Typha latifolia*	S5			x		
Deep-green Sedge	*Carex tonsa*	S5			x		
Lake Sedge	*Carex lacustris*	S5			x		
Slender Willow	*Salix petiolaris*	S5			x		
Redtop	*Agrostis gigantea*	SNA			x		
Smooth Brome	*Bromus inermis*	SNA			x		
Bluejoint Reedgrass	*Calamagrostis canadensis*	S5			x		
Common Reed	*Phragmites australis*	S4?			x		
Canada Bluegrass	*Poa compressa*	SNA			x		
Bladder Sedge	*Carex intumescens*	S5			x		
Awl-fruited Sedge	*Carex stipata*	S5			x		
Balsam Poplar	*Populus balsamifera*	S5			x		
Large-toothed Aspen	*Populus grandidentata*	S5			x		
Trembling Aspen	*Populus tremuloides*	S5			x		
Bebb's Willow	*Salix bebbiana*	S5			x		
Pussy Willow	*Salix discolor*	S5			x		
Speckled Alder	*Alnus incana ssp. rugosa*	S5			x		
White Birch	*Betula papyrifera*	S5			x		
Gray Birch	*Betula populifolia*	S4			x		
American Elm	*Ulmus americana*	S5			x		
Tall Buttercup	*Ranunculus acris*	SNA			x		
Field Mustard	*Brassica rapa*	SNA			x		
Common Strawberry	*Fragaria virginiana*	S5			x		
Choke Cherry	*Prunus virginiana*	S5			x		

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White Meadowsweet	*Spiraea alba*	S5	x
Goldenrods	*Solidogo sp.*		x
Barren Strawberry	*Geum fragarioides*	S5	x
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	S5	x
White Sweet Clover	*Melilotus albus*	SNA	x
Red Clover	*Trifolium pratense*	SNA	x
White Clover	*Trifolium repens*	SNA	x
Cow Vetch	*Vicia cracca*	SNA	x
Upright Yellow Wood-sorrel	*Oxalis stricta*	S5	x
Poison Ivy	*Toxicodendron radicans*	S5	x
Staghorn Sumac	*Rhus hirta*	S5	x
Red Maple	*Acer rubrum*	S5	x
Silver Maple	*Acer saccharinum*	S5	x
Glossy Buckthorn	*Frangula alnus*	SNA	x
Wild Carrot	*Daucus carota*	SNA	x
Bunchberry	*Cornus canadensis*	S5	x
Green Ash	*Fraxinus pennsylvanica*	S4	x
Common Milkweed	*Asclepias syriaca*	S5	x
Common Mullein	*Verbascum thapsus*	SNA	x
Common Plantain	*Plantago major*	SNA	x
Nannyberry	*Viburnum lentago*	S5	x
Common Yarrow	*Achillea millefolium*	SNA	x
Common Ragweed	*Ambrosia artemisiifolia*	S5	x
Howell's Pussytoes	*Antennaria howellii*	S5	x
Canada Thistle	*Cirsium arvense*	SNA	x
Bull Thistle	*Cirsium vulgare*	SNA	x
Spotted Joe Pye Weed	*Eutrochium maculatum*	S5	x
Grass-leaved Goldenrod	*Euthamia graminifolia*	S5	x
Mouse-ear Hawkweed	*Pilosella officinarum*	SNA	x
Common Sow-thistle	*Sonchus oleraceus*	SNA	x
Common Tansy	*Tanacetum vulgare*	SNA	x
Common Dandelion	*Taraxacum officinale*	SNA	x
Colts Foot	*Tussilago farfara*	SNA	x
Tall Goldenrod	*Solidago altissima spp. Altissima*	S5	x
Fescues	*Festuca sp.*		x
Willows	*Salix sp.*		x

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Common Mullein	*Verbascum thapsus ssp. thapsus*	SNA			x		
Reed Canary Grass	*Phalaris arundinacea var. arundinacea*	S5			x		
Grasses					x		
Common Juniper	*Juniperus communis var. communis*	SNA			x		
Western Chorus Frog	*Pseudacris triseriata*	S4		THR	x		x
Spring Peeper	*Pseudacris crucifer*	S5			x		
Green Frog	*Rana clamitans*	S5			x		
Wood Frog	*Rana sylvatica*	S5			x		
Snapping Turtle	*Chelydra serpentina*	S3	SC	SC		x	x
Blanding's Turtle	*Emydoidea blandingi*	S3	THR	THR		x	
Turkey Vulture	*Cathartes aura*	S5B			x		
Mallard	*Anas platyrhynchos*	S5			x		
Wild Turkey	*Meleagris gallopava*	S5			x		
American Woodcock	*Scolopax minor*	S4B			x		
Belted Kingfisher	*Ceryle alcyon*	S4B			x		
Alder Flycatcher	*Empidonax alnorum*	S5B			x		
Eastern Phoebe	*Sayornis phoebe*	S5B			x		
Warbling Vireo	*Vireo gilvus*	S5B			x		
Blue Jay	*Cyanocitta cristata*	S5			x	x	
American Crow	*Corvus brachyrhynchos*	S5B			x		
Black-capped Chickadee	*Poecile atricapilla*	S5			x		
Veery	*Catharus fuscescens*	S4B			x		
American Robin	*Turdus migratorius*	S5B			x		
European Starling	*Sturnus vulgaris*	SNA			x		
Yellow Warbler	*Dendroica petechia*	S5B			x		
Black-and-white Warbler	*Mniotilta varia*	S5B			x		
Ovenbird	*Seiurus aurocapillus*	S4B			x		
Northern Waterthrush	*Seiurus noveboracensis*	S5B			x		
Common Yellowthroat	*Geothlypis trichas*	S5B			x		
Grasshopper Sparrow	*Ammodramus savannarum*	S4					x
Song Sparrow	*Melospiza melodia*	S5B			x		
Swamp Sparrow	*Melospiza georgiana*	S5B			x		
Dark-eyed Junco	*Junco hyemalis*	S5B			x		
Northern Cardinal	*Cardinalis cardinalis*	S5			x		
Red-winged Blackbird	*Agelaius phoeniceus*	S4			x		
Common Grackle	*Quiscalus quiscula*	S5B			x		
Purple Finch	*Carpodacus purpureus*	S4B			x		

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American Goldfinch	*Carduelis tristis*	S5B	x
Grey Squirrel	*Sciurus carolinensis*	S5	x
Beaver	*Castor canadensis*	S5	x
Black Bear	*Ursus americanus*	S5	x
Raccoon	*Procyon lotor*	S5	x
White-tailed Deer	*Odocoileus virginianus*	S5	x

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APPENDIX E – PHOTOGRAPHIC RECORD

PHOTO #: 8114	
DATE: April 24, 2023	
DESCRIPTION: Community S2	
PHOTO #: 8125	
DATE: April 24, 2023	
DESCRIPTION: Community S3	

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PHOTO #: 8181	
DATE: April 24, 2023	
DESCRIPTION: Community S4	
PHOTO #: 9186	
DATE: June 2,2023	
DESCRIPTION: Community S5	

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PHOTO #: 8069	
DATE: April 24, 2023	
DESCRIPTION: Community S9	
PHOTO #: 8060	
DATE: April 24,2023	
DESCRIPTION: Community S10	

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PHOTO #: 8164	
DATE: April 24, 2023	
DESCRIPTION: Community S13	
PHOTO #: 8104	
DATE: April 24,2023	
DESCRIPTION: Community M2	

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APPENDIX F: QUALIFICATIONS

SHAUN M. ST.PIERRE, B.Sc. Biology

EDUCATION

B.Sc. Biology, Trent University 2007
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2005
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2004

LANGUAGES

Fluent in French and English

POSITIONS HELD

2018 -	:	BCH Environmental Consulting Inc., Biologist / Owner
2006-2017:		Bowfin Environmental Consulting Inc., Biologist / GIS Specialist / Environmental Site Inspector
2005:		St. Lawrence River Institute of Environmental Sciences, Field Research Assistant
2004:		MNR Kawartha Lakes, Field Research Assistant
2003:		DFO- Experimental Lake Area, Field Research Assistant
2001:		Resource Stewardship S, D &G, Stewardship Ranger

CERTIFICATIONS / PROFESSIONAL AFFILIATIONS

MTO/DFO/OMNR Fisheries Protocol, Ecological Land Classification, Certified in Inventory and Identification Methods for Ontario's Reptiles and Amphibians, North American Benthological Society (NABS) Certified Family Level Taxonomist, Ontario Benthos Biomonitoring Network (OBBN), Ontario Stream Assessment Protocol (OSAP), Certified Ontario Wetland Evaluator (OWES), Butternut Health Assessor (BHA), first aid, CPR, Pleasure Craft Operator Card, Marine Radio Operator, WHMIS, WHSA, Hazard Identification, Assessment and Control, All Terrain Vehicle Riders Course (issued by the Manitoba Safety Council), Water Safety Training (Bronze Cross), Possession / Acquisition Firearms Licence, Ontario Hunter Education Course Certificate, Ontario Trapper Education Course Certificate, Wildlife Chemical Immobilization, Vaccination, and Euthanasia- Certificate of Knowledge, South Lancaster Fish and Game Club (SLFGC; president 2012 and 2013; executive member 2014-2018), Ontario class G driver's license, and Snowmobile License.

EXPERIENCE

Experience in environmental impact assessments, environmental monitoring, environmental assessments, terrestrial habitat assessment, species at risk surveys, amphibian surveys, avian surveys, freshwater habitat assessment, collection and identification of plants, collection and identification of aquatic invertebrate, collection and identification of fish, fish salvage, fish behavioral studies, winter bat hibernaculum inventories and fisheries inventories including habitat mapping, electroshocking, FWIN and RIN. Other experience include GIS mapping.

Environmental and Fisheries Inspections

- Provided environmental and fisheries inspections for the construction of the Cataraqui Crossing HWY 401-MTO (Kingston, ON).
- Provided environmental and fisheries inspections for the construction of the Three Nations Bridge including surveys for nesting species at risk (Cornwall, ON).
- Provided environmental and fisheries inspections for construction (Ottawa, ON).
- Conducted nest surveys (Kemptville, ON.; Stittsville, ON.; Cornwall, ON.)
- Conducted environmental inspections for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Conducted environmental inspections for the construction of a new bridge crossing Bearbrook Creek along the 417.

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- Provided environmental and fisheries inspections for the blasting and drilling operation for the Burloak Water Purification Tunnel project (Burlington, ON).
- Provided environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.

Species at Risk Inventories / Monitoring

- Butternut survey and assessment for proposed developments (Brockville, Carleton Place, Carp, Clarence-Rockland, Cornwall, Munster, Hawkesbury, Kemptville, Ottawa, South Lancaster, Smith Falls, Stittsville, Prospect, Vars, Moose Creek, Prescott, Westminster, Renfrew, Battersea, Jones Falls, and Millbrook).
- American Eel surveys using the boat electrofisher on the Mississippi River (Almonte, ON), South Nation River (Casselman, ON) and Ottawa River (Renfrew, ON; Ottawa, ON: Shawville, QC)
- American Eel collection on the St. Lawrence River for the St. Lawrence River Institute (Cornwall, ON)
- American Ginseng survey for proposed development (Kanata, South Lancaster and Renfrew).
- Whip-poor-will survey for proposed development (Navan, ON; Kemptville, ON; Stittsville, ON; Prescott, ON; Alexandria, ON) and quarries (Avonmore, Moosecreek, Prospect, Stittsville, Kanata, Ottawa)
- Assisted in a Least Bittern survey (Avonmore, ON)
- Conducted turtle surveys: Blanding's turtle, Eastern musk turtle (Carleton Place, ON; Ottawa, ON; Stittsville, ON; Kanata, ON, Prospect, ON)
- Conducted rapid clubtail surveys (Almonte, ON)
- Bat maternal nesting site surveys (Prescott, ON; Battersea, ON; Prescott, ON; Hawkesbury, ON; Russell, ON)

Aquatic Inventories

- Boat electrofishing along the shoreline of the Ottawa River (Chat Falls, ON) along the shoreline of the Cataraqui River (Kingston, ON), downstream of the Carillion Dam (Pointe-Fortune, QC), Lake St. Francis (South Lancaster, ON), South Nation River (Casselman, ON), Raisin River (Lancaster, ON), and the St. Lawrence River (Cornwall, ON)
- Collecting and data entry for benthic macroinvetebrate community surveys on several watercourses within Ontario including: Bonnechere River (Renfrew, ON), Montreal River (Latchford, ON), Jock River (Ottawa, ON), tributaries of the Bonnechere River (Renfrew, ON), tributaries to Feedmill Creek (Ottawa, ON), tributary to Chippewa Creek (North Bay, On) and tributary to the Beaudette River (Alexandria, ON).
- Collecting and data entry for several fish community surveys including: Black Creek (Westminster, ON), Bonnechere River (Renfrew and Douglas, ON), Butler's Creek (Brockville, ON), East Branch of Little Cataraqui Creek (Kingston, ON), Kehoe Ditch (Greely, ON), Lac Opemisca (Ouje-Bougoumou, QC), Marshall Seguin Municipal Drain (Vars, ON), Montreal River (Latchford, ON), tributaries of Lavalle Creek (Carleton Place), tributaries to Feedmill Creek (Ottawa, ON), tributaries to Lafontaine Creek (Clarence-Rockland), tributaries to Shirley's Brook (Kanata, ON), tributaries to the Beaudette River (Alexandria, ON), tributaries to the Bonnechere River (Renfrew, ON), tributaries to the Ottawa River (Carp, ON; Ottawa, ON; Wendover, ON; Clarence-Rockland, ON), tributaries to the South Nation River (Casselman, ON), tributaries to the South Nation River (Jessup Falls, ON), tributary to Hawkesbury Creek (Hawkesbury, ON), Hawkesbury Creek (Hawkesbury , ON), tributary to the St.Lawrence River (Prescott, ON) and tributary to the North Castor River (Greely, ON).
- Mapped fish habitat in many watercourses including: Black Creek (Westminster, ON), Bonnechere River (Renfrew and Douglas, ON), Butler's Creek (Brockville, ON), Kehoe Ditch (Greely, ON), Lac Opemisca/Lac Barlow Bypass channel (Ouje-Bougoumou, QC), Marshall Seguin Municipal Drain (Vars, ON), McKinnons Creek (Navan, ON), Montreal River (Latchford, ON), tributaries of Lavalle Creek (Carleton Place), tributaries of the Bonnechere River (Renfrew, ON), tributaries to Lafontaine Creek (Clarence-Rockland), tributaries to McKinnons Creek (Navan, ON), tributaries to Shirley's Brook (Kanata, ON), tributaries to the North Castor River (Greely, ON), tributaries to the Ottawa River (Ottawa, ON; Wendover, ON), tributaries to the South Nation River (Casselman, ON), tributaries to the South Nation River (Jessup Falls, ON), tributary to the St.Lawrence River (Prescott, ON) and tributary to Hawkesbury Creek (Hawkesbury, ON).
- Assisted in YOY sampling on the Raisin River (Lancaster, ON).
- Conducted riverine index netting on the Bonnechere River (Renfrew, ON).

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- Assisted in gill netting on Bonnechere River (Renfrew, ON), Lac Barlow (Ouje-Bougoumou, QC), Lac Opemisca (Ouje-Bougoumou, QC), Montreal River (Latchford, ON), and Raisin River (Lancaster, ON).
- Assisted in conducting larvae surveys on Bonnechere River, Hoople Creek, Montreal River and Raisin River,
- Collected walleye eggs from the spawning grounds on the Bonnechere River, Montreal River, Raisin River and Hoople Creek.
- Assisted in the monitoring of a new wetland channel created in the Little Cataraqui River.
- Marsh monitoring program breeding amphibian survey at Stittsville, ON; Cornwall, ON; Kanata, ON; Hoople Creek and the Bonnechere River.
- Assisted in conducting fall walleye index netting for the MNR in Kawartha Lakes
- Conducted turtle surveys (Carleton Place, ON; Ottawa, ON)
- Conducted headwater waters assessment (Kanata, ON; Navan, ON, Ottawa, ON)

Terrestrial Inventories

- Multiple Environmental Impact Assessments across Ontario
- Tree Inventory for construction of the light rail (LRT; Ottawa, ON)
- Winter white-tailed deer survey (Edwardsburgh, ON)
- Plant community inventories for proposed developments, quarries, sand pits and road extensions (Brockville, Carleton Place, Carp, Casselman, Elgin, Griffith, Hamilton, Jessup Falls, Navan, Ottawa, Stittsville, Rockland, Simcoe, Cornwall, Kemptville, Hawkesbury, Smith Falls, Wendover, Moosecreek, Westminster, Prescott, Renfrew, Jones Falls, Michipicoten Island and in Ouje-Bougoumou in QC)

Aquatic Habitat Mapping for Municipal, City Roads and Provincial Highways

- Conducted MTO habitat assessments at Galetta Side Road, Torbolton Road, Kinburn Side Road (Ottawa, ON)
- Conducted MTO habitat assessments at Prince of Wales, Fernbank Road, Fallowfield Road, HWY 115, Arbuckle drain, the Carp river, tributaries to the Carp river and tributaries to Mud creek (Ottawa, ON)
- Conducted MTO habitat assessments at Innes Road, Ottawa, ON.
- Conducted MTO habitat assessments at MacLaren Side Road, Ottawa, ON.

Other

- Fish salvage: Mississippi River (Almonte, ON), Monaghan Drain (Ottawa, ON), tributary to the Rideau Canal (Kemptville, ON), and tributary to Feedmill Creek (Ottawa ON), Bonnechere River (Renfrew, ON)
- Assisted in conducting a winter bat hibernaculum inventory (Plantagenet, ON)
- Field research assistant for the Metalicuus study and EDC study (Experimental Lakes Area, ON)
- Captured, pit tagged, telemetry tagged and tracked Northern Pike (Experimental Lakes Area, ON)
- Construction and maintenance of nature trail (the Cornwall Outdoor Recreational Area, ON)
- Conducted frog deformities surveys (Glengarry, ON)
- Organized youth fishing derbies through SLFGC (2011-2013; South Lancaster)
- Organized the St.Francis Walleye Tournament through SLFGC (2012-2013; South Lancaster)

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CODY J.C FONTAINE, Fisheries and Wildlife Technologist

EDUCATION
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2012
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2011

LANGUAGES
Fluent in English

POSITIONS HELD
2022: BCH Environmental Consulting Inc., Fisheries and Wildlife Technologist
2014: Bowfin Environmental Consulting Inc., Fisheries and Wildlife Technologist
2009: Raisin Region Conservation Authority, Field Research Assistant

CERTIFICATIONS / PROFESSIONAL AFFILIATIONS
MTO/DFO/OMNR Fisheries Protocol, Environmental Monitoring For Construction Projects Practitioner (EMCPP), Ontario Stream Assessment Protocol (OSAP), Class 2 Electroshocking, first aid, CPR, Pleasure Craft Operator Card, WHMIS, WHSA, Hazard Identification, Assessment and Control, Ice Safety Training, Possession / Acquisition Firearms License, Fish Identification Certificate, Radio Telemetry Certificate, Fish Hatchery Operations Certificate, Ontario Hunter Education Course Certificate, Ontario trapper Education Course Certificate, Ontario class G driver's license.

EXPERIENCE
Experience in environmental monitoring, environmental assessments, terrestrial habitat assessment, species at risk surveys, amphibian surveys, freshwater habitat assessment, collection and identification of plants, collection and identification of fish, fish salvage, bat hibernaculum inventories and fisheries inventories including netting and electroshocking. Other experiences include GIS mapping.

Aquatic Inventories
- Assisted with boat electrofishing along the shoreline of the Ottawa River (Chat Falls and Ottawa, ON), Lake St. Francis (South Lancaster, ON), Bonnechere (Renfrew, ON), Raisin River (Lancaster, ON), Buckhorn Lake (Peterborough, ON) and the St. Lawrence River (Cornwall, ON)
- Assisted in collecting and data entry for several fish community surveys including: Bonnechere River (Renfrew, ON), tributaries to Feedmill Creek (Ottawa, ON), tributaries to Shirley's Brook (Kanata, ON), tributaries to the Ottawa River (Ottawa, ON), tributaries to the Rideau River (Manotick, ON), tributaries to the Castor River (Vars, ON), tributaries to the Otonabee River (Lakefield, ON), tributary to the Madawaska River (Arnprior, ON), tributaries to Kemptville Creek (Kemptville, ON), tributary to Blairs Creek (Clarence Creek, ON), tributaries to South Indian Creek River (Russell, ON) tributaries to the South Nation River (Casselman, ON), tributaries to Fraser Clarke Drain (Nepean, ON), tributaries to the Raisin River (Long Sault, ON), Oliver-Magee drain (South Glengarry, ON) and tributary to Hawkesbury Creek (Hawkesbury, ON).
- Assisted in collecting walleye eggs from the spawning grounds on the Raisin River.
- Marsh monitoring program breeding amphibian surveys (Stittsville, Lakefield, Cornwall, Long Sault, South Glengarry, Bourget, Manotick and Kanata, ON).
- Conducted turtle surveys (Carleton Place, Ottawa, Cornwall and Lancaster, ON)
- Conducted Headwater Assessments (Ottawa, Stittsville and Manotick, ON)
- Invasive Species Survey (Ottawa, ON)

Species at Risk Inventories / Monitoring

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- Assisted in butternut surveys, inventories and assessments for proposed developments (Carleton Place, Casselman, Cornwall, South Glengarry, Long Sault, Kemptville, Smiths Falls, Ottawa, Stittsville, Peterborough, Lakefield, Brockville, Alfred, Orleans, Kanata and Prescott, ON).
- American Eel surveys using the boat electrofisher on the Ottawa River (Ottawa, ON)
- American Eel collection on the St. Lawrence River for the St. Lawrence River Institute (Cornwall, ON)
- Conducted tailrace surveys for hydro facilities regarding American eel and lake sturgeon fatalities (Almonte, Renfrew, Ottawa and Fitzroy Harbour, ON)
- Whip-poor-will survey for proposed development (Ottawa, Kemptville, Bourget, Stittsville, Alfred, South Glengarry and Alexandria, ON) and quarries (Ottawa and Cornwall, ON)
- Surveyor for Little Brown bat, Eastern Small Footed Bat and Northern Long Eared Bat surveys at Ernestown Windpark (Ernestown, ON)
- Gray Ratsnake Survey (Smiths Falls and Lakefield, ON)
- Bat Cavity Survey (Lakefield, Smiths Falls, Bourget, Clarence Creek, Casselman, Orleans, Kanata, South Glengarry and Embrun, ON)
- Conducted Least Bittern surveys (Prospect, Alexandria, and Lancaster, ON)
- Conducted Black Tern nest surveys (Alexandria, and Cornwall, ON)
- Conducted turtle surveys: Blanding's turtle, Musk turtle and Northern Map turtle, Painted turtle and Snapping turtle (Carleton Place, Ottawa, Stittsville, Kanata, Rockland, Cornwall, Lakefield, Alfred, Clarence Creek and Lancaster, ON)
- Conducted American Ginseng Survey (Alfred, ON)
- Conducted rapid clubtail surveys (Almonte, ON)
- Conducted Osprey nest surveys (Cornwall, ON)

Terrestrial Inventories

- Assisted plant community inventories for proposed developments (Ottawa, Cornwall and Prescott, ON)
- Assisted in ELC inventories (Ottawa, Lakefield, Alfred, Kanata, Long Sault, South Glengarry and Peterborough ON)
- Nesting Bird Survey (Stittsville and Brockville ON)
- Large Tree Survey (Carp, Kanata and Orleans, ON)
- Deer and Moose Overwintering Survey (Alfred, ON)

Environmental and Fisheries Inspections

- Assisted in providing environmental and fisheries inspections for construction (Ottawa, ON)
- Assisted in turtle salvage during construction at the Cavanagh Snow Dump (Kanata, ON)

Fish Salvage

- Highway 401 Fish Salvage – Brockville, ON and Prescott, ON (Cruikshank, MTO Contract)
- Other fish salvages: Cardinal Creek (Ottawa, ON), Monaghan Drain (Ottawa, ON), tributary to the Rideau Canal (Kemptville, ON), tributary to Feedmill Creek (Ottawa ON), Bonnechere River (Renfrew, ON), Mississippi River (Almonte, ON), Ottawa River (Ottawa, ON), Tributary to Fraser Clarke Drain (Nepean, ON), tributary to St.Lawrence River (Newington, ON), Davidson Pond (Ottawa, ON),. Hazeldean tributary (Ottawa, ON), tributary to Jock River (Richmond, ON), culvert on Thunder Road (Gloucester, ON), culvert on Dunning Road (Cumberland, ON)

Other

- Organized fishing derby through RRCA (2008-2012; Cornwall, ON)
- Conducted environmental education presentations to many school groups (Cornwall, and Lancaster, ON)
- Tree Planting (2008-2012; Cornwall, ON)