ENVIRONMENTAL IMPACT STUDY
OSPREY SHORES SUBDIVISION

CITY OF BELLEVILLE

Prepared for:

2255718 Ontario Inc.

December 2023

Michalski Nielsen
ASSOCIATES LIMITED
ENVIRONMENTAL PLANNING BIOPHYSICAL ANALYSIS
LAKE CAPACITY ASSESSMENT RESOURCE MANAGEMENT

Michalski Nielsen
ASSOCIATES LIMITED

December 19, 2023

Mr. John Cheung
2255718 Ontario Incorporated

John@Zaincanine.com

Re: Environmental Impact Study in Relation to Proposed Osprey Shores Subdivision, Dundas Street East at Haig Road (Former Bakelite Site), City of Belleville; Our File 2722

Dear Mr. Cheung:

Michalski Nielsen Associates Limited is pleased to provide you with our Environmental Impact Study in relation to the proposed redevelopment of this former industrial site as a residential subdivision.

Please do not hesitate to call should you have any questions or comments.

Yours truly,

MICHALSKI NIELSEN ASSOCIATES LIMITED
Per:

Gord Nielsen, M.Sc.
Ecologist
President

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Letter of Transmittal

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1 INTRODUCTION

1.1 Site Overview

The subject property, shown on **Figure 1**, is located at 621 Dundas Street, adjacent to the Haig Road intersection in Belleville and has shoreline frontage on the Bay of Quinte of Lake Ontario. Formerly an industrial property (Bakelite), this brownfield site has a total area of 37.35 ha. However, portions of those lands are wetlands within or along the shoreline of the Bay of Quinte, and additionally includes areas which have been determined through a site assessment to have contaminant levels which preclude development for residential purposes. As a consequence of these constraints, and in order to ensure setbacks from the Lake Ontario floodplain and proper buffering of the shoreline wetlands, development is being proposed within an area of only 15.35 ha.

The shoreline and nearshore portions of the subject property contain portions of Belleville Marsh, a Provincially Significant Wetland (PSW) which also qualifies as a Great Lakes coastal wetland.

The past industrial uses of this property involved manufacturing facilities which discharged to ponds and wetlands on site, and with process waste materials having contaminated soils over much of these lands. These abuses continued with a subsequent owner then having moved contaminated soils around on the property, and having undertaken works within wetland areas. This was followed by a lengthy process which involved: efforts to have the then owner comply with the environmental requirements and orders of provincial and federal authorities; a subsequent change in ownership; very considerable efforts on the part of the new owners to remediate areas of contamination; and a cooperative process between these owners and the City of Belleville and Quinte Conservation to determine appropriate development limits for the redevelopment of these lands for residential uses. More recently, the property owners have brought in a partner who has advanced plans for the redevelopment of these lands as a residential subdivision.

1.2 Proposed Development

Our office has been working with the owners of these lands and their consultant team on a development plan which ensures protection and buffering of the PSW along the shoreline, with the proposed site plan shown on attached drawing AO.1, prepared by Cynthia Zahoruk Architects. This plan shows a looped road off of Dundas Street, opposite Haig Road, from which private, condominium roads are also proposed. A total of 599 residential units, consisting of a mixture of condominium apartments, condominium stacked townhouses, condominium back-to-back townhouses, condominium and freehold townhouses, and freehold detached bungalows, are being proposed. This development will be on full municipal services.

LEGEND:

Wetland [1]

- Evaluated-Provincial
- Not evaluated per OWES
- Subject Property (31.3 ha)

1 - MNRF
Imagery (2020) provided by Esri basemap service (Maxar).

0 50 100 150 200
metres

N

PROJECT NO.	1603385	REVISION:	3-1
DATE:	Jan 06, 2022	SCALE:	1:6000
DRAWN:	BE/SM	DATUM:	NAD 1983
CHECKED:	AA	PROJECTION:	UTM zone 18

CLIEN
Michalski Nielsen ASSOCIATES LIMITED

PREPARED BY:
Palmer

PROJECT: Belleville Environmental Review

DRAFT

Site Location

Figure 1

Document Path: G:\Shared drives\Projects 2016\16033 - MNAL\1603385 - Belleville Environmental Review\GIS\1_Workspace\MXD - Figures\1603385-1-1 Site Location.mxd

1 PROPOSED SITE PLAN
SCALE: 1:1800

PROPOSED LAND USE LEGEND

- CONDO APARTMENTS - 185 UNITS
- CONDO STACKED TOWNHOUSES (2 $\frac{1}{2}$ STOREY) - 176 UNITS
- FREEHOLD TOWNHOUSES - 54 UNITS
- FREEHOLD DETACHED BUNGALOWS - 36 UMITS
- CONDO TOWNHOUSES - 76 UNITS
- CONDO BACK TO BACK STACKED TOWNHOUSES - 72 UNITS
- NON-DEVELOPABLE AREA OUTSIDE OF TABLE 9 LIMIT

PROPERTY AREA	
LANDS OUT OF TABLE 9 LIMIT (TOTAL) OUTSIDE MNAL VARIABLE BUFFER = 15.44 Ha INSIDE MNAL VARIABLE BUFFER = 0.01 Ha AREA OF EXISTING EASEMENT INCLUDED = 0.85 Ha	16.30 Ha
LANDS WITHIN TABLE '9' LIMIT (INCLUDING WETLAND AND BAY) AREA OF EXISTING EASEMENT INCLUDED = 0.05 Ha	21.05 Ha
TOTAL PROPERTY AREA	37.35 Ha

OPEN SPACE AREA	
OPEN SPACE WITHIN DEVELOPABLE AREA AREA OF EXISTING EASEMENT INCLUDED = 0.07 Ha	0.64Ha
OPEN SPACE OUT OF DEVELOPABLE AREA AREA OF EXISTING EASEMENT INCLUDED = 0.08 Ha	3.34 Ha
TOTAL OPEN SPACE AREA	3.98 Ha

DEVELOPABLE AREA (AS PER TABLE 9 LIMIT & QCA DEVELOPMENT LIMIT)		
MUNICIPAL ROAD ALLOWANCE (EXCLUDING TRAIL) AREA OF EXISTING EASEMENT WITHIN ROAD ALLOWANCE = 0.01 Ha AREA OF TRAIL ON ROAD ALLOWANCE = 0.10 Ha (INCLUDED IN PARKLAND)		2.20 Ha
OPEN SPACE WITHIN DEVELOPABLE AREA		0.65 Ha
BLOCK 'A'	UNIT WIDTH - N/A AREA OF EXISTING EASEMENT WITHIN BLOCK 'A' = 0.21 Ha	1.74 Ha
BLOCK 'B'	APPROXIMATE UNIT WIDTH - 5.99 M [19'-8"]	0.98 Ha
BLOCK 'C'	APPROXIMATE UNIT WIDTH - 8.31 M [27'-3"]	1.0 Ha
BLOCK 'D'	APPROXIMATE UNIT WIDTH - 9.40 M [30'-10"]	0.40 Ha
BLOCK 'E'	APPROXIMATE UNIT WIDTH - 6.28 M [20'-7"]	2.34 Ha
BLOCK 'F'	APPROXIMATE UNIT WIDTH - 7.50 M [24'-7"] AREA OF EXISTING EASEMENT WITHIN BLOCK 'F' = 0.29 Ha	1.50 Ha
BLOCK 'G'	UNIT WIDTH - TBD AREA OF EXISTING EASEMENT WITHIN BLOCK 'G' = 0.25 Ha	1.70 Ha
BLOCK 'H'	APPROXIMATE UNIT WIDTH - 6.28 M [30'-10"]	2.22 Ha
BLOCK 'I'	APPROXIMATE UNIT WIDTH - 6.28 M [30'-10"]	0.48 Ha
PARKLAND DEDICATION (INCLUDING TRAIL ON ROAD A)		0.85 Ha
6.0M WIDE TRAIL AREA		0.12 Ha
TOTAL DEVELOPABLE AREA		16.17 Ha

AREA FOR E-FILE COMMENTS

NOT FOR CONSTRUCTION

CYNTHIA ZAHORUK ARCHITECTS
3077 NEW STREET,
BURLINGTON, ON L7N1M6
905.331.4480

ONTARIO ASSOCIATION OF ARCHITECTS
CYNTHIA ZAHORUK
LICENCE
4488
ONTARIO ASSOCIATION OF ARCHITECTS

NOTES:
1.THE CONTRACTOR OR PROJECT MANAGER WILL CHECK AND VERIFY ALL DIMENSIONS AND JOB CONDITIONS ON THE JOB AND REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. COORDINATION OF WORK IS THE RESPONSIBILITY OF THE CONTRACTOR OR OWNER/CONTRACTOR.
2.THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL SIGNED BY THE ARCHITECT.
3.ALL DRAWINGS ARE THE PROPERTY OF THE ARCHITECT AND MAY NOT BE COPIED, REPRODUCED OR ALTERED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT.
4.DO NOT SCALE THE DRAWINGS.

DD/MM/YY	REVISION
19/04/2023	ISSUED FOR PRECONSULT.
24/10/2023	ISSUED FOR COORDINATION
28/11/2023	ISSUED FOR COORDINATION

SCALE: AS NOTED
DRAWN BY: KR/EM
PRINT DATE: 15/12/2023

BELLEVILLE DEVELOPMENT

PROPOSED DEVELOPMENT
DUNDAS STREET EAST
BELLEVILLE, ONTARIO

PROPOSED SITE PLAN

A0.1

1.3 Our History of Involvement on This Site

Our work on this property began in 2010, in an effort to have the then owner comply with environmental requirements and orders of Quinte Conservation, the Ministry of Environment and Parks (MECP) and the Department of Fisheries and Oceans (DFO) to remedy some of the environmental issues that had been created by work he had undertaken on these lands. After the sale of these lands to a new owner, our work then continued through 2011 to 2013, during which time we worked alongside the new owner's project team, including those responsible for site remediation work, and with Quinte Conservation, MECP, the Ministry of Natural Resources and Forestry (MNRF) and City of Belleville in planning for the clean-up and redevelopment of this property, with recognition of both its environmental and community values. In this regard, these lands, which have long been abused, have great environmental, social and economic promise.

Although our earlier work on this property did not proceed to the point of your submitting a complete redevelopment application, it did involve substantial natural environment field work in support of redevelopment plans, which included:

- accurate mapping of wetlands and other vegetation communities, with the wetland mapping having been undertaken by a provincially certified wetland evaluator;
- amphibian surveys;
- breeding bird surveys, including calling surveys for marsh birds;
- the assessment of nearshore fish habitat; and
- screening for Species at Risk (SAR) and Significant Wildlife Habitat (SWH).

It also included confirmation of the boundaries of the PSW with Quinte Conservation and the Province, as well as working with those agencies towards a redevelopment plan that included cleaning up areas of wetland that had been contaminated as part of past industrial uses on these lands, undertaking habitat improvements in some select areas, and allowing for the removal of the central pond (which was deemed by all not to be part of the PSW, and which has only limited ecological values). We had then recommended, and had received support, for variable width buffers around the PSW. The combined elements of this plan provided for protection of the important natural features of this property, including opportunities for improvements, while also providing a development footprint of sufficient size and with a configuration that allowed for a scale of redevelopment which also make good economic sense. The mapping produced as

part of that earlier work ultimately led to the Province's updating its wetland boundary mapping, and had a high level of support from Quinte Conservation and the MECP.

As we had noted in correspondence we prepared at that time, the site remediation work being undertaken in the west marsh on this property offered significant ecological benefits. This wetland area is part of a larger wetland complex extending through the nearshore of the Bay of Quinte to both the south and west. It is the least disturbed area of wetland within this property, and is sufficient in size and natural character to support Least Bittern, a threatened species requiring large marsh areas and receiving protection under the *Endangered Species Act*. It additionally supports a wide variety of other birds, turtles, amphibians and mammals. This includes, for example, Sora, Virginia Rail, Marsh Wren, Osprey, Map Turtle, Chorus Frog, Spring Peeper, Beaver and Muskrat. The west marsh had long received contaminated runoff from areas of the property which were being remediated. These contaminants migrate through this wetland into other sensitive nearshore areas within the Bay of Quinte. The removal of these sources of contaminants provided for cleaner flows through these wetland areas. As surficial substrates in the wetland are replenished by decaying plant material, clean inletting water will result in a gradual improvement in sediment quality. Collectively, these provide for a healthier environment for the large variety of wildlife using this important area.

The mapping prepared as a consequence of our original work is included in **Appendix A**. As a quick overview of that mapping:

- Figure 1 included the original wetland mapping layer from MNRF, in green, a boundary layer which had generally not been field verified;
- Figure 1 additionally included our recommended boundary of PSW, in the blue hatching, plus additional areas of more marginal quality wetland, in red;
- that map also showed a proposed variable width buffer, in the dashed blue line;
- Figure 2 summarized some of the information in Figure 1, but added to that information in recommending lands to be protected (green tone), restored (yellow tone) and developed (pink tone);
- Figure 2 additionally shows the 100 year Lake Ontario flood limit (based on criteria of that time, with that flood limit having been more recently increased in elevation to reflect current flood models); and

- the final figure, entitled "Summary of Recommended Development Opportunities", is a later iteration of Figure 2, created as a consequence of ongoing consultation with the City of Belleville and, in particular, Quinte Conservation. It excludes earlier recommended development and associated restoration areas on the west side of the peninsula, creating a somewhat more compact development footprint. This generalized development area, established through an iterative consultation process, forms the foundation for establishing current development limits within the subject lands, a process which has been further defined through additional field work to re-confirm natural environment conditions and determine any additional natural environment constraints, through an updated floodplain analysis completed by others, and through ongoing consultation with the approval authorities.

1.4 Purpose and Scope of Our Work

It should be noted that the long process of site remediation and agency consultation which has contributed to the establishment of development limits within the subject property, and to the current development plans, represents, in our opinion, a true win-win-win situation. In this regard, the clean-up of this site with a very long legacy of industrial uses and environmental contamination is of great value to the PSW/Great lakes coastal wetland which fronts it, to the water quality of this wetland and adjacent areas of the Bay of Quinte, and to a variety of wildlife, including Species at Risk, which can capitalize on such improved habitat. For the people of Belleville, cleaning up this property and improving its scenic qualities is of substantial social benefit. Adding to this are opportunities for public access through the property and possible future interpretive trails along the wetlands and boardwalks/viewing platforms in the wetlands. From an owner's perspective, there was an opportunity to recoup the very costly and time consuming endeavor of restoring these lands to a healthy and socially beneficial condition.

In early 2021, our office was contacted to prepare an Environmental Impact Study (EIS) in support of the redevelopment of this property, with the recognition that work that we had earlier completed was then up to a decade old. One of the purposes of this EIS is to describe that new information, and to ensure our analysis of site opportunities and constraints considers both it and the earlier information we had collected. Other purposes of this EIS are: to describe how such information has informed present development plans; to describe specific aspects of those plans which have potential implications on the natural environment and how any such potential impacts have been addressed; and to recommend additional mitigation measures which will be important to ensure that this development is implemented in a manner that protects the natural environment.

Importantly, as part of this ongoing process, there has been continued consultation with both the City of Belleville and Quinte Conservation. As part of that dialogue, we prepared a report on January 10, 2022, entitled "Natural Environment work in Support of the Redevelopment of the Former Bakelite Site in Belleville", which included a compilation of all of the additional field information we had collected in 2021 with that which we had earlier collected, in order to inform discussions around development plans for these lands. While this information was not compiled as an EIS, it provided the information necessary to inform decisions on site opportunities and constraints, and to advance discussions on development plans with the City. Quinte Conservation was retained by the City of Belleville to review this document from a natural environment perspective, with Mr. Paul McCoy of that office having provided written comments to the City that were attached to an email of February 4, 2022. Those written comments are included in **Appendix B** to this report. As a brief summary, this correspondence:

- notes our offices involvement on this file, and the extensive field work we had undertaken, beginning in 2010;
- states that the earlier work had included defining the present day boundaries of the PSW as it relates to the subject property, in a process which involved consultation with both Quinte Conservation and the MNRF;
- notes that the central pond was removed from the PSW boundary;
- summarizes the results of the additional natural environment work we completed;
- in the comments section, notes that Quinte Conservation staff agree that the field work was sufficiently thorough, but that this information needs to be included within a comprehensive EIS that additionally references development plans and the manner in which such plans address the protection of the natural environment;
- notes that the EIS needs to include additional analyses relating to SWH;
- states that the EIS should additionally address lands that will be used by the City for recreation purposes (which in the present plan has been reduced to a public trail through the property);
- indicates that the EIS should also include a discussion of the use of the waterfront for such uses as docking, if applicable (note that no such uses are being planned at present); and

- states that development plans must incorporate the now more conservative 100 year floodplain limit for Lake Ontario, which was increased from 75.9 metres above sea level (masl) to 76.1 masl (a 0.2 m increase in elevation).

Also very importantly, during a subsequent meeting with the City of Belleville, and the applicant, Quinte Conservation noted that changes brought about through Bill 23 in Ontario have resulted in Conservation Authorities no longer having the ability to complete natural environment reviews for projects on behalf of municipalities (although they do retain their review function with respect to such matters as floodplains and stormwater management). As part of that discussion, Quinte Conservation indicated that it had already undertaken a detailed analysis of the natural environment work completed on this project, that it was satisfied that sufficient natural environmental work had been undertaken for this project, and that subject to the confirmation that all works were outside of a 6 m setback from the new floodplain limits for Lake Ontario, that the work completed was sufficient to confirm development limits. On that basis, City of Belleville planning staff stated that the EIS would not be required to undergo a peer review (as the most important requirements of such a review had already been completed by Quinte Conservation).

1.5 Acknowledgements

Michalski Nielsen Associates Limited has been assisted on this project by the firm Palmer, who were involved in the field assessment works completed in 2021, the SAR review and the assessment of potential SWH.

2 PROJECT METHODS

2.1 Background Review

Relevant background material was reviewed to provide a context for field investigations and to identify any environmental designations and policy requirements. The review included the following sources of information:

- Natural Heritage Information Centre (NHIC) Make-a-Map application, which includes the NHIC's species records database and Land Information Ontario (LIO) features the latter including the present boundaries of the PSW;
- Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement (MNRF, 2010);
- Significant Wildlife Habitat Technical Guide (MNRF, 2000);
- Previous 2011 ecology survey data of the site; and
- Aerial photography and topographic mapping.

Field investigations completed in 2011 are summarized in **Table 1**. To update and supplement those earlier surveys, several site visits were conducted on the subject property in 2021. These 2021 survey dates are summarized in **Table 2**. Field investigations were conducted in accordance with the methods described in Sections 2.2 to 2.4 of this report.

Table 1. Summary of 2011 Field Investigations

Date	Field Investigation(s)
April 19, 2011	Preliminary Site review
April 26, 2011	Breeding Amphibian Survey #1
May 13, 2011	Breeding Amphibian Survey #2
June 30, 2011	Breeding Amphibian Survey #3, Marsh Birds Survey #1, Breeding Bird Survey #1
July 6, 2011	Marsh Birds Survey #2, Breeding Bird Survey #2, Ecological Land Classification, vegetation inventory

Date	Field Investigation(s)
July 7, 2011	Marsh Birds Survey #2, Breeding Bird Survey #2 (continued), turtle and snake survey
September 14/15, 2011	Final Ecological Land Classification survey and vegetation inventory, revised wetland mapping

Table 2: Summary of 2021 Field Investigations

Date	Field Investigation(s)	Weather Conditions
June 10, 2021	Ecological Land Classification Wetland Delineation Vegetation Inventory Incidental Wildlife	23º C, clear, winds light to none
June 10, 2021 (evening)	Breeding Amphibian Survey	19º C, clear, winds light to none
June 15, 2021	Breeding Bird Survey	16º C, overcast, winds 13 km/h
June 28, 2021	Breeding Bird Survey	22º C, mostly clear, winds 10 km/h
July 14, 2021	Ecological Land Classification Vegetation Inventory Incidental Wildlife	26º C, partly cloudy, light winds

2.2 Vegetation and Flora

Terrestrial ecologists completed field investigations in 2021 to provide updated information on existing vegetation communities, natural features, and general site conditions. Vegetation communities were mapped and described as per the Ecological Land Classification (ELC) for Southern Ontario (Lee *et al.,* 1998), and the unpublished 2008 update tables where additional description is required. The identification of vegetation communities assisted in the assessment of wildlife habitat opportunities. The boundaries of existing wetland through the subject property were delineated in accordance with the Ontario Wetland Evaluation System (OWES) protocol (MNRF, 2013).

Botanical surveys were completed by traversing the site and recording species observed in the representative vegetation communities. Provincial plant status was based on the *Provincially Rare Flora of Ontario* (Oldham and Brinker, 2009) and the Natural Heritage Information Centre (NHIC, 2021).

2.3 Wildlife

2.3.1 Species at Risk

Prior to fieldwork, existing Species at Risk (SAR) records were investigated on the NHIC Make-a-Map online application. Additional species to those identified in nearby NHIC squares were analyzed in this review due to the knowledge of their occurrence within the area. General screening for potential SAR habitat opportunities was completed for the subject property during field investigations. Habitat opportunities for SAR on the site were then assessed by comparing habitat preferences of species deemed to have potential to occur against current site conditions.

2.3.2 Amphibian Surveys

A single breeding amphibian survey was undertaken in 2021 to supplement the three surveys that had been completed in 2011. All such surveys were completed in accordance with standard field protocols (Gartshore, et al., 2004; Bird Studies Canada, 2009). Species were identified by call, and an abundance code for each species heard calling was assessed by the following the Amphibian Monitoring protocol:

- Code 0: No calls heard.

1. Code 1: Calls not overlapping or simultaneous, number of individual frogs can be counted.

2. Code 2: Calls overlapping or simultaneous, number of individuals can still be distinguished, number of individual frogs cannot be counted, but a reliable estimate of numbers can be made based on location and call voices.

3. Code 3: Full chorus, calls simultaneous and overlapping, numbers of calling males cannot be reasonably counted or estimated.

2.3.3 Breeding Birds

Breeding bird surveys were conducted using a roving survey method whereby the entirety of site is covered. In doing so, the subject property was walked such that the observer was within about 50 m or less of all parts of the site. Two breeding bird surveys were completed more than one week apart in 2011, with two additional surveys completed more than one week apart in 2021. In both cases, these surveys occurred within the peak breeding season. Surveys were conducted between 5:30 and 10:00 a.m. to coincide with the dawn chorus. Surveys were conducted under suitable weather conditions when wind speeds were less than 20 km/h and there was no precipitation. The surveyor used a site map to record all bird species and individuals seen and heard in the approximate location observed.

2.3.4 Incidental Wildlife Observations

Incidental observations of wildlife were recorded during all visits to the subject property. Recorded wildlife observations included direct and indirect evidence. Direct evidence included visual or auditory observations of species. Evidence considered "indirect" includes observation of tracks, scat, browse, or other signs.

2.3.5 Significant Wildlife Habitat

The Significant Wildlife Habitat Criteria for Ecoregion 6E (MNRF 2015) were compared with the habitat attributes of the subject property to determine the potential for candidate SWH, with such potential being further reviewed as part of site inspections.

2.4 PSW Limits

During the 2011 field work, the boundaries of the PSWs within the property were delineated by a wetland evaluator who was certified under the provincial Ontario Wetland Evaluation System (OWES). As part of a consultation process that included the determination that the central pond within this property, although having some wetland attributes, was an artificial feature that was not appropriately included in the PSW, the wetland boundary information was provided to Quinte Conservation and MNRF as a digital file, with these authorities agreeing upon these boundaries and with MNRF subsequently updating its LIO and NHIC databases to include this boundary information. In the course of the 2021 work, ecologists who were also certified under OWES completed updated vegetation community mapping of the subject property, during which they confirmed that the 2011 wetland mapping, and current provincial mapping, continue to accurately reflect the limits of wetlands which are appropriately considered PSW.

3 ENVIRONMENTAL POLICY CONTEXT

3.1 Overview

Decisions on land use planning within this property, as it relates to the protection of the natural environment, are governed by Ontario's 2020 Provincial Policy Statement (PPS), Ontario Regulation 319/09 and related policies of Quinte Conservation, and the City of Barrie Official Plan (2021). A planning analysis of the proposed development has been prepared under separate cover by others, and it is not the intent of the present document to duplicate that information. Accordingly, our discussion of municipal planning direction is very brief. However it is important that this report addresses the natural heritage policy guidance of the PPS. Further, it is important that the requirements of the *Endangered Species Act* be spoken to. Our policy discussion is therefore primarily focused on these two items, followed by brief discussion of Conservation Authority and municipal environmental planning direction. A brief discussion of the Bay of Quinte Remedial Action Plan is also included, given the subject property's location on that waterbody.

3.2 Provincial Policy Statement

The 2020 PPS remains in effect as of the time this report was prepared. Section 2.1 of the PPS relates to the protection of natural heritage features and reads as follows:

> **2.1 Natural Heritage**
>
> 2.1.1 Natural features and areas shall be protected for the long term.
>
> 2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.
>
> 2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.
>
> 2.1.4 Development and site alteration shall not be permitted in:
>
> a) significant wetlands in Ecoregions 5E, 6E and 7E; and b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
d) significant wildlife habitat;
e) significant areas of natural and scientific interest; and
f) coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

2.1.9 Nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue.

Belleville Marsh, a PSW which, because of its location on the Great Lakes also qualifies as a significant coastal wetland, occurs across the shoreline portion of much of the subject property, as well as across its nearshore. Although this wetland has been impacted by past land use and activities on the subject lands, it is an area of considerable diversity and wildlife values, and its qualification as a provincially significant resource is not in doubt. The boundaries of this wetland were delineated by a qualified wetland evaluator,

working with both Quinte Conservation and MNRF, in 2011, and the provincial mapping layers were updated at that time to accurately reflect its boundaries. There have been no activities or events since that time which have changed the boundaries of wetlands within or adjacent to the subject property, and our more recent work has confirmed that the boundaries of the PSW in relation to the subject property, as included in the Province's current mapping database, remain accurate.

Significant Woodlands and Significant Valleylands are difficult to identify at a site-specific level, and these features have not been identified in the Land Use or Natural Heritage Features schedules of the City of Belleville Official Plan. It is noted that there are no valleyland features within the subject property and that woodland areas within these lands (outside of the limits of the PSW) tend to be quite young or disturbed, reflective of the past industrial activities on these lands. As such, there are no concerns in relation to either Significant Woodlands or Significant Valleylands.

Significant Wildlife Habitat (SWH) is one aspect of the PPS which is less straightforward to define. In this regard, the Province has provided technical guidance on what might constitute SWH, but has left decisions on the designation of such habitat to the discretion of individual municipalities. In accordance with guidance documents produced by the Province, for Ecoregion 6E, and with specific reference to the subject lands, this can include:

Seasonal Concentration Areas of Animals

- Turtle Wintering Area
- Waterfowl Stopover and Staging Areas (Aquatic)
- Reptile Hibernacula
- Colonial-nesting Bird Breeding Habitat

Specialized Habitat for Wildlife

- Turtle Nesting Areas
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat
- Amphibian Breeding Habitat (Woodland)
- Amphibian Breeding Habitat (Wetland)

Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)

- Marsh Breeding Bird Habitat
- Special Concern and Rare Wildlife Species

The Province's documents on SWH are provided for guidance only. The PPS explicitly provides latitude to municipalities on how they define such habitat. In this regard, the definition of significance, as it relates to SWH, includes "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system." Further, it states that in the determination of significance, criteria are recommended by the Province, "but municipal approaches that achieve or exceed the same objectives may also be used." This is important, because what may be a fairly scarce habitat attribute within one portion of the Province, and which may be at risk of further loss because of ongoing development pressures, may be very commonplace, and not at any risk of decline, elsewhere.

What is clear from the definition of SWH in the PPS is that it is something that is best defined over an entire municipality, not on individual blocks of land. Unfortunately, it is not the common practice of municipalities, particularly those outside of large urban areas, to define such areas.

That said, within some jurisdictions, it is becoming more common to identify and protect a Natural Heritage System, which at least indirectly captures much of the land that might contribute to SWH. The current Official Plan of The City of Belleville does identify a majority of the subject property as being within its proposed Natural Heritage System, although the reasons for that are not articulated (see Section 3.6 of this report for further discussion on this). While the PSW area within the subject property is separately identified in the schedules to the Official Plan and is of significance, the remainder of the subject property is generally a very disturbed landscape, without significant natural heritage values. SWH is further discussed in Section 4.3.5 of this report.

As a further comment on municipal decisions regarding SWH, even in a case where a municipality deems that a property contains SWH, the policy direction of the PPS is permissive. In this regard, in accordance with Policy 2.1.5, it allows development both within and adjacent to areas of SWH providing that "there will be no negative impacts on the natural features or ecological functions". For SWH, this must be considered in the context of the PPS definition of "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural system".

The nearshore of the subject property does contain fish habitat. The central pond, while not connected to the Lake Ontario waterfront, has some potential for fish to have been transferred into it by humans or wildlife, with some minnows having been observed in it. However, Fisheries and Oceans Canada, which regulates fish habitat under the federal *Fisheries Act*, does not consider man-made ponds to constitute fish habitat.

Comments on the protection of the habitat of Threatened and Endangered species and their habitat are provided in Section 3.3, below.

3.3 ***Endangered Species Act***

The *Endangered Species Act* (*ESA*) came into effect in Ontario in 2007, and provided for immediate protection of all species on the Species at Risk in Ontario (SARO) list. This protection is afforded under Section 9(1) of the Act, which reads:

> Prohibition on killing, etc.
>
> 9.(1) No person shall,
>
> a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
>
> b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,
>
> (i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
>
> (ii) any part of a living or dead member of a specie as referred to in subclause (i),
>
> (iii) anything derived from a living or dead member of a species referred to in subclause (i); or
>
> c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b)(i), (ii) or (iii). 2007, c.6, s.9(1).

The *ESA* additionally affords habitat protection to species on the SARO list. The relevant portions of the *Act* are found under Sections 10(1) through 10(3) and are repeated as follows:

> **Prohibition on damage to habitat, etc.**
>
> 10(1) No person shall damage or destroy the habitat of,
>
> (a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species; or

(b) a species that is listed on the Species at Risk in Ontario List as an extirpated species, if the species is prescribed by the regulations for the purpose of this clause. 2007, c.6, s. 10(1).

Specified geographic area

10(2) If the Species at Risk in Ontario List specifies a geographic area that a classification of a species applies to, subsection (1) only applies to that species in that area. 2007, c. 6, s. 10 (2).

Exception, suspension of protections

10(3) If a species is listed on the Species at Risk in Ontario List as an endangered or threatened species for the first time, the application of the prohibition in clause (1) (a) with respect to the habitat of the species is subject to any order made under section 8.1. 2019, c. 9, Sched. 5, s. 9.

Also important to this discussion is the definition of habitat under the Endangered Species Act, which is described under Section 2(1) as follows:

- "Habitat" means,

  (a) With respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or

  (b) With respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nets, hibernacula or other residence; (habitat)

- Definition of "habitat", cl. (b)

  (2) For greater certainty, clause (b) of the definition of "habitat" in subsection (1) does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry on their life processes. 2007, c. 6, s. 2 (2).

The MNRF has prepared a document entitled Categorizing and Protecting Habitat under the ESA that outlines the overall approach and considerations that the MNRF used in determining whether a proposed activity is likely to damage or destroy habitat protected under subsection 10(1) of the ESA. Although the responsibility for administering the ESA has since been transferred by the Province from MNRF to the Ministry of Environment, Conservation and Parks (MECP), the guidance provided in that document remains useful. For clarity, the following is provided directly from that document:

Not every activity that occurs within or near habitat will damage or destroy that habitat. Determining whether a proposed activity is likely to damage or destroy the habitat of an endangered or threatened species requires the consideration of the activity details, which parts of habitat are likely to be altered by the activity, and how the alteration may affect the species' ability to carry out its life processes.

3.1.1 Damaging Habitat

An activity that damages the habitat of a species is one that alters the habitat in ways that impair the function (usefulness) of the habitat for supporting one or more of the species' life processes.

3.1.2 Destroying Habitat

An activity that destroys the habitat of a species is one that alters the habitat in ways that eliminate the function (usefulness) of the habitat for supporting one or more of the species' life processes.

In some cases, the anticipated alteration that a proposed activity will have on habitat may be so minor that the function of the habitat for supporting the species' life processes will not become impaired or eliminated. In such cases the activity would not contravene subsection 10(1) of the ESA and would not require authorization under the Act with respect to this provision. In other cases, the alteration may be more significant such that the function of the habitat for supporting one or more of the species' life processes may become impaired or eliminated. Such activities would contravene subsection 10(1) of the ESA and would require authorization under the Act prior to proceeding.

Ensuring compliance with the *ESA* is a proponent's responsibility. On a development of this scale, it requires an understanding of what species are known to the broader area, then an assessment of their potential to use the lands to be developed, based on habitat attributes. For some species, this analysis may benefit from targeted field surveys to determine whether a species is using habitat that may be suitable for it; however, as endangered and threatened species are generally difficult to find, and as the mobility of wildlife means that their absence on any given occasion does not discount their potential use, the assessment of habitat potential is always key.

The Province has a permitting process which allows activities which would otherwise be prohibited under Section 9 or 10 of the Endangered Species Act, which is described under Section 17 of the Act.

As described in Section 4.3.4 of this report, an assessment of Species at Risk potential has been completed for the lands to be developed, and adjacent lands.

3.4 Quinte Conservation

A substantial portion of the subject property is regulated under **Ontario Regulation 319/09: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses**. Under that regulation, a permit is required from that Conservation Authority for any site grading, fill placement, fill removal or construction within the regulated area. It is important to note that it is possible to get a permit for development within a regulated area, subject to the approval of the Conservation Authority and providing that all intended works address such matters as the protection of the wetland area along the Bay of Quinte/Lake Ontario waterfront, the protection of any natural hazards associated with shoreline areas, including those relating to flooding and erosion concerns, and proper attention to such matters as wetland and shoreline buffering, water quality protection, protection of natural corridor functions and the protection of other ecological functions. It is the intent of this report to demonstrate how all such functions can be maintained at the interface between proposed development and the regulated area limits.

3.5 Bay of Quinte Remedial Action Plan

The Bay of Quinte was one of 41 areas around the Great Lakes which were identified in 1985 as Areas of Concern by the International Joint Commission under the Great Lakes water Quality Agreement between Canada and the United States. These areas were identified on the basis of their environmental qualities having been severely impacted by human activities. The environmental concerns for the Bay of Quinte were quite extensive, and included excess nutrients, persistent toxic contamination, bacterial contamination and the loss of fish and wildlife habitat. Of course, industrial properties such as the former Bakelite property that were located along the shoreline of the Bay of Quinte would have contributed to these impaired conditions. Over the past nearly four decades there have been a number of remedial actions taken within the Bay of Quinte to restore environmental conditions. Collectively, these measures have eliminated many of the earlier issues. Per the description of the current status of the remedial action plan on Quinte Conservation's website, areas where some impairment remain to this day include:

- fish and wildlife consumption (in some specific areas);
- eutrophication (nutrient enrichment) and undesirable algae;
- degradation of aesthetics (still under review); and
- degradation of phytoplankton and zooplankton communities.

The environmental clean-up of the subject property that has occurred over the past decade has of course made a positive contribution to these goals, reducing contamination issues and allowing for the natural restoration of previously impacted fish and wildlife habitat. It is very important that the future development of those lands continues to recognize opportunities to maintain and restore the health of adjacent areas of the Bay of Quinte. In particular, this can be achieved by:

- ensuring that wetlands along the shoreline of the subject property are protected and buffered over the long-term, allowing these once disturbed areas to further re-naturalize and contribute beneficially to fish and wildlife habitat; and

- incorporating robust measures to protect the quality of runoff from the subject property, both during and subsequent to development, into the servicing plans for this property, ensuring such runoff is of good quality, that it provides beneficial nourishment of the nearshore wetlands, and that wetland buffers and the wetlands themselves receive treated stormwater in a manner which provides additional water quality polishing and flow attenuation benefits.

3.6 City of Belleville Official Plan

As conformity of the proposed development with the policies of the City of Belleville Official Plan (2021) are addressed under separate cover by others, the present discussion is focused on the Plan's most relevant natural heritage policies only.

Schedule B, Land Use Plan – Urban Serviced Area, to the City of Belleville Official Plan identifies the entirety of the subject property as being Environmental Protection, described in Section 3.5 of the plan as being intended to define those lands that require special care and regulation due to their inherent natural or physical characteristics. This description can apply to lands having the following types of characteristics:

- natural hazards, which includes floodplain (present over a portion of the subject property); and

- natural heritage features, including significant wetlands and significant coastal features (present over a portion of the subject property).

Accordingly, it is appropriate that an Environmental Protection designation applies to those lands which comprise the PSW/significant coastal wetland, together with any additional lands that are within the Lake Ontario 100 year flood limit. It may also be appropriate to apply such a designation to buffers and setbacks that are deemed appropriate to the protection of such features and functions. However, it is not appropriate

that such a designation apply to the remainder of the subject property, a landscape which was in previous industrial use and which contains substantial areas that remain very influenced/disturbed by that past land use. Section 3.5.6 of the Official Plan notes that the Natural Heritge Features map that is included as Appendix C to the Official Plan, and which serves in part to inform Schedule B, was prepared as a desk-top exercise, using a GIS landscape overlay modelling approach. It notes that the Official Plan encourages the municipality to undertake additional field work to verify the natural heritage features, and that the results of such work should be incorporated into the Official Plan through an OPA. Quite clearly, the City of Belleville recognizes the past land uses on the subject lands, as they have been working in good faith with the ownership of this property towards a land use which is appropriate to these lands, and which takes into account the considerable natural heritage values associated with the PSW/significant coastal wetland and the constraints associated with the Lake Ontario floodplain. One of the benefits of this EIS, and earlier reporting describing the natural heritage features of these lands, is that they properly define the actual extent of natural heritage constraints within the subject property. As earlier noted, Quinte Conservation were consulted over the many years of natural heritage work on those lands and are in agreement with the wetland limits, wetland buffering, limited extent of other natural heritage constraints and general development limits.

Schedule E, Detailed Planning Areas, to the City of Belleville Official Plan identifies the subject property as being within the Bayshore Planning Area. Section 4.1 of the Official Plan provides policy direction for this area and notes that, while this area contains a number of existing industrial uses, the area is now envisioned as a mixed-use waterfront, in which no new industrial uses should be located. It describes this area as having the potential to become a major destination for recreational purposes, and a preferred location in which to live or establish a business. It specifically notes the establishment of the Bayshore Trail and other park development, which have solidified the prescription that the Bay of Quinte has the potential to define the character of the City and improve the quality of life for residents; the redevelopment of the subject property has considerable potential to contribute to that objective.

Schedule F, Natural Hazard features, to the City of Belleville Official Plan identifies generalized floodplain constraints within the subject property. Those constraints have now been properly delineated through work completed by others on the project team, included through a topographic survey of the property.

Schedule G, Constraint Areas, to the City of Belleville Official Plan identifies the majority of the municipality, including the subject property, as being within a highly vulnerable aquifer area. It is noted that the City of Belleville has municipal water intakes within the offshore of the Bay of Quinte, to the

southwest of the subject lands, with an intake protection zone extending in a broad radius around that area, and coming to the shoreline of the subject property; as new development within the subject property will be residential, as it will be set back from the shoreline, and as a comprehensive stormwater management plan will be implemented to ensure stormwater is of good quality, there are no concerns that the redevelopment of this property could adversely influence the offshore municipal water intakes located in some vicinity of these lands.

Appendix B, Wildland Fire Hazard Areas, to the City of Belleville Official Plan, identifies the generalized boundaries of areas of wildland fire risk, based on the Province's interpretation of aerial and/or satellite imagery. This mapping suggests that portions of the subject property are of moderate risk, with other portions identified as being of either low risk or no risk. It is noted that fire risk is based on vegetation type, with areas of high to moderate risk typically being areas of denser conifer (of certain types), which are very combustible and which allow fire to move quickly from tree to tree. While a Wildland Fire Assessment has not been completed as part of our EIS, vegetation conditions within the subject property are not those associated with wildland fire risk, and the form of proposed development (i.e., urban development which will involve complete vegetation removal within the portions of the property that are being developed) generally eliminates/substantially reduces wildland fire risk at any rate. Accordingly, we do not believe wildland fire risks to be a relevant concern to the redevelopment of the subject property.

Appendix C, Natural Heritage Features, to the City of Belleville Official Plan, shows the subject property as being within the City's proposed Natural Heritage System. As noted above, Section 3.5.6 of the Official Plan notes that this mapping was produced as a desk-top exercise, and that further field investigations can be helpful in identifying what the actual limits of such areas should be (with that being one of the purposes of this EIS and the previous studies leading up to its preparation).

4 EXISTING SITE CONDITIONS

4.1 Overview

The majority of the subject property consists of formerly disturbed areas that have naturalized sufficiently to begin to apply ELC classifications to them. However, evidence and influence of past uses are still apparent in most places. For instance, treed areas were found to be quite hummocky, inferring that vegetation has developed over spoil piles/overburden dumping areas. In several areas, foundations or remnants of former structures were observed. In some areas, small pockets of wetland have developed as a consequence of water impoundment due to foundations or spoil pile placement. The areas where the remains of former structures are most prominent consist largely of open meadow with many non-native or invasive species, and where naturalization appears to have been delayed. The large open pond that is central to the site (the central pond) largely retains a linear form that continues to show evidence of past alteration.

4.2 Vegetation Communities and Flora

4.2.1 Vegetation Communities

Field investigations identified a total of 17 vegetation communities comprising the subject property. These communities and their corresponding boundaries are illustrated on **Figure 2**, with vegetation community descriptions provided below. Refer to **Appendix C** for a list of plant species recorded on the subject property, combining the results of both the 2011 and 2021 field surveys.

Terrestrial System

Cultural

CUT1-4: Gray Dogwood Deciduous Shrub Thicket

This community comprises a portion of the subject property around the central pond. The sub-canopy reaches approximately 10 m with a coverage of 10% and is dominated by Red Cedar (*Juniperus virginiana*) and Eastern Cottonwood (*Populus deltoides*). The understory reaches 3 m with a coverage of 20% and is dominated by Grey Dogwood (*Cornus racemosa*) and invasive European Buckthorn (*Rhamnus cathartica*). The groundcover reaches 0.5 m with a coverage of 90% and is dominated by Kentucky Bluegrass (*Poa pratensis*), Goldenrod species (*Solidago* sp.), Black Medick (*Medicago lupulina*) and Tufted Vetch (*Vicia cracca*).

A walking path rings the pond through this community, which is actively used by hikers and dog walkers, as observed during most 2021 surveys.

Forest

FODM4-11: Dry - Fresh Black Locust Deciduous Forest

This community is in the northwest portion of the subject property. The canopy is about 20 m tall with a coverage of 60%, dominated by non-native Black Locust (*Robinia pseudoacacia*) and Manitoba Maple (*Acer negundo*). The sub-canopy reaches 10 m with a coverage of 40%, and includes Manitoba Maple, European Buckthorn and Green Ash (*Fraxinus pennsylvannica*). The understory reaches 3 m with a coverage of 25% and is dominated by Manitoba Maple, European Buckthorn, and non-native Tartarian Honeysuckle (*Lonicera tatarica*). The groundcover includes a coverage of 75% and is dominated by invasive Garlic Mustard (*Alliaria petiolata*).

Like the CUT1-4, a well-developed walking path is found through this community, which continues onto the property to the west.

FOD7-3: Fresh – Moist Willow Lowland Deciduous Forest with Small Swamp Inclusions

This community is located within the western portion of the subject property. The canopy reaches 20-30 m with a coverage of 60-70% and is dominated by White Willow (*Salix alba*) and Eastern Cottonwood. The subcanopy reaches 15 m with a coverage of 25% and is dominated by Manitoba Maple. The understory reaches 4 m, with coverage ranging between 50 and 70%, and is dominated by European Buckthorn and Grey Dogwood. The groundcover covers <10% and is dominated by Poison Ivy (*Toxicodendron radicans*) and Wild Strawberry (*Fragaria virginiana*).

The micro-topography of this community is highly variable and appears to have developed over spoil piles/overburden dumping areas from past land uses. Depressed areas within the community contain seasonally impounded waters and include species such as Narrow-leaved Cattail (*Typha angustifolia*) and Red Maple (*Acer rubra*).

There is an inclusion area in the south portion of this community that is similar to the CUT1-4: Gray Dogwood Deciduous Shrub Thicket that circles the pond.

FODM7-7: Fresh - Moist Manitoba Maple Lowland Deciduous Forest with Pool of Water Inclusions

This community is located along the northern border of the subject property. The canopy reaches 20 m with a coverage of less than 10% and is dominated by Eastern Cottonwood. The sub-canopy reaches 15 m with a coverage of 75% and is dominated by Manitoba Maple and White Ash (*Fraxinus americana*). The understory is 2-3 m tall, with a coverage of <10% and is dominated by White Ash and Staghorn Sumac (*Rhus typhina*). The groundcover provides 70% cover and is dominated by Garlic Mustard.

Like the FOD7-3 community, the micro-topography of this community is variable over old spoil piles/overburden dumping areas, but partly as a consequence of the natural topography, which rises to the north. Small pools of standing water within this community contain Dwarf Clearweed (*Pilea pumila*), European Water-horehound (*Lycopus europaeus*) and Hyssop (*Hyssopus officinalis*).

FOD8-1: Fresh – Moist Poplar Deciduous Forest

This community is located along the north edge of the subject property, on a west-facing slope with a small draw at the base. The trees appear to be early pioneers, being only of sub-canopy height (<10 m tall). The trees have a coverage of <10% and are dominantly Eastern Cottonwood and Manitoba Maple. The understory reaches 2 m with a coverage of 10-15% and is dominated by Tartarian Honeysuckle and Grey Dogwood. The groundcover has a coverage of 60% and is dominated by Reed Canarygrass (*Phalaris arundinacea*), Goldenrod (*Solidago*) species and Oxeye Daisy (*Leucanthemum vulgare*).

Upland Meadow

MEGM3-4: Kentucky Blue Grass Graminoid Meadow

This community comprises much of the north and eastern portions of the property. The topography includes tablelands along Dundas Street that fall gradually towards the south. The foundations of several former buildings and debris piles are prominent on the landscape. The remains of several driveways are also seen.

The vegetation of the area is likely a reflection of past landscaping surrounding the buildings. It is primarily open and contains a diverse collection of native and non-native species. There is only a sparse (<10%) cover of pioneering Eastern Cottonwood and Manitoba Maple, all being <10 m tall. Tartarian Honeysuckle and Grey Dogwood shrubs are also found in this community at 10 – 15% cover. Kentucky Bluegrass (*Poa pratensis*) is dominant, with Creeping Bentgrass (*Agrostis stolonifera*), perhaps as the past lawn species. Wormwoods (*Artemisia absinthium*, *Artemisia vulgaris*) are abundant exotics, indicative of dry soils.

Goldenrods, Black Medick, Wild Chicory (*Cichorium intybus*) and Common Viper's Bugloss (*Echium vulgare*) are also abundant in the area. Cover is only about 60%, as open, gravelly areas are also seen through the area. Narrow-leaved Cattails and Reed Canarygrass are found in depressions created by the foundations.

Another area of this community occurs in the northwest corner of the subject property, with this area having Tartarian Honeysuckle and Staghorn Sumac as primary shrub species. In its centre, a small inclusion of the adjacent FOD8-1: Fresh – Moist Poplar Deciduous Forest is found, with denser (75%) Eastern Cottonwood and Manitoba Maple, and with sparse Red Cedar in the understory.

MEGR1 – Dry - Fresh Calcareous Bedrock Graminoid Meadow

This community is located in the very southern portion of the subject property. This area is very open, with the understory reaching only 1 m – 2 m. There is a patchy coverage of 10% young trees and shrubs, dominated by Staghorn Sumac and young Eastern Cottonwood and Red Cedar. The groundcover covers about 60% and is dominated by Kentucky Blue grass, Quackgrass (*Elymus repens*), Mossy Stonecrop (*Sedum acre*) and Common Viper's Bugloss. Occasional gravelly pavements are seen among the thin soils.

Wetland and Aquatic System

ER1: European Reed Patch

This community consists of a dense patch of invasive European Reed (*Phragmites australis* ssp. *australis*) of about 3 m height, found in a depression that leads to a Cattail Mineral Shallow Marsh to the east.

MAM2-2: Reed-canary Grass Graminoid Mineral Meadow Marsh

This community is located on the west edge of the property and appears largely undisturbed. The very sparse (<10%) understory reaches 2 m and is dominated by Red-osier Dogwood (*Cornus sericea*) and White Willow. The groundcover has a coverage of about 90% and is dominated by Reed Canarygrass and Broad-leaved Cattail (*Typha latifolia*). Bittersweet Nightshade (*Solanum dulcamara*) is occasionally found among these taller species.

MAS2-1: Cattail Mineral Shallow Marsh

To the east of the European Reed Patch is an area of open water marsh dominated by Narrow-leaved Cattails, with occasional Reed Canarygrass. It is fringed by smaller White Willows and Manitoba Maples (~2 m tall). This marsh is contained and separated from Lake Ontario to the south by a levee of taller White Willows and Eastern Cottonwoods, with Staghorn Sumac and Tartarian Honeysuckle.

SAF: Shallow Aquatic

Within the main Kentucky Blue Grass Graminoid Meadow area, there is a smaller excavation that may have previously held a building. It holds water but has no inlet or outlet. The occasional aquatic species and green algae were observed within this artificially created area.

SAF1-2: American Lotus Floating-leaved Shallow Aquatic

There is a large pond (2.9 ha) at the centre of the subject property, also without an observed inlet or outlet. Trees on the fringes of the pond are about 10 m tall with a coverage of <10%, dominated by Coyote Willow (*Salix exigua*) and Black Locust. The groundcover has a 90% coverage and is dominated by Goldenrod species. Among the plant species with an affinity for wet conditions that ring the pond, Common Boneset (*Eupatorium perfoliatum*), Needle Spikerush (*Eleocharis acicularis*), Blue Vervain (*Verbena hastata*), Spotted Jewelweed (*Impatiens capensis*) and Small Duckweed (*Lemna minor*) are common.

The pond itself contains Fragrant Waterlily (*Nymphaea odorata*) at about 25% cover, with Narrow-leaved Cattail and Eurasian Milfoil (*Myriophyllum spicatum*).

SWD3-4: Manitoba Maple Mineral Deciduous Swamp – Anthropogenic Influence

This community is found in two areas of the property. The one area is found in the northeast portion of the subject property, and comprises lower areas between spoil piles that have become treed. However, trees within the swamp area are only in the sub-canopy layer, at about 15 m tall with a coverage of 25%. This layer is dominated by Manitoba Maple and Green Ash. The understory reaches about 1.5 m with a coverage of 30% and is dominated by Grey Dogwood and European Buckthorn. The groundcover is about 50% and is dominated by non-native Bittersweet Nightshade, although Spotted Jewelweed, Small Duckweed and exotic Hyssop (*Hyssopus officinalis*) are also common in open water portions.

The other area of this community is in the eastern portion of the property, surrounded by the anthropogenic MEGM3-4 - Kentucky Blue Grass Graminoid Meadow. This area appeared to be an old parking lot or sublevel, and while a wetland classification is assigned, it is a marginal wetland area. There are sparse Manitoba Maple and Eastern Cottonwoods at <2 m tall, and patches of Reed Canarygrass and Narrow-leaved Cattails. The south portion of this area is bermed, which appears to be impounding water.

SWD4-1/MAS2-1: Willow Mineral Deciduous Swamp w/Cattail Mineral Shallow Marsh

This community is a coastal wetland located in the south portion of the subject property, sloping to meet the Lake Ontario shoreline. The tall, large White Willow and Eastern Cottonwoods here reach about 30 m height, with a coverage of 75%. The sub-canopy is also tall, reaching 20 m high with a coverage of 30%, being primarily Manitoba Maple. The understory reaches 3 m with a coverage of 50% and is dominated by European Buckthorn and Grey Dogwood. The 30% groundcover is dominated by shorter European Buckthorn. Needle Spikerush, Spotted Jewelweed, and Common Mallow (*Malva neglecta*) are also common. Along the shoreline, there are portions of this community which transition to Cattail Mineral Shallow Marsh, with Narrow-leaved Cattails, Patches of European Reed and Small Duckweed in still waters.

SWT2-5: Red-osier Dogwood Mineral Deciduous Thicket Swamp

This small community is located to the south of the central pond. It is found in a depression between the berm that holds the main pond, and an elevated area to the south, which is dominated by European Buckthorn. The shrubby thicket swamp reaches a height of only about 2 m with a coverage of 50% and is dominated by Red-osier Dogwood and Prickly Ash (*Zanthoxylum americanum*). The groundcover has a coverage of 80% and is dominated by Reed Canarygrass, Hemp Dogbane (*Apocynum cannabinum*) and Hyssop.

SWTM3: Willow Mineral Deciduous Thicket Swamp

This community is located in the southwestern portion of the subject property and may represent an excavated area or impoundment amongst spoil piles. The fringe canopy of White Willow reaches 20 m with a coverage of 10%. The thicket understory reaches 2 m with a coverage of 30% and is dominated by White Willow and Red Osier Dogwood. Where not open water, the groundcover is about 80%, dominated by Reed Canarygrass and Narrow-leaved Cattails, with Hyssop, Dwarf Clearweed (*Pilea pumila*) and invasive Purple Loosestrife (*Lythrum salicaria*).

4.2.2 Flora

Appendix C includes a complete list of vascular plants found within the subject property. Based on both 2011 and 2021 botanical surveys, a total of 251 species of vascular plants were observed during field surveys of these lands. For those plants identified to species, the flora records result in 132 species (53%) identified as native and 91 species (36%) as non-native to Ontario, and 28 identified to genus only.

Most of the native species have S-Ranks of S5 or S4, indicating they are common and secure, or apparently secure, in the province (Ministry of Natural Resources and Forestry, 2021). No SAR flora species were observed.

4.3 Wildlife

4.3.1 Breeding Birds

Breeding bird surveys were conducted using a roving survey method whereby the entirety of site is covered. To assist in the detection of wetland birds, wetland bird songs were played during the 2011 surveys, including those for Sora and Virginia Rail. Results of the breeding bird surveys are summarized in **Appendix D**. A total of 43 bird species were documented on the subject property in 2021, with a total of 60 bird species having been documented in the combined 2011 and 2021 surveys. The most frequently observed species in order of abundance were: Red-winged Blackbird (*Agelaius phoeniceus*), Yellow Warbler (*Setophaga petechia*), European Starling (*Sturnus vulgaris*) and Song Sparrow (*Melospiza melodia*), all of which commonly occur in wetland and woodland habitats.

During the 2011 surveys, Least Bittern (*Ixobrychus exilis*) was observed in the western MAM2-2: Reed-canary Grass Graminoid Mineral Meadow Marsh. Least Bittern are ranked as Threatened under the *ESA*. This species was not documented during the 2021 surveys.

One SAR with the designation of Special Concern, Barn Swallow (*Hirundo rustica*), was observed foraging over the subject property during both breeding bird surveys. All potential nesting structures on the subject property were searched for Barn Swallow nests, and none were found. Note that Barn Swallow were previously designated as Threatened, but have now been downlisted to Special Concern, which no longer affords them species or habitat protection under the *ESA*.

Two additional provincially ranked species were observed within or adjacent to the subject property during the 2021 surveys. This included one Black-crowned Night-Heron (*Nycticorax nycticorax*) along the shore of Lake Ontario adjacent to the southern edge of the subject property. Black-crowned Night-Heron are designated as a S3 (Vulnerable) species. During the first breeding bird survey in 2021, four Great Egret (*Ardea albus*) were observed within the central pond. During the second breeding bird survey, one Great Egret was observed along the shoreline of Lake Ontario. Great Egret have a provincial S-rank of S2 (Imperiled), but are not listed as SAR. However, neither species exhibited any behaviour that would indicate breeding on site, as they were observed to be foraging during all encounters. That said, the treed and wetland habitats within the subject property have the potential to serve as breeding habitat for these species.

No other SAR or provincially ranked S1 through S3 (Critically Imperiled through to Vulnerable) bird species, were recorded in the subject property.

Five forest area-sensitive bird species have been recorded between 2011 and 2021 within the subject property (**Appendix D**). Area-sensitive birds, while not necessarily rare, are species that are often associated with higher quality habitats, and which either require large areas of contiguous habitat for breeding or are more productive in larger areas of suitable habitat. The specific habitat requirements vary by species – some species prefer deciduous forests, while many prefer mixed forests. The five area-sensitive species observed were: Hairy Woodpecker (*Picoides villosus*), White-breasted Nuthatch (*Sitta carolinensis*), Black-throated Green Warbler (*Setophaga virens*), Least Bittern (as earlier described, only during 2011 surveys), and Ovenbird (*Seiurus aurocapillus*).

4.3.2 Breeding Amphibians

Amphibian breeding surveys were conducted at a total of six locations along the boundaries of on-site wetland features in 2021 (**Figure 2**). Two species of amphibians were recorded during the surveys: Green Frog (*Lithobates clamitans*) and American Bullfrog (*Rana catesbeiana*). A summary of the surveys is provided in **Table 3** and survey station locations are shown on **Figure 2**.

Table 3: Summary of Amphibian Survey Results

Breeding Amphibian Monitoring Station	Date: June 10, 2021
FR 1	Green Frog (Code 1), approx. 2 – 3 individuals
FR2	Green Frog (Code 1), approx. 2 – 3 individuals
FR3	Green Frog (Code 1), approx. 1 – 2 individuals; American Bullfrog (Code 2), approx. 2 – 3 individuals
FR4	Green Frog (Code 1), approx. 2 – 3 individuals; American Bullfrog (Code 2), approx. 5 – 6 individuals
FR5	Green Frog (Code 1), approx. 3 individuals
FR6	Green Frog (Code 1), approx. 1 individual

Notes:
The calling codes are designated according to the Amphibian Road Call Counts (Gartshore *et al.,* 2004). They are as follows:

1 – Individuals of one species can be counted, calls are not overlapping; second number denotes number of individuals.

2 – Calls of one species are overlapping; second number denotes estimated number of individuals.

3 – Full chorus of one species, calls continuous and overlapping, individuals not distinguishable.

The shallow water conditions of the delineated wetland features provide suitable conditions for breeding amphibian activities. The large central pond (SAF1-2) showed the most activity, with active bullfrog calling through the entire pond. Other monitoring stations recorded only minor amounts of calling.

4.3.3 Incidental Wildlife

Incidental observations of the following wildlife species were made during the 2021 field investigations:

- Mammals
  - Beaver (*Castor canadiensis*): dam observed in SE corner of open water (SAF1-2); however, no physical activity was noted during any survey.
  - Eastern Cottontail (*Sylvilagus floridanus*): was startled near an old foundation within the northeastern meadow (MEGM3-4) community, and near the open pond (SAF1-2).
  - Eastern Chipmunk (*Tamias striatus*): observed throughout treed areas of the subject property.

- Red Squirrel (*Sciurus vulgaris*): observed throughout treed areas of the subject property.

- Birds

  - Turkey Vulture (*Cathartes aura*): Flyover of open waters
  - Osprey (*Pandion haliaetus*): Fishing (dive) in open water (SAF1-2); was successful
  - Killdeer (*Charadrius vociferus*): an individual was observed using the SWD3-4 deciduous swamp area (old foundation) in the east part of the subject property.
  - Great Egret (*Ardea alba*), Canada Goose (*Branta canadensis*), gulls: A single Great Egret, accompanied by about 50 Canada Goose and various gulls were observed in the bay of Lake Ontario, east of the open pond (SAF1-2).

- Herptiles

  - Dekay's Brown Snake (*Storeria dekayi*) was observed within the MEGM3-4 meadow, at an old foundation between the two shallow aquatic (SAF) areas.
  - Frogs: Green frogs were heard/seen in the Central Pond.
  - Turtles: several Painted Turtles (*Chrysemys picta*) were observed in the central pond (SAF1-2), and the nest of an unidentified turtle species was observed at the Lake Ontario shoreline, southeast of the large pond.

- Insects

  - Swallowtail (*Papilio* sp.): observed within the northeastern meadow (MEGM3-4) community.

- Fish

  - Several minnows observed in open water (SAF1-2);

4.3.4 Species at Risk

The *ESA* provides protection for species listed as Endangered or Threatened in Ontario, including their habitat. The Species at Risk in Ontario (SARO) List also identifies species of Special Concern that may become Threatened or Endangered in the future. Species of Special Concern and their habitats are not protected under the ESA. Prior to field investigations, a background review was completed for potential

SAR habitat opportunities. The NHIC database and other relevant sources, including the 2011 data, were reviewed for SAR records.

The subject property was screened for potential SAR habitat opportunities by comparing habitat preferences of species deemed to have potential to occur against current site conditions. This SAR habitat assessment can be found in **Appendix E**, providing a detailed description of each species' habitat (including those deemed to not have potential habitat), as well as a discussion of habitat suitability within and surrounding the subject property, potential impacts, and mitigation, where applicable. Based on the rationale provided in **Appendix E**, the following 28 SAR were screened for:

Birds

- Bank Swallow (*Riparia riparia*) – Threatened
- Barn Swallow (*Hirundo rustica*) – Special Concern
- Bobolink (*Dolichonyx oryzivorus*) – Threatened
- Chimney Swift (*Chaetura pelagica*) – Threatened
- Common Nighthawk (*Chordeiles minor*) – Threatened
- Eastern Meadowlark (*Sturnella magna*) – Threatened
- Eastern Wood Pewee (*Contopus virens*) – Special Concern
- Grasshopper Sparrow (*Ammodramus savannarum*) – Special Concern
- Least Bittern (*Ixobrychus exilis*) – Threatened
- Wood Thrush (*Hylocichla mustelina*) - Special Concern

Reptiles

- Northern Map Turtle (*Graptemys geographica*) – Special Concern
- Snapping Turtle (*Chelydra serpentina*) – Special Concern
- Western Chorus Frog (*Pseudacris triseriata*) – Threatened

Vascular Plants

- Butternut (*Juglans cinerea*) – Endangered

- Ogden's Pondweed (*Potamogeton* x *ogdenii*) – Endangered

Mammals

- Little Brown Myotis (*Myotis lucifugus*) – Endangered
- Northern Myotis (*Myotis septentrionalis*) – Endangered
- Eastern Small-footed Myotis (*Myotis leibii*) – Endangered
- Tri-colored Bat *(Perimyotis subflavus)* – Endangered

Fish

- Grass Pickerel (*Esox americanus vermiculatus*) – Special Concern

Based on a review of the NHIC database, 2011 and 2021 surveys, as well as knowledge of the general area and experience with SAR in the region, a total of three SAR have been identified as having confirmed habitat within the subject property, as further described below; however, none of these species were observed during the 2021 surveys. Based on observed site conditions in 2021, potential habitats for an additional five SAR were identified on the property, also as further described below.

Barn swallow was observed foraging over the subject property in 2021. However, all potential nesting structures were searched for Barn Swallow nests, and none were found. While Butternut was observed on the property in 2011, the individual tree was dead at that time. Butternut was not observed in 2021.

Identified SAR

Least Bittern

Based on 2011 surveys, Least Bittern was observed in the west marsh area (MAM2-2). While not observed in 2021, the habitat requirements of this species remain present.

Snapping Turtle

Snapping Turtle was observed in 2011 at the southern end of the central pond (SAF1-2). This species was not observed in 2021; however, several Painted Turtles were observed in the same location, and habitat opportunities for Snapping Turtle remain. A nest of an unidentified turtle species was also found on the Lake Ontario shoreline, southeast of the open pond and north of the former pumping station.

Western Chorus Frog

Based on 2011 surveys, Western Chorus Frogs were observed in the thicket swamp (SWTM3) area and the west marsh area (MAM2-2) (**Figure 2**). While not observed in 2021, the habitat requirements of this species remain present.

Potential SAR, based on Habitat Availability

SAR Bats

Since 2011, four bat species have been determined to be SAR in Ontario, due to the devastating impacts of a fungal disease on these species. These species find maternity roosts in forested communities and may be present in the wooded areas of the subject property during roosting (**April 1 – September 30**). In particular, the larger trees found near Lake Ontario present good cavity/crevice opportunities adjacent to water. Areas of generally immature trees within previously disturbed portions of the property do not provide much habitat opportunity.

Grass Pickerel

This fish species was identified during review of NHIC records. Although the open pond (SAF1-2) provides fish habitat opportunities, this pond has no surficial connections to Lake Ontario and remains an isolated waterbody. Good potential habitat is found within the nearshore of Lake Ontario, particularly within the bay to the southwest of the subject property.

Habitat opportunities for all previously identified and potential SAR can be protected. This will be primarily achieved by the protection of the PSW and an adjacent buffer to it, which will retain the more valuable areas of wildlife habitat and virtually all SAR habitat within the property. It will additionally be ensured through timing restrictions on tree removals elsewhere within the property, avoiding periods when birds are nesting and when bats could be using such trees as roosting and maternity habitat.

4.3.5 Significant Wildlife Habitat

SWH can be difficult to appropriately determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as regional resource patterns and landscape effects. To help with site level assessments, the MNRF has developed the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015). The relevant planning authorities

have the responsibility to identify Significant Wildlife Habitat. With the exception of wintering deer yards, which are often considered SWH, the detailed identification and designation of SWH has not been completed in most municipalities, including within the City of Belleville.

The Natural Heritage Policies of the Provincial Policy Statement [Subsection 2.1.4 d)] identify four principal components of SWH as described in the *Significant Wildlife Habitat Technical Guide* (MNRF, 2000), including:

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitat for Wildlife;
- Animal Movement Corridors; and,
- Habitats for Species of Conservation Concern.

Criteria for the identification of these features provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015) were used to screen wildlife habitat within the study area for potential SWH (**Appendix C**). Four SWH types are considered confirmed on the subject property based on the 2021 field investigations and a background review, with these lands also having the potential to support an additional six SWH, as follows:

Confirmed SWH:

- **Seasonal Concentration Areas of Animals: Turtle Wintering Area:** Habitat opportunities are assumed to occur in association with the central pond.
- **Specialized Habitat for Wildlife: Turtle Nesting Areas:** Habitat opportunities are assumed to occur in association with the central pond, as well as in vicinity of portions of the shoreline.
- **Specialized Habitat for Wildlife: Amphibian Breeding Habitat (Wetlands):** The central pond qualified as providing this function.
- **Species of Conservation Concern:** Snapping Turtle, Black-crowned Night-heron and Great Egret have all been observed on or adjacent to the property, with opportunities for these species being primarily associated with the shoreline and nearshore wetlands, but to some degree also in association with the central pond.

Potential SWH:

- **Seasonal Concentration Areas of Animals: Waterfowl Stopover and Staging Area (Aquatic):** Opportunities are associated with the shoreline of the subject property and associated wetland habitat.
- **Seasonal Concentration Areas of Animals: Reptile Hibernaculum:** Opportunities were found in association with old building foundations.
- **Seasonal Concentration Areas of Animals: Colonially-nesting Bird Breeding Habitat (Tree/Shrubs):** Potential habitat occurs in association with both the shoreline/nearshore of the property and the central pond.
- **Specialized Habitat for Wildlife: Bald Eagle & Osprey Nesting, Foraging and Perching Habitat:** Osprey have been identified on the subject property and were found in 2011 nesting on a pole with a platform that had been installed for the purpose of creating such nesting opportunities.
- **Specialized Habitat for Wildlife: Amphibian Breeding Habitat (Woodland):** There are small ponded areas within some of the woodland areas of the property that have been created as a consequence of past site disturbance, with some of those areas being used for amphibian breeding, although not in sufficient numbers to qualify as SWH.
- **Habitat of Species of Conservation Concern: Marsh Breeding Bird Habitat:** Habitat for marsh breeding bird species of Conservation Concern occur in association with a portion of the PSW (MAM2-2 community in west portion of the subject property).

As with SAR habitat, SWH is found largely in association with the PSW, which is to be protected and buffered. However, past anthropogenic uses of the property have created some opportunities for SWH, primarily in association with the constructed central pond, but also in association with old foundations. Uses of these areas by wildlife are considered opportunistic; as these features are not part of the natural system, local wildlife have simply adapted to use them and/or could take advantage of them. Their presence on this landscape for a number of years increases the likelihood of such opportunistic use. In our opinion, it is not the intent of the PPS to protect artificially created habitat for wildlife. Further, the PPS provides latitude for municipalities on how they define such habitat and defines significance, as it relates to SWH, as "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system". The central pond and building foundations do not, in our opinion, meet this definition. Wildlife species which may have been

able to take advantage of the habitat afforded by those anthropogenic features will be able to find other habitat opportunities in this area, including, for amphibians, birds and turtles, in association with PSW areas. Impacts on such wildlife can be further reduced by a careful process of emptying the pond during the August through September period, when there are no concerns that birds would be nesting or that amphibians would be breeding, and when turtles are active. During the process of emptying the pond, trapped fish, amphibians and turtles can be rescued and relocated. Similarly, the demolition of remnant foundations between mid-April and the end of September will avoid any potential to disrupt any snakes which could be hibernating in such structures.

4.4 Summary Comments on Existing Natural Environment Conditions

In summary, the subject property continues to naturalize since its abandonment; however, the former cultural uses have had a lasting influence. It is expected that this cultural influence will continue to be present without intervention. There is notable wildlife activity, particularly in the southern part of the property. This can be attributed primarily to the presence of water, with the shoreline wetlands, Lake Ontario shoreline and the Open Pond (SAF1-2) presenting a number of habitat opportunities.

Although 10 years have passed since our earlier work on this property, 2021 conditions remain very similar to what had been earlier observed, the most notable change being the continued development of trees within the spoil pile areas, to the point where ELC classification can be inferred from observations. **The additional information from 2021 verifies our earlier assessment of development constraints and opportunities in association with these lands. In this regard, there are no further changes warranted to the boundaries of the PSW, and the updated SAR and SWH information does not change our earlier position regarding the feasibility of development within those lands identified in the final drawing of Appendix A as remaining suitable for that purpose. Nor are there any environmental policy changes between the time of our earlier work and the present that change the feasibility of development within that portion of the subject property.**

4.5 Comment on Updated Floodplain Analysis

There has been an updated floodplain analysis completed by others on this project, with the new 100 year limit for Lake Ontario shown as the blue line on the proposed Site Plan (Drawing AO.1). The development limit incorporates a minimum 6 m offset from the floodplain.

5 COMMENTS AND RECOMMENDATIONS ON DEVELOPMENT

5.1 Site Suitability

Michalski Nielsen Associates Limited has worked with the project proponents and their consultant team to help determine how the subject lands can be developed for residential purposes in a manner which retains, and in areas improves, the natural heritage values of these lands and adjacent nearshore areas of the Bay of Quinte, and which will contribute to the social values of this area.

The development plan shown on Drawing AO.1 is primarily focused on lands forming part of the former industrial facility on this property, which are generally very disturbed. Although these lands contain pockets of woodland, such woodland areas tend to be young, fragmented successional areas. These lands also contain small pockets of ponded areas/marginal wetlands that have been created through past excavation, fill piles and berm placement, with those anthropogenic areas having very limited wildlife values. Accordingly, the redevelopment of these lands, portions of which have been subject to extensive clean-up over recent years, is fully appropriate.

The majority of the shoreline of the subject property is constrained by wetland which forms part of the Belleville Marsh, a wetland which qualifies as a PSW and also as a Great Lakes Coastal Wetland. Notwithstanding that there has been some history of abuse to this wetland through past land uses and activities on this property, it provides very valuable habitat and is a very important feature to protect. The site remediation work that has occurred on this property in recent years is an important consideration with respect to the protection of this wetland, which is now receiving cleaner runoff to it than it historically would have, and with this having direct benefits to the wildlife that use it.

As part of our work between 2011 and 2013 on this property, there was an extensive consultation process with the City of Belleville, and most particularly with Quinte Conservation, to establish what the limits of a variable buffer to protect this wetland should be, with variations in that a buffer recognizing the current extent of adjacent disturbance, the ecological sensitivity of particular areas of wetland, as well as the extensive work that was being undertaken to clean up the site and improve wetland water quality. Dependent on location, these minimum buffers that were established through that process ranged from 2 m (along one section of existing roadway only), but more generally from 10 m, to over 15 m; this variable width buffer that had been established is shown by the magenta coloured line on Drawing AO.1. However, the development limit shown on that drawing has additionally taken into account more recent discussions with the City of Belleville and Quinte Conservation and the need to incorporate the updated Lake Ontario floodplain elevation, which is shown as a dashed blue line on Drawing AO.1, together with a 6 m setback

from that limit, shown as the solid green line on that drawing. All of these lands are to be designated as open space, with **the resultant development setback from the PSW being a minimum 25 m, and in many cases 30 m or more; the average wetland setback is over 30 m**. Particularly in consideration of this relationship of adjacent areas of wetland to past land uses, these setbacks, the great majority of which will be retained in a natural condition and/or restored to a naturalized condition, afford a very high level of protection to the PSW.

Proposed development on this property will result in the removal of the central pond, a feature which was constructed as part of the former industrial use of this property. Although the central pond is not a natural feature, it has been used opportunistically by wildlife and could qualify as SWH (although in our opinion should not be considered such). The pond can be removed in a manner which does not harm wildlife, and wildlife that presently use this feature will be able to find suitable habitat in the general vicinity of these lands. Likewise, while there may be some opportunistic use of old foundations on the property by wildlife, these are also artificial features within the landscape; these foundations can be removed when not being used by wildlife and any wildlife that could be making use of them will be able to find other suitable habitat in the general vicinity of these lands.

A public trail will be installed to connect from west to east across the subject property. Because municipal standards require this to be a paved, multi-use trail of substantial dimension, it is to be generally installed immediately adjacent to the public road, and otherwise adjacent to development, such that it is set well back from the wetland (a minimum 30 m). In this regard, while smaller width trails of up to 2 m, made of natural and permeable materials (i.e., bark chip, gravel), can be quite compatible uses within wetland buffers, as they have minimal impacts on vegetation and retain the permeability of the landscape, that is not the case for wide, asphalt pathways.

5.2 Stormwater Management

A Functional Servicing Report (FSR) has been prepared for this project by Van MEER limited, and has been submitted under separate cover. It is noted that Michalski Nielsen Associates Limited has been working with that firm on some of the components of that report, particularly those associated with water quality treatment and the discharge of treated stormwater to the PSW. The FSR notes that the property grades gradually to the south, with drainage sheet flowing into the PSW along the shoreline of the Bay of Quinte. There is also a storm sewer on Haig Road that outlets into a ditch along the east boundary of the property and discharges to the Bay of Quinte.

The FSR recognizes that adjacent areas of the Bay of Quinte are a sensitive receiver, owing both to the presence of a PSW/Coastal Wetland, and to the objectives of the Bay of Quinte Remedial Action Plan. The FSR recognizes that there are two aspects of stormwater management that are of critical importance to the protection of those resources, namely long-term water quality treatment following the development of the property and short-term protection against erosion and sedimentation as the property is being developed. Each of these is spoken to in the paragraphs following. Because the property is located adjacent to the Bay of Quinte of Lake Ontario, a very large receiver, water quantity treatment is not an important consideration, except as it relates to the safe release and dispersal of major storm events into the downgradient PSW, avoiding any potential erosion issues (a mater that is discussed in our comments below on water quality treatment).

Long-term Stormwater Management

Stormwater from the development is to be treated to an Enhanced Level of water quality per the MECP Stormwater Management Planning and Design Manual; this is the highest treatment standard of the Province, requiring a minimum 80% reduction in total suspended solids (TSS), and similar removal rates of other pollutants associated with particulate matter. This level of treatment is to be achieved by capturing flows from small catchment areas within the property (seven in total), and treating these with oil-grit separators (those branded as Downstream Defender are being considered). Per calculations included in the FSR, these treatment units have been sized to provide 99% TSS removal on an annualized basis, taking into account the typical variety of very small to larger precipitation and runoff events that are encountered. They will have a TSS removal efficiency of between 80.0% and 94.0% (average of 86.9%) during 25 mm events. During a much larger 5 year storm event, they have been calculated to still provide for between 59.3% and 77.5% removal of TSS.

Treated stormwater flows, together with major system flows, are then to be discharged to a number of vegetated spreader berms, generally to be located within the portion of the open space wetland setback/buffer that is furthest removed from the wetland. This green infrastructure will consist of a shallow ditch with a downgradient shallow berm that is reinforced with rock along its edge, and with that downgradient edge having a consistent height. As water flows into these vegetated spreader berms, it will spread over the entire length, which, depending on location, will be between 26 m and 100 m long, before being broadcast evenly over the downgradient edge, through an area that is densely planted with shrubs, and sheet flowing across the remainder of the wetland buffer, then into the wetland. These spreader berms will only require very infrequent maintenance. They serve a variety of important functions, including:

- providing some additional opportunities for sedimentation, filtration, evapotranspiration, and possible infiltration within the area of the spreader berm itself;

- further filtration and sedimentation of runoff as it sheet flows out of the spreader berm, and is dispersed across a broad area of wetland buffer;

- by promoting sheet flow, avoiding any erosion within buffer areas grading to adjacent wetland areas or within those wetland itself, and nourishing the adjacent wetland much as would have naturally occurred within this landscape; and

- by broadly dispersing flows into the wetland, providing for additional water quality polishing within the adjacent wetland area as the water flows diffusely through it.

It is noted that because the broad area of wetland downgradient of the development is a Coastal Wetland, inundated by the Bay of Quinte and, depending on wave and wind action on any given day, having abundant circulation of water through it, there are no needs to consider wetland hydrology (i.e., delivering pre-development flows to specific wetland areas under pose-development conditions), although the use of multiple oil grit separators and spreader berms to treat and discharge flows across much of the length of the buffer will nevertheless maintain general pre-development drainage patterns.

During very large storm events, flows beyond the first flush will partially bypass the oil grit separators, however will still be delivered diffusely to the wetland via the level spreader berms, with the design of these spreader berms ensuring flow velocities out of them are kept low during major rain events. In this regard, flow velocities outletting from the spreader berms will range from 0.26 m/s to 0.34 m/s during a major storm event, which is low enough to avoid any downgradient erosion concerns.

It is noted that the existing storm sewer outlet conveying external drainage from Haig Road to the north, which is then piped beneath Dundas Street East and conveyed as an open ditch across the subject lands, will continue to flow as it does at present to the lake, although will now flow in a shallow pipe rather than as an open ditch across much of the subject property. Flows from that external catchment for storm sizes up to the 5 year event will continue to be dispersed into vegetated areas forming part of the buffer, in a similar fashion to how they are dispersed today, before entering the wetland. For events larger than the 5 year storm, there will be overland runoff from that external drainage, with the site having been graded to allow that overland flow to be captured within the long length of adjacent vegetated spreader berm to the

immediate west, and with that spreader berm having been sized to be able to disperse/sheet flow that additional runoff into the wetland at low velocities (avoiding erosional concerns).

Having worked with the project civil engineer as he prepared the FSR, and having reviewed the information included in that report, Michalski Nielsen Associates Limited is satisfied that the proposed strategy for the long-term treatment of stormwater is appropriate to the protection of the PSW/Coastal Wetland, as well as in ensuring a high level of water quality protection in the adjacent waters of the Bay of Quinte. In fact, given that many portions of the subject property remain quite disturbed as a consequence of past land uses and activities, this is one of only a few developments we have been involved in where the redevelopment of the property affords, beyond the substantial removal of contaminated materials that has already occurred, very tangible water quality benefits to the downgradient receiver (i.e., by ensuring all flows, including those under major system storms, are properly treated and dispersed prior to their release into the downgradient PSW and the Bay of Quinte. It is recognized that there will still be a final design process for this stormwater management plan that will follow site plan approvals, with it being very important that those details continue to place a very strong emphasis on the protection of the important PSW and aquatic resources occurring downgradient of this development.

Erosion and Sediment Controls During Construction

The FSR that has been prepared for this project addresses the potential for erosion and sedimentation during construction. In this regard, it includes detailed drawing sheets showing the locations of silt fencing along the downgradient perimeter of the property. A standard detail is included for such sediment fencing although, given the sensitivity of the downgradient receiver, we recommend that this be replaced with a heavy duty sediment fence in the detailed design/construction drawings, to consist of a 4' high heavy duty filter fabric, backed with paige wire and affixed to t-bars, with such fencing to additionally serve as an exclusion fence, preventing wildlife that may be in the wetland, including such species as turtles, from wandering into areas of construction. The FSR also describes a variety of other best management practices which are to be employed as part of the erosion and sediment control plan, which are to include:

- minimizing the extent of site disturbance at any given time;
- stabilizing disturbed areas as quickly as can be achieved;

- including additional measures such as: drainage swales with crushed stone filter berms, straw bale check dams and filter cloth at their inlets; and additional sediment fencing around areas of active construction, to capture sediments closer to source during construction;

- as catchbasins are installed, having filter cloth sediment traps in them until such time as the contributing drainage area has been fully stabilized;

- having protocols in place to ensure sediment controls are properly installed, monitored and maintained;

- controlling dust during construction;

- if any dewatering is required, discharging such water in a manner that captures any sediment and/or prevents sediment from being entrained where such flows are discharged; and

- ensuring there is proper management of any temporary stockpiles of stripped soils or imported soils.

With the exception of the need to ensure that a heavy duty silt fence is specified for erosion controls, with the caveat that a high level of monitoring/diligence will be required by both the contractor and a qualified individual as part of contract administration to ensure that sediment controls are being properly maintained and quickly repaired/augmented as necessary, and with the need for the contractor to ensure that a back-up supply of materials which will be required to maintain/supplement sediment and erosion controls is available on site, Michalski Nielsen Associates Limited is satisfied that the proposed erosion and sediment control measures are appropriate to the protection of the PSW/Coastal Wetland, as well as in ensuring a high level of water quality protection in the adjacent waters of the Bay of Quinte over the period of construction/site disturbance. It is recognized that there will still be a final design process that will follow site plan approvals, with it being very important that the final erosion and sediment control plan and associated protocols continue to place a very strong emphasis on the protection of the important PSW and aquatic resources occurring downgradient of this development.

5.3 Additional Aspects of Site Servicing

As described in the FSR, the proposed development will have direct access to Dundas Street East, with the existing driveway into the property to be slightly realigned and improved as a municipal road which is

aligned with Haig Road to the north. That looping road within the property will be constructed with a 20 m road allowance.

Sanitary services will be extended from an existing trunk sanitary sewer on an easement along the west side of the property. A small sewage lift station will be required to service southerly portions of the property, with a peak flow design of only 5.4 L/s. Redundancies are being built into the design of the sewage lift station. Sanitary sewers will generally follow the road network within the development, and will otherwise be located well back from, and outside of the environmental setbacks/buffers from, the PSW.

A water supply will be extended from an existing watermain on Dundas Street East. Water services will generally follow the road network within the development and will otherwise be located well back from, and outside of the environmental setbacks/buffers from, the PSW.

Site utilities will generally follow the road network within the development, with all to be located outside of the environmental setbacks/buffers from the PSW.

5.4 Construction Management

It is important that construction activities be timed and managed in a manner which avoids potential harm to local wildlife and which minimizes the potential for physical or water quality impacts on areas adjacent to development, with a particular emphasis on the protection of the PSW/Coastal Wetland and the water quality of the Bay of Quinte. To this end, and in conjunction with the direction of the FSR, Michalski Nielsen Associates Limited recommends that:

- **all tree cutting be undertaken between October 1 and March 31 in order to avoid impacts on nesting birds or roosting bats;**
- **prior to removing the central pond, it is to be slowly emptied, with flows to be outlet through a filter bag into areas of vegetation back from the PSW/Bay of Quinte shoreline. This work is to occur during the August to September period, when there will be no active bird nests, no breeding amphibians or amphibian eggs, when any tadpoles will have matured into frogs, and when turtles are active, all in an effort to minimize any potential harm to these species. A screened intake is to be used to prevent the entrainment of fish. Ecologists are to be on site during the course of this work to complete a wildlife rescue, with rescued wildlife to be relocated to either adjacent areas of wetland or adjacent nearshore waters of the Bay of Quinte (dependent on species);**
- **any works to remove old building foundations on the subject property must occur between April 15 and September 30, which will avoid the potential to**

disrupt any potential opportunistic use of such foundations as snake hibernacula;

- **at the onset of grubbing, and prior to any other earthworks, a heavy-duty silt fence is to be properly installed around the downgradient perimeter of all such works. The sediment fence is to be a minimum 4' in height, such that it additionally serves as a temporary wildlife exclusion fence. It is to be properly trenched into the ground (a minimum 0.2 m). A qualified individual is to provide certification that the silt fencing has been properly installed**;
- **additional sediment and erosion controls are to be installed, where deemed necessary by the project engineer, including such measures as temporary or permanent check dams at appropriate locations on any ditching;**
- **sediment and erosion controls are to be inspected daily by the contractor, and at least monthly by qualified members of the project team. Any deficiencies in these controls are to be remedied immediately, with the contractor to have a back up supply of such materials on site at all times;**
- **once an area has been grubbed, works are to progress as quickly as possible, with all disturbed areas to be stabilized by grading, then by seeding or sodding, as soon as can be practically achieved;**
- **sediment and erosion controls are to be left in place, and regularly monitored and repaired, until such time as the lands which have been disturbed are certified by a qualified individual as being stable**;
- **present plans do not include any trails or other public facilities within the wetland setbacks/buffers. As development plans are finalized, it may be desirable to create some additional trails outside of the planned municipal multiuse trail which will connect across the property. If that is to be the case, such trails should be no wider than 2 m, be comprised of permeable natural materials, such as bark chips or gravel, and be located such that they wind around mature trees. If there is contemplation of other amenity features beyond trails, such as boardwalks into areas of wetland or elevated viewing platforms for bird watching/nature appreciation, then these plans should first be reviewed by an ecologist, and circulated to the City of Belleville and Quinte Conservation for comment; and**
- **present plans do not include any marine facilities, such as boat docks, within the Bay of Quinte. If there are ever any plans for such works, or for upgrades to the present day pier into Lake Ontario, those plans will need to be carefully developed to ensure they are compatible with the protection of both the PSW and nearshore fish habitat, and would be subject to additional supporting studies and approvals from the City of Belleville, Quinte Conservation and, depending on the nature of such works, possibly also MNRF and Fisheries and Oceans Canada.**

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APPENDIX A – SITE OPPORTUNITIES AND CONSTRAINTS MAPPING FROM 2011 – 2012

Figure 1 - Wetland Boundaries

Legend

- MNAL Variable Buffer
- KIM wetland Sept 12_2011
- MNAL Preliminary Marginal Wetland
- MNAL Preliminary Wetlands
- MNR Wetland Boundary

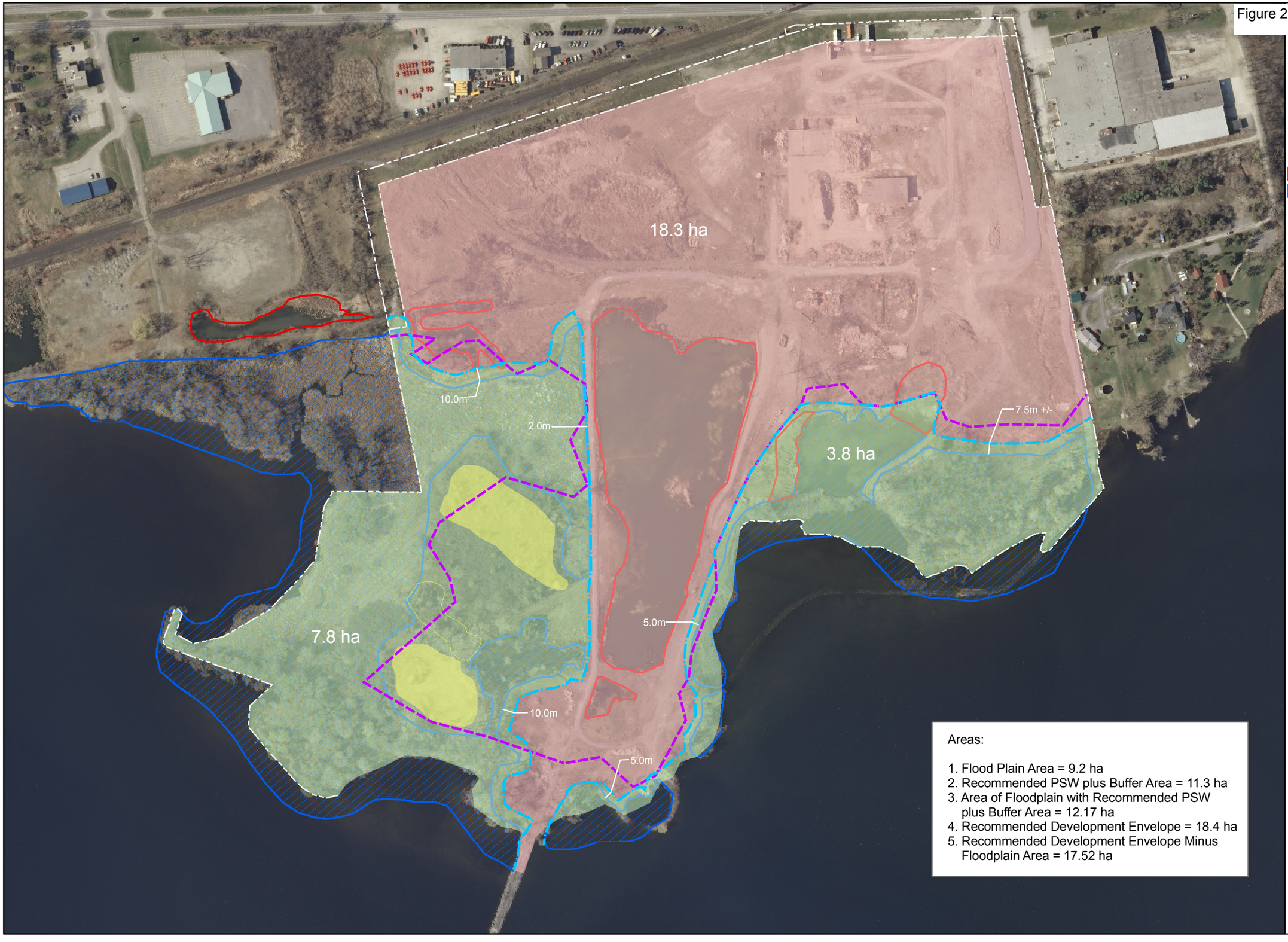
Project Name: Bakelite
Project Number: 5010
Date Created: October 2011

N

50 25 0 50 Meters

Michalski Nielsen
ASSOCIATES LIMITED

Figure 2. Recommended Development and Protected Areas



Legend

- MNAL Variable Buffer
- 100 Year Lake Ontario Flood Limit
- MNAL Habitat Improvement
- Recommended Development Area
- Recommended PSW Plus Buffer Area
- KIM wetland Sept 12_2011
- MNAL Preliminary Marginal Wetland
- MNAL Preliminary Wetlands

Areas:

1. Flood Plain Area = 9.2 ha
2. Recommended PSW plus Buffer Area = 11.3 ha
3. Area of Floodplain with Recommended PSW plus Buffer Area = 12.17 ha
4. Recommended Development Envelope = 18.4 ha
5. Recommended Development Envelope Minus Floodplain Area = 17.52 ha

Project Name: Bakelite
Project Number: 5010
Date Created: October 2011

N

50 25 0 50 Meters

Michalski Nielsen Associates Limited

Summary of Recommended Development Opportunities

Legend

- Recommended Development Area
- Recommended PSW Plus Buffer Area

Areas:

1. Recommended PSW plus Buffer Area = 38.8% of Total Area
2. Recommended Development Envelope = 61.2% of total Area

Project Name: Bakelite
Project Number: 5010
Date Created: August 2012

N

50 25 0 50 Meters

Michalski Nielsen
ASSOCIATES LIMITED

APPENDIX B – QUINTE CONSERVATION AUTHORITY COMMENTS OF FEBRUARY 4, 2022 RE NATURAL ENVIRONMENT WORK COMPLETED FOR THE SUBJECT PROPERTY

Quinte CONSERVATION

2061 OLD HIGHWAY 2, RR#2, BELLEVILLE, ON, K8N 4Z2
PHONE: (613) 968-3434 • **FAX:** (613) 968-8240
www.quinteconservation.ca

Letter from Michalski Nielsen dated January 10 regarding former Bakelite Site

Summary:

History

- Michalski Nielson (MN) has been involved with this site since 2010 (environmental surveys, remediation and development proposals)
- The site includes portions of Belleville Marsh, a PSW which qualifies as a Great Lakes coastal wetland
- In 2010 MN began substantial field work – mapping of vegetation communities, amphibian surveys, breeding bird surveys, fish habitat assessment and SAR screening. The work also included confirmation of wetland boundaries with QC staff and MNRF.
- The central pond was removed from the PSW boundary.
- Various buffers from the wetlands and floodplain were approved by all parties.
- The PSW at the west of the site is the least disturbed.
- The PSW and associated wildlife as well as proposed development and recreational potential benefited from the remediation.
- It is understood that the City is interested in acquiring some of the lands for parkland.
- An EIS will be required when the final plans are prepared.

2020 and 2021 updated field surveys

- Updated environmental surveys were performed in the spring 2020 and 2021, however an EIS that consolidates all the previous surveys and history should be completed
- The updated surveys included breeding bird and amphibian surveys, updated vegetation surveys
- No SAR flora species were observed
- The site was screened for SAR. Three SAR were identified as having confirmed habitat on the site, however none of the species were observed, based on 2021 surveys potential habitats exist for 5 additional SAR were identified
- Barn Swallow was observed in 2021, all potential nesting structures were searched but none found
- Based on 2011 surveys, Least Bittern was observed in the west marsh but not observed in 2021, the habitat requirements remain present
- Snapping Turtle was observed in 2011 at south end of central pond. However, was not observed in 2021, several painted turtles were found at the same location
- Western Chorus Frogs were found in the thicket swamp and the west marsh. While not observed in 2021 the habitat requirements remain present
- Habitat for 4 SAR bat species exists in particular the large trees near the Bay
- Habitat for Grass Pickeral exists along the SW Bay shoreline

- 4 SWH types are considered confirmed on the site based on 2021 investigations (Turtle Wintering and Nesting, Amphibian Breeding and Species of Conservation Concern (Snapping Turtle, Black-Crowned Night Heron and Great Egret). There is also a potential for 6 additional SWH
- The 2021 conditions were similar to 2011 conditions. The wetland boundaries and other community boundaries had not changed

Comments:

- Staff agree that additional field investigation may not be necessary since surveys were completed in 2010 and 2020, 2021.
- Staff agree that a comprehensive EIS is required. The EIS should summarizes all field information and history as well as include a discussion on appropriate setbacks for the proposed development. Obviously, the consultant must refer to a proposed site plan.
- Further, the updated EIS should include a more detailed discussion on SWH (confirmed and potential) and their locations on the site as well as the habitat locations for confirmed and potential SAR.
- The EIS should include a discussion on the lands that will be used by the City (recreational activities/structures)
- The EIS should include a discussion on the use of the waterfront (ie. Docks, boating etc.) if applicable.
- Further, as discussed, the 100 year floodplain will increase from 75.9 to 76.1 meters GSC. This may affect the setback along the east half of the site. However, as stated above, all setbacks must be justified by the EIS.

Paul McCoy

APPENDIX C – VASCULAR PLANT LIST

Appendix C. Vascular Plant List

Family	Scientific Name	Common Name	COSEWIC Status	SAR Schedule 1 Status	SARO Status	G Rank	S Rank	Exotic Status	Coefficient of Conservatism	Coefficient of Wetness
Aceraceae	*Acer negundo*	Manitoba Maple				G5	S5		0	0
Aceraceae	*Acer platanoides*	Norway Maple				GNR	SNA	SE5		5
Aceraceae	*Acer rubrum*	Red Maple				G5	S5		4	0
Aceraceae	*Acer saccharinum*	Silver Maple				G5	S5		5	-3
Alismataceae	*Alisma plantago-aquatica*	European Water-plantain							3	-5
Alismataceae	*Sagittaria latifolia*	Broad-leaved Arrowhead				G5	S5		4	-5
Alismataceae	*Sagittaria rigida*	Sessile-fruited Arrowhead				G5	S4		6	-5
Amaranthaceae	*Amaranthus albus*	White Amaranth				GNR	SNA	SE5		3
Amaranthaceae	*Amaranthus* sp.	Amaranth Species								
Anacardiaceae	*Rhus aromatica*	Fragrant Sumac				G5	S4		8	5
Anacardiaceae	*Rhus typhina*	Staghorn Sumac				G5	S5		1	3
Anacardiaceae	*Toxicodendron radicans*	Poison Ivy				G5	S5		2	0
Apiaceae	*Cicuta sp.*	Water-hemlock Species								
Apiaceae	*Daucus carota*	Wild Carrot				GNR	SNA	SE5		5
Apiaceae	*Pastinaca sativa*	Wild Parsnip				GNR	SNA	SE5		5
Apocynaceae	*Apocynum cannabinum*	Hemp Dogbane				GNR	S5		3	0
Apocynaceae	*Asclepias incarnata*	Swamp Milkweed				G5	S5		6	-5
Apocynaceae	*Asclepias syriaca*	Common Milkweed				G5	S5		0	5
Araceae	*Arisaema triphyllum*	Jack-in-the-pulpit				G5	S5		5	-3
Asteraceae	*Achillea millefolium*	Common Yarrow				G5	SNA	SE5?		3
Asteraceae	*Ambrosia artemisiifolia*	Common Ragweed				G5	S5		0	3
Asteraceae	*Arctium minus*	Common Burdock				GNR	SNA	SE5		3
Asteraceae	*Artemisia absinthium*	Absinthe Wormwood				GNR	SNA	SE5?		5
Asteraceae	*Artemisia vulgaris*	Common Wormwood				GU	SNA	SE5		5
Asteraceae	*Aster sp.*	Aster Species								
Asteraceae	*Bidens cernua*	Nodding Beggarticks				G5	S5		2	-5
Asteraceae	*Bidens discoidea*	Small Beggarticks				G5	S4		6	-3
Asteraceae	*Bidens tripartita*	Three-parted Beggarticks				G5	S5?		5	-3
Asteraceae	*Carduus acanthoides*	Spiny Plumeless Thistle				GNR	SNA	SE5		5
Asteraceae	*Cichorium intybus*	Wild Chicory				GNR	SNA	SE5		5
Asteraceae	*Cirsium arvense*	Canada Thistle				G5	SNA	SE5		3
Asteraceae	*Cirsium sp.*	Thistle Species								
Asteraceae	*Cirsium vulgare*	Bull Thistle				GNR	SNA	SE5		3
Asteraceae	*Erigeron annuus*	Annual Fleabane				G5	S5		0	3
Asteraceae	*Erigeron philadelphicus*	Philadelphia Fleabane				G5	S5		1	-3
Asteraceae	*Eupatorium perfoliatum*	Common Boneset				G5	S5		2	-3
Asteraceae	*Euthamia graminifolia*	Grass-leaved Goldenrod				G5	S5		2	0
Asteraceae	*Eutrochium maculatum*	Spotted Joe Pye Weed				G5	S5		3	-5
Asteraceae	*Hieracium scabrum*	Rough Hawkweed				G5	S4		7	5
Asteraceae	*Hieracium sp.*	Hawkweed Species								
Asteraceae	*Hieracium vulgatum*	Common Hawkweed				G5	SNA	SE2?		5
Asteraceae	*Leucanthemum vulgare*	Oxeye Daisy				GNR	SNA	SE5		5
Asteraceae	*Matricaria discoidea*	Pineappleweed				G5	SNA	SE5		3
Asteraceae	*Senecio sp.*	Ragwort Species								
Asteraceae	*Solidago altissima*	Tall Goldenrod				G5	S5		1	3
Asteraceae	*Solidago gigantea*	Giant Goldenrod				G5	S5		4	-3

Appendix C. Vascular Plant List

Family	Scientific Name	Common Name	COSEWIC Status	SAR Schedule 1 Status	SARO Status	G Rank	S Rank	Exotic Status	Coefficient of Conservatism	Coefficient of Wetness
Asteraceae	*Solidago nemoralis*	Grey-stemmed Goldenrod				G5	S5		2	5
Asteraceae	*Solidago sp.*	Goldenrod Species								
Asteraceae	*Sonchus arvensis*	Field Sow-thistle				GNR	SNA	SE5		3
Asteraceae	*Symphyotrichum cordifolium*	Heart-leaved Aster				G5	S5		5	5
Asteraceae	*Symphyotrichum ericoides*	White Heath Aster				G5	S5		4	3
Asteraceae	*Symphyotrichum lanceolatum*	Panicled Aster				G5	S5		3	-3
Asteraceae	*Symphyotrichum novae-angliae*	New England Aster				G5	S5		2	-3
Asteraceae	*Symphyotrichum puniceum*	Purple-stemmed Aster				G5	S5		6	-5
Asteraceae	*Taraxacum officinale*	Common Dandelion				G5	SNA	SE5		3
Asteraceae	*Tussilago farfara*	Coltsfoot				GNR	SNA	SE5		3
Asteraceae	*Xanthium strumarium*	Rough Cockleburr				G5	S5		2	0
Balsaminaceae	*Impatiens capensis*	Spotted Jewelweed				G5	S5		4	-3
Betulaceae	*Betula papyrifera*	Paper Birch				G5	S5		2	3
Boraginaceae	*Echium vulgare*	Common Viper's Bugloss				GNR	SNA	SE5		5
Brassicaceae	*Alliaria petiolata*	Garlic Mustard				GNR	SNA	SE5		0
Brassicaceae	*Brassica oleracea*	Cabbage				GNR	SNA	SE1		5
Brassicaceae	*Brassica rapa*	Field Mustard				GNR	SNA	SE5		5
Brassicaceae	*Capsella bursa-pastoris*	Common Shepherd's Purse				GNR	SNA	SE5		3
Brassicaceae	*Hesperis matronalis*	Dame's Rocket				G4G5	SNA	SE5		3
Brassicaceae	*Thlaspi arvense*	Field Pennycress				GNR	SNA	SE5		5
Butomaceae	*Butomus umbellatus*	Flowering-rush				G5	SNA	SE5		-5
Cabombaceae	*Brasenia schreberi*	Watershield				G5	S5		7	-5
Caprifoliaceae	*Lonicera sp.*	Honeysuckle Species								
Caprifoliaceae	*Lonicera tatarica*	Tatarian Honeysuckle				GNR	SNA	SE5		3
Caprifoliaceae	*Lonicera x bella*	(Lonicera morrowii X Lonicera tatarica)				GNA	SNA			3
Caprifoliaceae	*Viburnum edule*	Squashberry				G5	S5		8	-3
Caprifoliaceae	*Viburnum opulus*	Cranberry Viburnum				G5	S5		5	-3
Caryophyllaceae	*Gypsophila vaccaria*	Cowcockle				GNR	SNA	SE3		5
Caryophyllaceae	*Silene vulgaris*	Bladder Campion				GNR	SNA	SE5		5
Celastraceae	*Celastrus orbiculatus*	Oriental Bittersweet				GNR	SNA	SE2		5
Ceratophyllaceae	*Ceratophyllum demersum*	Common Hornwort				G5	S5		4	-5
Chenopodiaceae	*Chenopodiastrum simplex*	Maple-leaved Goosefoot				G5	S5		0	5
Clusiaceae	*Hypericum perforatum*	Common St. John's-wort				GNR	SNA	SE5		5
Clusiaceae	*Hypericum sp.*	St. John's-wort Species								
Convolvulaceae	*Calystegia sp.*	Bindweed Species								
Convolvulaceae	*Ipomoea purpurea*	Common Morning Glory				GNR	SNA	SE2		3
Cornaceae	*Cornus obliqua*	Silky Dogwood				G5	S5		2	-3
Cornaceae	*Cornus racemosa*	Grey Dogwood				G5	S5		2	0
Cornaceae	*Cornus sericea*	Red-osier Dogwood				G5	S5		2	-3
Crassulaceae	*Sedum acre*	Mossy Stonecrop				GNR	SNA	SE5		5
Cucurbitaceae	*Sicyos angulatus*	One-seed Burr Cucumber				G5	S4S5		2	-3
Cupressaceae	*Juniperus virginiana*	Eastern Red Cedar				G5	S5		4	3
Cyperaceae	*Bolboschoenus fluviatilis*	River Bulrush				G5	S4S5		7	-5
Cyperaceae	*Carex bebbii*	Bebb's Sedge				G5	S5		3	-5
Cyperaceae	*Carex blanda*	Woodland Sedge				G5	S5		3	0

Appendix C. Vascular Plant List

Family	Scientific Name	Common Name	COSEWIC Status	SAR Schedule 1 Status	SARO Status	G Rank	S Rank	Exotic Status	Coefficient of Conservatism	Coefficient of Wetness
Cyperaceae	*Carex granularis*	Limestone Meadow Sedge				G5	S5		3	-3
Cyperaceae	*Carex hirta*	Hammer Sedge				GNR	SNA	SE2		0
Cyperaceae	*Carex lacustris*	Lake Sedge				G5	S5		5	-5
Cyperaceae	*Carex rostrata*	Swollen Beaked Sedge				G5	S4?		10	-5
Cyperaceae	*Carex tenera*	Tender Sedge				G5	S5		4	0
Cyperaceae	*Carex utriculata*	Northern Beaked Sedge				G5	S5		7	-5
Cyperaceae	*Carex vulpinoidea*	Fox Sedge				G5	S5		3	-5
Cyperaceae	*Cyperus esculentus*	Perennial Yellow Flatsedge				G5	S5		1	-3
Cyperaceae	*Eleocharis acicularis*	Needle Spikerush				G5	S5		5	-5
Cyperaceae	*Eleocharis palustris*	Creeping Spikerush				G5	S5		6	-5
Cyperaceae	*Schoenoplectus pungens*	Common Three-square Bulrush				G5	S5		6	-5
Cyperaceae	*Scirpus atrovirens*	Dark-green Bulrush				G5	S5		3	-5
Equisetaceae	*Equisetum arvense*	Field Horsetail				G5	S5		0	0
Euphorbiaceae	*Euphorbia cyparissias*	Cypress Spurge				G5	SNA	SE5		5
Fabaceae	*Lotus corniculatus*	Garden Bird's-foot Trefoil				GNR	SNA	SE5		3
Fabaceae	*Medicago lupulina*	Black Medick				GNR	SNA	SE5		3
Fabaceae	*Medicago sativa*	Alfalfa				GNR	SNA	SE5		5
Fabaceae	*Melilotus albus*	White Sweet-clover				G5	SNA	SE5		3
Fabaceae	*Melilotus officinalis*	Yellow Sweet-clover				GNR	SNA	SE5		3
Fabaceae	*Robinia pseudoacacia*	Black Locust				G5	SNA	SE5		3
Fabaceae	*Trifolium aureum*	Yellow Clover				GNR	SNA	SE5		5
Fabaceae	*Trifolium hybridum*	Alsike Clover				GNR	SNA	SE5		3
Fabaceae	*Trifolium pratense*	Red Clover				GNR	SNA	SE5		3
Fabaceae	*Trifolium repens*	White Clover				GNR	SNA	SE5		3
Fabaceae	*Vicia cracca*	Tufted Vetch				GNR	SNA	SE5		5
Fabaceae	*Vicia sp.*	Vetch Species								
Fagaceae	*Quercus macrocarpa*	Bur Oak				G5	S5		5	3
Grossulariaceae	*Ribes rubrum*	European Red Currant				G4G5	SNA	SE5		5
Grossulariaceae	*Ribes sp.*	Currant Species								
Haloragaceae	*Myriophyllum sp.*	Water-milfoil Species								
Haloragaceae	*Myriophyllum spicatum*	Eurasian Water-milfoil				GNR	SNA	SE5		-5
Hydrocharitaceae	*Hydrocharis morsus-ranae*	European Frog-bit				GNR	SNA	SE5		-5
Iridaceae	*Iris versicolor*	Harlequin Blue Flag				G5	S5		5	-5
Juglandaceae	*Juglans cinerea*	Butternut	END	END	END	G3	S2?		6	3
Juglandaceae	*Juglans nigra*	Black Walnut				G5	S4?		5	3
Juncaceae	*Juncus effusus*	Soft Rush				G5	S5		4	-5
Juncaceae	*Juncus nodosus*	Knotted Rush				G5	S5		5	-5
Juncaceae	*Juncus sp.*	Rush Species								
Juncaceae	*Juncus tenuis*	Path Rush				G5	S5		0	0
Juncaceae	*Juncus torreyi*	Torrey's Rush				G5	S5		3	-3
Lamiaceae	*Clinopodium vulgare*	Wild Basil				G5	S5		4	5
Lamiaceae	*Glechoma hederacea*	Ground-ivy				GNR	SNA	SE5		3
Lamiaceae	*Hyssopus officinalis*	Hyssop				GNR	SNA	SE2		5
Lamiaceae	*Leonurus cardiaca*	Common Motherwort				GNR	SNA	SE5		5
Lamiaceae	*Lycopus americanus*	American Water-horehound				G5	S5		4	-5
Lamiaceae	*Lycopus europaeus*	European Water-horehound				GNR	SNA	SE5		-5

Appendix C. Vascular Plant List

Family	Scientific Name	Common Name	COSEWIC Status	SAR Schedule 1 Status	SARO Status	G Rank	S Rank	Exotic Status	Coefficient of Conservatism	Coefficient of Wetness
Lamiaceae	*Mentha arvensis*	field mint							3	-3
Lamiaceae	*Nepeta cataria*	Catnip				GNR	SNA	SE5		3
Lamiaceae	*Prunella vulgaris ssp. vulgaris*	Common Self-heal				G5TU	SNA	SE3		0
Lamiaceae	*Salvia nemorosa*	Woodland Sage				GNR	SNA	SE1		5
Lemnaceae	*Lemna minor*	Small Duckweed				G5	S5?		5	-5
Lentibulariaceae	*Utricularia minor*	Lesser Bladderwort				G5	S5		8	-5
Liliaceae	*Asparagus officinalis*	Garden Asparagus				G5?	SNA	SE5		3
Liliaceae	*Lilium lancifolium*	Lance-leaved Tiger Lily				GNR	SNA	SE1		5
Lythraceae	*Lythrum salicaria*	Purple Loosestrife				G5	SNA	SE5		-5
Malvaceae	*Malva neglecta*	Common Mallow				GNR	SNA	SE5		5
Malvaceae	*Malva sp.*	Mallow Species								
Nymphaeaceae	*Nymphaea odorata*	Fragrant Water-lily				G5	S5		5	-5
Nymphaeaceae	*Nymphaea odorata ssp. tuberosa*	Tuberous White Water-lily				G5T5	SU		5	-5
Oleaceae	*Fraxinus americana*	White Ash				G5	S4		4	3
Oleaceae	*Fraxinus pennsylvanica*	Red Ash				G5	S4		3	-3
Oleaceae	*Syringa vulgaris*	Common Lilac				GNR	SNA	SE5		5
Onagraceae	*Circaea alpina*	Small Enchanter's Nightshade				G5	S5		6	-3
Onagraceae	*Epilobium hirsutum*	Hairy Willowherb				GNR	SNA	SE5		-3
Onagraceae	*Oenothera biennis*	Common Evening-primrose				G5	S5		0	3
Plantaginaceae	*Plantago major*	Common Plantain				G5	SNA	SE5		3
Plantaginaceae	*Plantago rugelii*	Rugel's Plantain				G5	S5		1	0
Poaceae	*Agrostis stolonifera*	Creeping Bentgrass				G5	SNA	SE5		-3
Poaceae	*Bromus inermis*	Smooth Brome				G5	SNA	SE5		5
Poaceae	*Bromus tectorum*	Downy Brome				GNR	SNA	SE5		5
Poaceae	*Calamagrostis canadensis*	Bluejoint Reedgrass				G5	S5		4	-5
Poaceae	*Cinna arundinacea*	Stout Woodreed				G5	S4		7	-3
Poaceae	*Dichanthelium acuminatum*	tapered panicgrass							2	0
Poaceae	*Elymus repens*	Quackgrass				GNR	SNA	SE5		3
Poaceae	*Elymus riparius*	Eastern Riverbank Wildrye				G5	S4		7	-3
Poaceae	*Elymus sp.*	Wild-rye Species								
Poaceae	*Festuca rubra*	Red Fescue				G5	S5			3
Poaceae	*Hordeum jubatum*	Foxtail Barley				G5	S5?		0	0
Poaceae	*Leersia oryzoides*	Rice Cutgrass				G5	S5		3	-5
Poaceae	*Leersia virginica*	White Cutgrass				G5	S4		6	-3
Poaceae	*Panicum capillare*	Common Panicgrass				G5	S5		0	0
Poaceae	*Panicum flexile*	Wiry Panicgrass				G5	S4		8	-3
Poaceae	*Phalaris arundinacea*	Reed Canarygrass				G5	S5		0	-3
Poaceae	*Phleum pratense*	Common Timothy				GNR	SNA	SE5		3
Poaceae	*Phragmites australis*	Common Reed				G5	S4?		0	-3
Poaceae	*Phragmites australis ssp. australis*	European Reed				G5T5	SNA	SE5		-3
Poaceae	*Poa compressa*	Canada Bluegrass				GNR	SNA	SE5		3
Poaceae	*Poa palustris*	Fowl Bluegrass				G5	S5		5	-3
Poaceae	*Poa pratensis*	Kentucky Bluegrass				G5	S5		0	3
Poaceae	*Setaria viridis*	Green Foxtail				GNR	SNA	SE5		5

Appendix C. Vascular Plant List

Family	Scientific Name	Common Name	COSEWIC Status	SAR Schedule 1 Status	SARO Status	G Rank	S Rank	Exotic Status	Coefficient of Conservatism	Coefficient of Wetness
Poaceae	*Sporobolus cryptandrus*	Sand Dropseed				G5	S4		2	3
Polygonaceae	*Persicaria amphibia*	Water Smartweed				G5	S5		5	-5
Polygonaceae	*Persicaria maculosa*	Spotted Lady's-thumb				G3G5	SNA	SE5		-3
Polygonaceae	*Rumex crispus*	Curled Dock				GNR	SNA	SE5		0
Polygonaceae	*Rumex sp.*	Dock Species								
Pontederiaceae	*Pontederia cordata*	Pickerelweed				G5	S5		7	-5
Portulacaceae	*Portulaca oleracea*	Common Purslane				GU	SNA	SE5		3
Potamogetonaceae	*Stuckenia pectinata*	Sago Pondweed				G5	S5		4	-5
Primulaceae	*Lysimachia ciliata*	Fringed Yellow Loosestrife				G5	S5		4	-3
Primulaceae	*Lysimachia nummularia*	Creeping Yellow Loosestrife				GNR	SNA	SE5		-3
Primulaceae	*Lysimachia terrestris*	Swamp Yellow Loosestrife				G5	S5		6	-5
Ranunculaceae	*Anemonastrum canadense*	Canada Anemone				G5	S5		3	-3
Ranunculaceae	*Anemone* sp.	Anemone Species								
Ranunculaceae	*Thalictrum pubescens*	Tall Meadow-rue				G5	S5		5	-3
Rhamnaceae	*Rhamnus cathartica*	European Buckthorn				GNR	SNA	SE5		0
Rosaceae	*Fragaria vesca*	Woodland Strawberry				G5	S5		4	3
Rosaceae	*Fragaria virginiana*	Wild Strawberry				G5	S5		2	3
Rosaceae	*Geum aleppicum*	Yellow Avens				G5	S5		2	0
Rosaceae	*Geum urbanum*	Wood Avens				G5	SNA	SE3		5
Rosaceae	*Malus baccata*	Siberian Crabapple				GNR	SNA	SE1		5
Rosaceae	*Malus sp.*	Apple Species								
Rosaceae	*Potentilla anserina*	Silverweed				G5	S5		5	-3
Rosaceae	*Potentilla recta*	Sulphur Cinquefoil				GNR	SNA	SE5		5
Rosaceae	*Prunus virginiana*	Chokecherry				G5	S5		2	3
Rosaceae	*Rosa acicularis*	Prickly Rose				G5	S5		5	3
Rosaceae	*Rosa blanda*	Smooth Rose				G5	S5		3	3
Rosaceae	*Rosa multiflora*	Multiflora Rose				GNR	SNA	SE5		3
Rosaceae	*Rosa rubiginosa*	Sweetbriar Rose				GNR	SNA	SE4		3
Rosaceae	*Rosa sp.*	Rose Species								
Rosaceae	*Rubus idaeus*	Red Raspberry				G5	S5		2	3
Rosaceae	*Rubus occidentalis*	Black Raspberry				G5	S5		2	5
Rubiaceae	*Galium palustre*	Common Marsh Bedstraw				G5	S5		5	-5
Rubiaceae	*Galium sp.*	Bedstraw Species								
Rutaceae	*Zanthoxylum americanum*	Common Prickly-ash				G5	S5		3	3
Salicaceae	*Populus balsamifera*	Balsam Poplar				G5	S5		4	-3
Salicaceae	*Populus deltoides*	Eastern Cottonwood				G5	S5		4	0
Salicaceae	*Populus grandidentata*	Large-toothed Aspen				G5	S5		5	5
Salicaceae	*Populus tremuloides*	Trembling Aspen				G5	S5		2	0
Salicaceae	*Salix alba*	White Willow				G5	SNA	SE4		-3
Salicaceae	*Salix amygdaloides*	Peach-leaved Willow				G5	S5		6	-3
Salicaceae	*Salix bebbiana*	Bebb's Willow				G5	S5		4	-3
Salicaceae	*Salix discolor*	Pussy Willow				G5	S5		3	-3
Salicaceae	*Salix eriocephala*	Cottony Willow				G5	S5		4	-3
Salicaceae	*Salix exigua*	coyote Willow							3	-5
Salicaceae	*Salix interior*	Sandbar Willow				G5	S5		1	-3

Appendix C. Vascular Plant List

Family	Scientific Name	Common Name	COSEWIC Status	SAR Schedule 1 Status	SARO Status	G Rank	S Rank	Exotic Status	Coefficient of Conservatism	Coefficient of Wetness
Salicaceae	*Salix petiolaris*	Meadow Willow				G5	S5		3	-3
Salicaceae	*Salix sp.*	Willow Species								
Salicaceae	*Salix x sepulcralis*	(Salix alba X Salix babylonica)				GNA	SNA			
Scrophulariaceae	*Agalinis purpurea* var. *parviflora*	Small-flowered Purple False Foxglove				GNRTNR	S4S5		8	-3
Scrophulariaceae	*Linaria vulgaris*	Butter-and-eggs				GNR	SNA	SE5		5
Scrophulariaceae	*Mimulus ringens*	Square-stemmed Monkeyflower				G5	S5		6	-5
Scrophulariaceae	*Verbascum thapsus*	Common Mullein				GNR	SNA	SE5		5
Solanaceae	*Solanum dulcamara*	Bittersweet Nightshade				GNR	SNA	SE5		0
Sparganiaceae	*Sparganium eurycarpum*	Broad-fruited Burreed				G5	S5		3	-5
Typhaceae	*Typha angustifolia*	Narrow-leaved Cattail				G5	SNA	SE5		-5
Typhaceae	*Typha latifolia*	Broad-leaved Cattail				G5	S5		1	-5
Typhaceae	*Typha x glauca*	(Typha angustifolia X Typha latifolia)				GNA	SNA			-5
Ulmaceae	*Celtis occidentalis*	Common Hackberry				G5	S4		8	0
Ulmaceae	*Ulmus americana*	White Elm				G4	S5		3	-3
Ulmaceae	*Ulmus pumila*	Siberian Elm				GNR	SNA	SE3		3
Urticaceae	*Boehmeria cylindrica*	Small-spike False Nettle				G5	S5		4	-5
Urticaceae	*Pilea pumila*	Dwarf Clearweed				G5	S5		5	-3
Urticaceae	*Urtica dioica*	Stinging Nettle				G5	S5		2	0
Verbenaceae	*Verbena hastata*	Blue Vervain				G5	S5		4	-3
Verbenaceae	*Verbena urticifolia*	White Vervain				G5	S5		4	0
Violaceae	*Viola odorata*	English Violet				GNR	SNA	SE2		5
Violaceae	*Viola sororia*	Woolly Blue Violet				G5	S5		4	0
Violaceae	*Viola sp.*	Violet Species								
Vitaceae	*Parthenocissus quinquefolia*	Virginia Creeper				G5	S4?		6	3
Vitaceae	*Vitis riparia*	Riverbank Grape				G5	S5		0	0

APPENDIX D – BREEDING BIRDS

Breeding Birds of Belleville Bakelite

Common Name	Scientific Name	Status				Number of Pairs/Territories - 2021			MNAL - 2011
		National Species at Risk COSEWIC [a]	Species at Risk in Ontario Listing [a]	Provincial breeding season SRANK [b]	Area-sensitive (OMNR) [c]	Terrestrial Habitats	Wetland Habitats	Total	Number of Observations
Great Blue Heron	*Ardea herodias*			S4			2	2	4
Great Egret	*Ardea albus*			S2			4	4	
Black-crowned Night-Heron	*Nycticorax nycticorax*			S3			(1)	(1)	
Mute Swan	*Cygnus olor*			SE			1	1	2
Mallard	*Anas platyrhynchos*			S5			(3)	(3)	10
Herring Gull	*Larus argentatus*			S5			1	1	Obs.
Mourning Dove	*Zenaida macroura*			S5		2		2	Obs.
Belted Kingfisher	*Ceryle alcyon*			S4			1	1	
Downy Woodpecker	*Picoides pubescens*			S5		2		2	
Hairy Woodpecker	*Picoides villosus*			S5	A	1		1	
Willow Flycatcher	*Empidonax traillii*			S5		4		4	
Eastern Phoebe	*Sayornis phoebe*			S5		1	1	2	
Eastern Kingbird	*Tyrannus tyrannus*			S4		1		1	
Tree Swallow	*Tachycineta bicolor*			S4		1 (f)		1	1
Barn Swallow	*Hirundo rustica*	THR	THR	S4		1 (f)		1	
Blue Jay	*Cyanocitta cristata*			S5		1		1	2
American Crow	*Corvus brachyrhynchos*			S5		2		2	Several
Black-capped Chickadee	*Poecile atricapillus*			S5		4		4	Several
White-breasted Nuthatch	*Sitta carolinensis*			S5	A	1		1	
House Wren	*Troglodytes aedon*			S5		1		1	
Carolina Wren	*Thryothorus ludovicianus*			S4		2		2	
American Robin	*Turdus migratorius*			S5		6	3	9	Several
Gray Catbird	*Dumetella carolinensis*			S4		3	3	6	
Brown Thrasher	*Toxostoma rufum*			S4		2		2	Obs.
Cedar Waxwing	*Bombycilla cedrorum*			S5		2		2	
European Starling	*Sturnus vulgaris*			SE		~12		~12	Obs.
Warbling Vireo	*Vireo gilvus*			S5		4	3	7	
Red-eyed Vireo	*Vireo olivaceus*			S5		2		2	
Yellow Warbler	*Setophaga petechia*			S5		18	10	28	Obs.
Chestnut-sided Warbler	*Setophaga pensylvanica*			S5		1		1	
Black-throated Green Warbler	*Setophaga virens*			S5	A	1		1	
Common Yellowthroat	*Geothlypis trichas*			S5		2	1	3	
Northern Cardinal	*Cardinalis cardinalis*			S5		3		3	4
Indigo Bunting	*Passerina cyanea*			S4		1		1	
Chipping Sparrow	*Spizella passerina*			S5		1		1	3
Song Sparrow	*Melospiza melodia*			S5		9	2	11	Several
Swamp Sparrow	*Melospiza georgiana*			S5			2	2	
Red-winged Blackbird	*Agelaius phoeniceus*			S4		2	~45	~47	Several
Common Grackle	*Quiscalus quiscula*			S5		2		2	Several
Brown-headed Cowbird	*Molothrus ater*			S5		3		3	
Baltimore Oriole	*Icterus galbula*			S4		3	1	4	
House Finch	*Carpodacus mexicanus*			SE		1		1	
American Goldfinch	*Cardeulis tristis*			S5		4		4	Several
Canada Goose	*Branta canadensis*			S5					Several
American Wigeon	*Anas americana*			S4					2
Blue-winged Teal	*Anas discors*			S4					4
Hooded Merganser	*Lophodytes cucullatus*			S5					4
Least Bittern	*Ixobrychus exilis*	THR	THR	S4	A				Several
Sora	*Porzana carolina*			S4					Obs.
Virginia Rail	*Rallus limicola*			S4					Obs.
Osprey	*Pandion haliaetus*			S5					Obs.
Killdeer	*Charadrius vociferus*			S5					Several
Rock Pigeon	*Columba livia*			SE					Several
Spotted Sandpiper	*Actitis macularia*			S5					Obs.
Ring-billed Gull	*Larus delawarensis*			S5					Obs.
Black-billed Cuckoo	*Coccyzus erythropthalmus*			S					Obs.

Marsh Wren	*Cistothorus palustris*			S4					2
Ovenbird	*Seiurus aurocapillus*			S4	A				5
Field Sparrow	*Spizella pusilla*			S4					3
Common Snipe	*Gallinago gallinago*								1

Field Work Conducted On:	Date	Temp (°C)	Wind Speed (km/h)	Cloud Cover (%)	Start time	End time
Site visit 1	15-Jun-21	16	13	100	7:05	9:45
Site visit 2	28-Jun-21	22	10	40	5:35	8:50

Number of Species:	43
Number of breeding (provincial and national) Species at Ris	0
Number of breeding S1 to S3 (provincially rare) Species:	0
Number of Regionally Rare Species:	0
Number of Area-sensitive Species:	3

KEY
Species with (f) were observed to be foraging with no indication of breeding.
Species number in brackets (#) indicates that territory of bird was likely partially on and partially off-site
a COSEWIC = Committee on the Status of Endangered Wildlife in Canada
a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)
END = Endangered, THR = Threatened, SC = Special Concern

[D] SRANK (from Natural Heritage Information Centre) for breeding status if:
S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)
SZB (breeding migrants or vagrants) and SR (reported as breeding, but no persuasive documentation) .
SE (exotic, i.e. non-native)

c Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

APPENDIX E – SPECIES AT RISK SCREENING

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
AVIFAUNA										
Bank Swallow (*Riparia riparia*)	THR	THR	THR	1	S4B	The Bank Swallow is threatened by loss of breeding and foraging habitat, destruction of nesting habitat and widespread pesticide use. Bank swallows are small songbirds with brown upperparts, white underparts and a distinctive dark breast band. It averages 12 cm long and weighs between 10 and 18 grams. The swallow can be distinguished in flight from other swallows by its quick, erratic wing beats and its almost constant buzzy, chattering vocalizations. They nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposit, including banks of rivers and lakes, active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs (Ministry of Natural Resources and Forestry, 2014).	OBBA	No	Appropriate habitat structures (banks) generally not present on-site. No evidence of nesting observed in remains of foundations. Not observed during 2021 breeding bird surveys.	
Barn Swallow (*Hirundo rustica*)	THR	SC	SC	1	S4B	The Barn Swallow is a threatened species, is found throughout southern Ontario, and can range into the north as long as suitable nesting locations can be found. These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn Swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. A significant decline in populations of this species has been documented since the mid-1980s, which is thought to be related to a decline in prey. Since the Barn Swallow is an aerial insectivore, this species relies on the presence of flying insects at specific times during the year. Changes in building practices and materials may also be having an impact on this species (Ministry of Natural Resources and Forestry, 2015).	OBBA and Breeding Bird Survey	No	Observed foraging during 2021 breeding bird surveys. However, all potential nesting structures were searched for Barn Swallow nests, and none were found.	
Bobolink (*Dolichonyx oryzivorus*)	THR	THR	THR	1	S4B	The Bobolink is found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (Ministry of Natural Resources and Forestry, 2014). The historical habitat of the bobolink was tallgrass prairie and other natural open meadow communities; however, as a result of the clearing of native prairies and the post-colonial increase in agriculture, bobolinks are now widely found in hayfields. Due to their reproductive cycle, nesting habits, and use of agricultural areas, bobolink nests and young are particularly vulnerable to loss as a result of common agricultural practices (i.e. first cut hay).	OBBA	No	No appropriate habitats found on-site. Not observed during 2021 breeding bird surveys.	
Chimney Swift (*Chaetura pelagica*)	THR	THR	THR	1	S4B,S4N	The Chimney Swift is a threatened species which breeds in Ontario and winters in northwestern South America. It is found mostly near urban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. Prior to settlement, the Chimney Swift would mainly nest in cave walls and hollow tress. The Chimney Swift initially benefitted from human settlement; however, recent declines in flying insects and the modernization of chimneys are factors attributed to their current population declines. As a threatened species, the Chimney Swift receives protection for both species and habitat under the ESA (Ministry of Natural Resources and Forestry, 2014).	OBBA	No	No appropriate habitats found on-site. Not observed during 2021 breeding bird surveys.	
Common Nighthawk (*Chordeiles minor*)	THR	SC	THR	1	S4B	The Common Nighthawk is an extremely well camouflaged bird that inhabits gravel beaches, rock outcrops and burned woodlands, that have little to no ground vegetation. This species can also be found in highly disturbed locations such as clear cuts, mine tailings areas, cultivated fields, urban parks, gravel roads, and orchards. As an insectivore, the primary threat to this species is the widespread application of pesticides (Ministry of Natural Resources and Forestry, 2015).	OBBA	No	Potential habitat, but not heard in 2011 night call bird surveys.	

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Eastern Meadowlark (*Sturnella magna*)	THR	THR	THR	1	S4B	The Eastern Meadowlark is a bird that prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields and human use areas such as airports and roadsides. Eastern meadowlarks can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses. The decline in population of these species is thought to be at least partially related to habitat destruction and agricultural practices (Ministry of Natural Resources and Forestry, 2014).	OBBA	No	No appropriate habitats found on-site. Not observed during 2021 breeding bird surveys.	
Eastern Wood-Pewee (*Contopus virens*)	SC	SC	SC	1	S4B	The Eastern Wood-pewee is classified as a species of special concern by COSSARO. Their population has been gradually declining since the mid-1960's (The Cornell Lab of Ornithology, 2015). The Eastern Wood-pewee is a "flycatcher", a bird that eats flying insects, that lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation. Threats to the population are largely unknown; however, causes may include loss of habitat due to urban development and decreases in the availability of flying insect prey (Ministry of Natural Resources and Forestry, 2014).	OBBA	No	Not observed during 2021 breeding bird surveys.	
Grasshopper Sparrow (*Ammodramus savannarum*)	No Status	No Status	SC	X	S4B	Grasshopper Sparrow are specialized to open relatively short grassland habitat, preferably grasslands with relatively sparse cover such as those in areas of poor soils, including alvars, moraines, and sand plains and generally does not favour tall grass moist meadows. It will also breed in manmade hayfields and occasionally in cereals such as Rye (*Secale cereale*).	OBBA	No	Not observed during 2021 breeding bird surveys.	
Least Bittern (*Ixobrychus exilis*)	THR	THR	THR	1	S4B	The Least Bittern prefers marshes and swamps dominated by emergent vegetation, preferably cattails, interspersed with patches of woody vegetation and open water. The smallest member of the heron family, least bitterns nest in marshes south of the Precambrian Shield in Ontario. Due to the location of the nests close to the water surface, least bittern nests are susceptible to damage as a result of wakes cast by recreational boats (Government of Canada, 2015).	OBBA and Breeding Bird Survey	Yes	2011 - confirmed observations on site within west marsh; not identified in 2021.	Habitat is within PSW, and will be protected.
Wood Thrush (*Hylocichla mustelina*)	THR	SC	THR	1	S4B	The Wood Thrush is a species of Special Concern because of habitat degradation or destruction by anthropogenic development. The Wood Thrush is a medium-sized songbird, generally rusty-brown on the upper parts with white under parts and large blackish spots on the breast and sides, and about 20 cm long. The Wood Thrush forages for food in leaf litter or on semi-bare ground, including larval and adult insects as well as plant material. They seek moist stands of trees with well-developed undergrowth in large mature deciduous and mixed (conifer-deciduous) forests. The Wood Thrush flies south to Mexico and Central America for the winter (Ministry of Natural Resources and Forestry, 2014).	OBBA and NHIC	No	Not observed during 2021 breeding bird surveys.	
HERPTILES										
Northern Map Turtle (*Graptemys geographica*)	SC	SC	SC	1	S3	The northern map turtle is a medium sized turtle with a carapace marked by concentric rings that resemble contour lines on a map. The range of this turtle includes larger lakes and rivers that contain an abundance of their primary prey species; molluscs. Shoreline development, water pollution and the spread of the zebra mussel are notable reasons for the decline in populations of this species (Ministry of Natural Resources and Forestry, 2014).	ORAA	No	While habitat exists, not observed in 2021 - only Painted Turtles.	
Snapping Turtle (*Chelydra serpentina*)	SC	SC	SC	1	S3	The snapping turtle is a species of special concern in Ontario due to the potential for the species to become threatened or endangered as a result of biological factors or other identified threats. While not presently protected by law, the snapping turtle has been recognized as a species of special concern by COSSARO. Snapping turtles spend the majority of their lives in water and travel slightly upland to gravel or sandy embankments or beaches to lay their eggs (Ontario Ministry of Natural Resources and Forestry, 2014).	ORAA and NHIC	Yes	Observation in 2011. Not observed in 2021 - only Painted Turtles.	Habitat is generally along Lake Ontario shoreline and within PSW areas, which will be protected.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Western Chorus Frog (*Pseudacris triseriata*)	THR	-	THR	1	S3	The Great Lakes/St. Lawrence – Canadian Shield population of the western chorus frog is federally listed as threatened by COSEWIC. This small frog is primarily a lowland terrestrial species that requires access to terrestrial and aquatic habitats in close proximity to one another. Relying on marshes and wooded wetlands adjacent to forested habitats, this species also requires isolated, predator free pools for breeding. Temporary pools, such as vernal pools in wooded areas, are preferred. This species hibernates terrestrially in a variety of environs, including leaf litter, wood debris, and vacant animal burrows (Government of Canada, 2016)	ORAA and NHIC	Yes	Records of calls were noted in 2011; no calls were heard in 2021.	Natural and important wetlands associated with the subject property are being protected, ensuring ongoing habitat opportunities for this species, if still present in area.
VASCULAR PLANTS										
Butternut (*Juglans cinerea*)	END	END	END	1	S2?	The butternut is designated as endangered by COSSARO and is tracked by the NHIC as a species at risk. The tree is federally regulated by the Species at Risk Act (2002). Butternut belongs to the walnut family and produces edible nuts which are a preferred food source for wildlife. The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. Butternut trees, which at one time were much more common to the south extending to the northern aspect of zone 6E, have been declining due to factors including forest loss and disease. Butternut trees suffer from a highly transmissible fungal disease called butternut canker. Butternut canker is causing very rapid decline in this tree species across its native range. The fungal disease is easily transmitted by wind and is very difficult to prevent. Trees often die within a few years of infection by butternut canker (Ministry of Natural Resource and Forestry, 2014).	Dead individual found on site	No	2011 - Confirmed on site but dead. 2021 - Not observed.	
Ogden's Pondweed (*Potamogeton ogdenii*)	END	END	END	1	SH	Ogden's pondweed is an underwater, or submersed, aquatic plant that grows in clear, slow-moving streams, ponds, and lakes. Like other pondweeds, it has alternate leaves with a prominent mid-vein. Its stems are thread-like; leaves are narrow and five (5) to seven (7) centimeters long. It is very hard to differentiate Ogden's pondweed from other narrow-leaved pondweeds. It is threatened by habitat destruction and competition from invasive aquatic plants, such as Eurasian water-milfoil (*Myriophyllum spicatum*) (Ministry of Natural Resources and Forestry, 2014).	NHIC	No	Not observed during flora surveys.	
MAMMALS										
Tri-colored Bat (Eastern Pipistrelle) (*Perimyotis subflavus*)	END	END	END	1	S3?	The eastern pipistrelle is a small bat that is widely distributed in eastern North America and whose range extends north to southern Ontario. The eastern pipistrelle is rare in this region of Ontario which is at the northernmost limit of the natural range for the species. These bats prefer to nest in foliage, tree cavities and woodpecker holes, and are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Eastern pipistrelles feed primarily on small insects and prefer an open forest habitat type in proximity to water (University of Michigan Museum of Zoology, 2004).	Professional Experience	Potential	Potential habitat in treed areas.	Mature trees generally only occur in close proximity to Lake Ontario, and can be protected.
Eastern Small-footed Myotis (*Myotis leibii*)	No Status	END	No Status	No Schedule	S2S3	The eastern small-footed myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Eastern small-footed bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown, about 8 cm long in size and weighs 4-5 grams. In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects to eat, including beetles, mosquitos, moths, and flies. They hibernate in winter, often in caves and abandoned mines. They can be found from south of Georgian Bay to Lake Erie and east to the Pembroke area, and choose colder and drier sites (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Potential	Potential habitat in treed areas.	Mature trees generally only occur in close proximity to Lake Ontario, and can be protected.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Little Brown Myotis (*Myotis lucifugus*)	END	END	END	1	S4	Little brown myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Little brown bats have glossy brown fur and usually weigh between four and 11 grams. Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing – an ideal environment for the fungus to grow and flourish. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Potential	Potential habitat in treed areas.	Mature trees generally only occur in close proximity to Lake Ontario, and can be protected.
Northern Myotis (*Myotis septentrionalis*)	END	END	END	1	S3	The northern long-eared myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are approximately eight cm long, with a wingspan of about 25 cm, and usually weigh six to nine grams. Northern long-eared bats can be found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Potential	Potential habitat in treed areas.	Mature trees generally only occur in close proximity to Lake Ontario, and can be protected.
FISH										
Grass Pickerel (*Esox americanus vermiculatus*)	SC	SC	SC	1	S3	The habitat of the Grass Pickerel is characterized by warm, slow-moving streams, ponds and shallow bays of larger lakes, with clear to tea-coloured water, and abundant aquatic vegetation. Bottom substrate is usually mud, but it has also been found over rock and gravel. Eggs are dispersed and adhere to aquatic vegetation.	NHIC	Potential within nearshore of Lake Ontario only.	No surveys completed on central pond; however, pond has no connections to any watercourse or Lake Ontario	Habitat is within PSW, and will be protected.

Notes:
SC - Special Concern
THR - Threatened
END - Endangered
S1 - Extremely rare in Ontario
S2 - Very rare in Ontario
S3 - Rare to uncommon in Ontario
S4 - Considered to be common in Ontario
S5 - Species is widespread in Ontario
SH - Possibly extirpated
S#S# - Indicates insufficient information exists to assign a single rank.
S#? - Indicates some uncertainty with the classification due to insufficient data.
S#N - Nonbreeding
S#B - Breeding

APPENDIX F – SIGNIFICANT WILDLIFE HABITAT SCREENING

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Rationale
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	No	CUM vegetation community present onsite; however, no evidence of sheet flow and meadow areas are highly disturbed.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds **not** SWH. Reservoir managed as a large wetland or pond/lake qualifies.	Potential	Lake Ontario shoreline and adjacent MAM2-2 have the potential to host appropriate number of individuals. Incidential observations suggest numbers approaching critieria levels.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds **not** SWH.	No	MAM habitat present, and sandpiper observed. However, noted influence of large number of birds not observed.
Raptor Wintering Area	Eagles, Hawks, Owls	**Hawks/Owls:** Combination of both Forest and Cultural Ecosites **Bald Eagle:** Forest or swamp near open water (hunting ground)	**Raptors:** >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. **Eagles:** open water, large trees & snags for roosting.	No	Sufficient sized habitat not present within the subject property. Species not observed during surveys.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites **not** SWH.	No	No caves or suitable habitat features within the subject property.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Decidious or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	No	No large forested areas within the subject property. Trees in forested areas generally <25 cm DBH, though individual trees near Lake Ontario are >25 cm DBH.
Turtle Wintering Area	**Turtles** (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	**Free water beneath ice.** Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	Yes	The large open pond is inferred to have wintering habitat due to the presence of turtles (including 2011 snapping turlte observations) and appropriate conditions.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Rationale
Reptile Hibernaculum	Snakes	**Snakes:** Any ecosite (esp. w/ rocky areas), other than very wet ones. **Five-lined Skink:** FOD and FOM, FOC1, FOC3 - with rock outcrops	**Access below frost line:** burrows; **rock** crevices, piles or slopes, **stone** fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	Potential	Foundations present opportunities. Dekay's Brown Sanke (not a criteria species) was observed.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, **not** a licensed/permitted aggregate area or new man-made features (2 yrs).	No	No suitable habitat within the subject property.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned Night Heron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	Potential	Black-crowned Night-Heron and Great Egret observed in Open Pond and bay of Lake Ontario. However, 5 or more nesting sites were not observed.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	**Gulls/Terns:** Rocky island or peninsula in lake or river. **Brewer's Blackbird:** close to watercourses in open fields or pastures with scattered trees or shrubs.	**Gulls/Terns:** islands or peninsulas with open water or marshy areas. **Brewers Blackbird colonies:** on the ground in low bushes close to streams and irrigation ditches.	No	While species were observed foraging, numbers approaching criteria quantities not observed. No nesting activity observed.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, **Special Concern:** Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	No	CU and FO communities are too small, lack of nectar species, surroudning area is highly urbanized.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	No	Criteria sized habitat not presnt within the subject property.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	No	No suitable habitat within the subject property.
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	No	No suitable habitat within the subject property.
Rare Vegetation Communities					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	**Cliff:** near vertical bedrock >3m **Talus Slope:** coarse rock rubble at the base of a cliff	No	No suitable habitat within the subject property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Rationale
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	No	No suitable habitat within the subject property.
Alvar	*Carex crawei, Panicum philadelphicum, Eleocharis compressa, Scutellaria parvula, Trichostema brachiatum,* Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. **Need 4 of the 5 Alvar Inidcator Spp**. <50% vegetation cover are exotic species.	No	No suitable habitat or criteria species within the subject property.
Old Growth Forest	Trees >140 yrs; heavy mortaily = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	No	Forested areas within the subject property have developed since abandonment of the property.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a tallgrass prairie habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	No	No tallgrass habitat located within the subject property.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An open Tallgrass Prairie habitat has < 25% tree cover. Less than 50% cover of exotic species.	No	No tallgrass habitat located within the subject property.
Other Rare Vegetation Communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	No	No rare vegetation communities identified within the subject property.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	No	Only Mallard observed, with numbers not approching criteria numbers.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	Potential	Osprey were observed nesting in 2011 (on pole). Was observed hunting in 2021, though nest was not observed.
Woodland Raptor Nesting Habitat	Barred Owl. **Hawks:** N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	No	No suitable habitat within the subject property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Rationale
Turtle Nesting Areas	Midland Painted Turtle **Special Concern:** Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	Yes	The large open pond is inferred to have nesting habitat due to the presence of turtles (including 2011 snapping turlte observations) and appropriate conditions. An unidentified nest was observed in 2021.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. **(2 or more confirms SWH type).**	No	No seeps or springs were identified within the subject property.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m^2 within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	Potential	Hummocky terrain presents opportunities, and Chorus Forg observed, but not in sufficient numbers.
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m^2 isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	Yes	While call levels are limited, the presence of American Bullfrog qualifies the Central Pond (SAF1-2) as SWH.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	No	No large, mature forests/woodlots within the subject property.
Habitat of Species of Conservation Concern					
Marsh Breeding Bird Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 **Green Heron**: SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	Potential	Virginia Rail and Sora were observed in 2011 within the MAM2-2 on west side of the property.
Shrub/Early Successional Bird Breeding Habitat	**Brown Thrasher + Clay-coloured Sparrow (indicators),** Field Sparrow, Black-billed Cuckoo, E. Towhee, Willow Flycatcher, Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	No	Potential habitat within the subject property is marginal and disturbed. Adjacent to developed areas.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Rationale
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	No	No terrestrial crayfish chimneys identified on the subject property.
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	Yes	Observations of Snapping Turtle, Black-crowned Night-Heron and Great Egret were noted on the subject property during investigations, with appropriate habitat.
Animal Movement Corridors					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	No	While direct habitat exists, no water connections are made to other habitats. Areas are broken by trails and disturbed areas.
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	No	No deer wintering habitat located within subject property
Exceptions for Ecoregion 6E					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	No	Not in 6E-14. No suitable habitat within the subject property
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands. Low agricultural intensity.	No	Not in 6E-17. No suitable habitat within the subject property.