

WESTWOOD ESTATES PHASE 3, PORT COLBORNE

ENVIRONMENTAL IMPACT STUDY

Prepared For:
Lester Shoalts Ltd.

Prepared By:
LCA Environmental Consultants
&
Ecological & Environmental Solutions

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1 INTRODUCTION

LCA Environmental Consultants were retained by Lester Shoalts Limited to prepare an Environmental Impact Study (EIS) to support a plan of subdivision application under Section 51 of the Planning Act. An EIS is required to evaluate the natural heritage and ecological features on the property to identify any constraints to development on the property. The EIS, including a Constraints Analysis and Impact Assessment, has been completed in accordance with the Regional Municipality of Niagara EIS Guidelines and with regard to the Provincial Policy Statement (2020), and the 2014 Consolidated Regional Official Plan.

The purpose of the EIS is to address the anticipated impacts of the proposed Phase 3 of Westwood Estates development on the natural heritage features identified on the site and adjacent lands. These features and their relative functions were assessed through a review of the existing data and field studies. The planning application proposes 315 residential units on the property, with a mix of detached dwellings, street townhomes and a medium density residential block.

1.1 Study Objectives

This report includes a summary of the study approach and relevant background data, a description of the existing natural heritage features on the subject property as well as an assessment of their ecological functions. The constraints associated with the subject property and opportunities for enhancement of natural features are detailed in the report. Following the assessment of constraints, a description of the proposed development is provided and the expected impacts to the natural features and their functions are summarized.

The primary objective of this study is to assess the impacts of the proposed plan of subdivision to the natural heritage features on and adjacent to the property. Mitigation measures will be recommended as appropriate with the goal of maintaining or improving the ecological integrity of the features on or adjacent to the subject property.

1.2 Study Area

The property exists within the urban area boundary (UAB) and is currently zoned as Secondary Plan Area (SPA) and Environmental Protection Area (EPA) according to Schedule A of the Official Plan for the City of Port Colborne. The site proposed for development is located at 0 Cement Road, Port Colborne, and is approximately 30.5 hectares in size. It is legally described as ARN: 271101002709301, City of Port Colborne, Regional Municipality of Niagara, and is part of Lot 33 of Concession 1, Humberstone Township. The property is located between Stanley Street and Lakeshore Road West and is bound to the east by Olga Drive. The land east and north of the property is urban residential, with Provincially Significant Wetland (PSW) to the west beyond the UAB.

The existing natural heritage features on and adjacent to the subject property include Significant Woodlands, which have been identified in Schedule B2 of the City of Port Colborne Official Plan and in Schedule C of the Regional Official Plan as Environmental Conservation Area (ECA). Portions of the Wainfleet Eagle Marsh Drain PSW are located in the northeast and southeast

portions of the subject property, which are both complexed with the PSW on the west side of Cement Road. The PSWs are identified in Schedule B1 of the City of Port Colborne and Regional Official Plans as EPA. Schedule B1 of the Municipal Official Plan identifies Natural Hazard Land in the southwest portion of the property associated with the floodplain of the Eagle Marsh Drain located along the southern perimeter of the property. The southwest corner of the property is located within a potential Natural Heritage Corridor as identified on Schedule C of the Niagara Region Official Plan and Schedule B2 of the Municipal Official Plan.

The study area and surrounding landscape are shown in Figure 1.

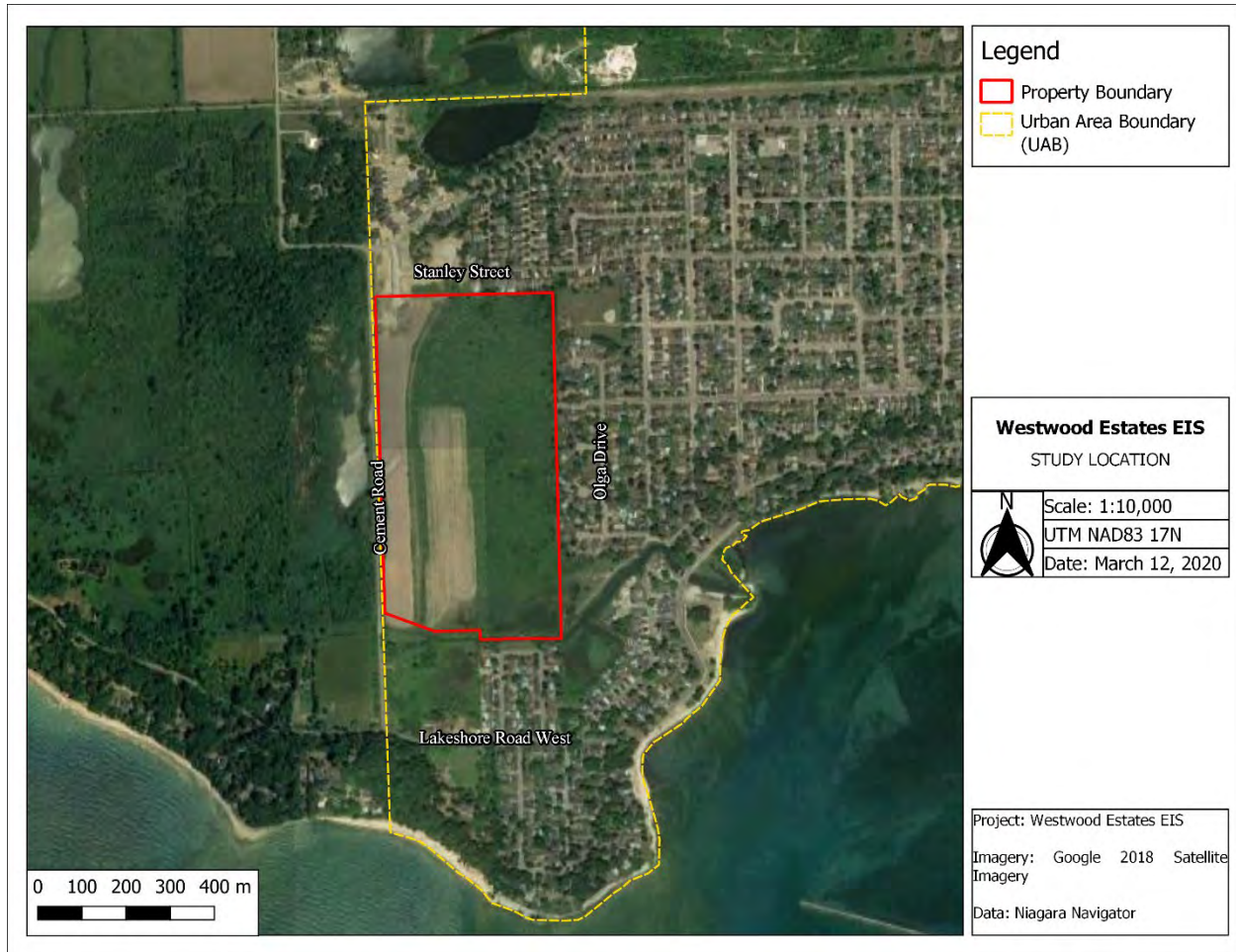


Figure 1: Location of the subject property.

1.3 Pre-consultation and Study Scope

A virtual pre-consultation meeting was held on September 9, 2021, with Municipal and agency staff, the landowner and consultants to discuss the proposed development and identify study requirements for complete application to the City. Prior to the pre-consultation meeting, LCA Environmental prepared a Terms of Reference (TORs) for the EIS and submitted to Regional and NPCA staff on March 19, 2021. The TORs were approved by Regional Environmental Planning Staff on March 29, 2021. NPCA staff provided comments for the TORs and EIS scoping on June 15, 2021, requesting additional surveys for water balance, salamander monitoring, raptors, and

movement corridors. LCA responded to these comments on June 16, 2021, to provide clarification on the proposed TORs, which included standardized survey methods for amphibians, birds, and SARs. During the pre-consultation meeting, the requirement for completion of an EIS was verified and the agencies confirmed that the TORs prepared by LCA Environmental had been previously approved, but did request additional feature-based water balance assessments be completed in addition to the studies identified in the TORs.

The EIS was scoped to include the following requirements:

- Ecological Land Classification and mapping
- Two Season Botanical Inventory
- Woodland Feature Delineation
- Breeding Bird Surveys
- Marsh Breeding Bird Surveys
- Anuran Call Surveys
- Reptile /Amphibian Visual Encounter Surveys
- Bat Monitoring
- Wetland Evaluation and Delineation as needed.
- Other Species at Risk surveys
- Wetland Water Balance Assessment

The final report will be submitted to the Region of Niagara and NPCA for review. All correspondence with agencies has been included in Appendix B of this report.

2 STUDY BACKGROUND AND SCOPING

2.1 Literature Review

Background studies reviewed for this EIS include:

- Natural Heritage Information Centre database (MNRF)
- Atlas of the Breeding Birds of Ontario (ABBO)
- iNaturalist.org
- City of Port Colborne Official Plan (2013)
- Lake Erie North Shore Watershed Plan (2010)
- Endangered Species Act (2007)
- Consolidated Regional Official Plan (2014)
- Provincial Policy Statement (2020)

Additional references are listed at the end of this report.

The subject property is located within the Eagle Marsh Drain Subwatershed and is located within the Lake Erie North Shore Watershed. The Eagle Marsh Drain Subwatershed is approximately 12 square kilometers in area and is primarily residential and agricultural lands. The Lake Erie North Shore Watershed Plan summarizes characteristics of the subwatersheds, including soils, physiography, fish habitat, groundwater recharge and discharge areas, and land use. The main tributary of Eagle Marsh Drain flows along the southern boundary of the subject property prior to

the outlet into Lake Erie. This tributary of Eagle Marsh Drain is a Class C drain and has been identified as Type 2 Important habitat by the NDMNRF. A second order channel traverses the subject property, conveying stormwater flows from the adjacent residential lands south towards the Eagle Marsh Drain. The channel was cut into bedrock prior to 2000 to accommodate the stormflows from the existing and future development and has not been evaluated for Fish Habitat by the NDMNRF.

The Natural Heritage Information Centre (NHIC) was also consulted to search for recent and historical records of provincially significant flora, fauna and natural heritage features on, and in proximity to the site.

2.2 Baseline Data Assessment

A Species at Risk (SAR) screening was completed for the subject property to verify whether any additional surveys were required to confirm the presence or absence of any species which have the potential to occur in the study area. The SAR screening involved cross-referencing the list of species known to occur in the City of Port Colborne with the habitat that is present on the subject property to determine potential for occurrence. Species tracked by the Natural Heritage Information Centre and identified within the area were also included as having potential to occur. A total of thirty SARs were identified as having potential to occur on the subject property (Appendix C).

Twelve of the species identified as having potential to occur on the property were avian species and five were mammalian. Breeding and Marsh Bird surveys were completed to monitor bird species using the study area and to identify any potential Significant Wildlife Habitat. Four of the mammalian SAR identified were bats and surveys were carried out to locate potential roosting habitat within the study area. Incidental observations were noted regularly to document mammalian species using the study area.

Seven of the SARs identified were reptile and amphibian species. Visual encounter surveys and active hand searches were completed to monitor for their presence. Three SAR identified as having potential to occur were insect species (Monarch, West Virginia White, and Rusty Patched Bumblebee). Incidental observations were completed to monitor for SAR insects, however no additional surveys were required to monitor for their presence. The screening also identified potential for SAR mollusc (Snuffbox), but their habitat is outside the study area and therefore no surveys were completed to confirm their presence.

Field assessments were completed throughout the spring and summer of 2021 by LCA Environmental to assess natural heritage features and their ecological functions, and to identify any constraints to development or enhancement opportunities present on the property. All field surveys were completed according to current standardized protocols as outlined in the Terms of Reference approved by the Region of Niagara. A summary of the field survey dates and protocols has been included in Appendix C.

2.3 Analysis of Significant Features

Biological field data were evaluated to assess the significance of the natural heritage features on the subject property. Provincial and national status of plants and wildlife was verified according to the Natural Heritage Information Centre (NHIC, 2023). The status of each species within the Region of Niagara was also verified (Oldham, 2017).

Potential sensitivity of natural features and functions within the study area was also measured through an assessment of:

- Vegetation communities (habitat quality, degree of disturbance).
- Sensitive species (rare plants or wildlife).
- Significant Wildlife Habitat; and
- Linkage functions and connectivity.

The relative significance of the natural features on the subject property was evaluated with regard to local (Official Plan for the City of Port Colborne), Regional (Consolidated Regional Official Plan) and Provincial (Provincial Policy Statement) planning documents, Federal and Provincial Species at Risk legislation, and Significant Wildlife Habitat Criteria for Eco-region 7E (MNRF, 2017).

3 POLICY AND LEGISLATIVE FRAMEWORK

Before impact assessment can be completed, a constraints analysis must identify the existing conditions, applicable policies and regulations, and conduct field studies to assess the natural heritage and hydrologic features and their functions. A review of the policies and guidelines at the Provincial, Regional, and Municipal level must also be completed. In accordance with the Region of Niagara EIS Guidelines (2018), a summary of applicable policies and regulations has been provided in Table 1 below.

3.1 Regional Policy Changes

At the onset of this EIS, and at the time the Terms of Reference were submitted to the Region of Niagara and NPCA for review, the 2014 Consolidated Regional Official Plan was the most recent land use policy document for Niagara.

However, in November 2022, prior to completion of the EIS report, a new Regional Official Plan was approved by the Minister of Municipal Affairs and Housing.

The Policy analysis in Table 1 reflects the 2014 Regional policies which were active at the time of the submission of the Terms of Reference, guiding the field work and forming the basis of the constraints analysis provided to inform the proposed development.

Table 1: Summary of applicable policies and legislations.

Policy Document	Policy Section	Policy Summary	Application
Provincial Policy Statement, 2020	2.1 Natural Heritage	2.1.2 Diversity, connectivity, and function of natural systems should be maintained, restored, or improved	The study area contains ECA woodlands and EPA PSWs. The study area also contains potential habitat for threatened or endangered species.
		2.1.5 No development in significant wetlands, woodlands, valleylands, wildlife habitat, or ANSIs unless no negative impacts have been demonstrated	
		2.1.7 Development not permitted in habitat of endangered/threatened species	
		2.1.8 No development on lands adjacent to natural heritage features unless no negative impacts have been demonstrated.	
Endangered Species Act (2007)	Protection and Recovery of Species	10.1 Prohibits damage or destruction to the habitat of any species listed as endangered, threatened, or extirpated under SARO.	SAR screening identified thirty SAR with potential habitat in the study area. Nineteen of those are threatened or endangered.
Migratory Bird Convention Act, 1994	Purpose	4 protect and conserve migratory birds and their nests.	Potential interference of migratory nesting habitat
Niagara Region Official Plan, 2014	7.B The Core Natural Heritage System	7.B.1.1 Core Natural Heritage includes: a. Core Natural Area, classified as either EPA or ECA. b. Potential Natural Heritage Corridors. c. Greenbelt Natural Heritage and Water Resources System; and d. Fish Habitat	The study area contains Core Natural Heritage features including Regional ECA, EPA, regulated floodplain and a Potential Natural Heritage Corridor.
		7.B.1.10 Development not permitted within EPAs, except: a. Forest, fish, wildlife management b. Flood or erosion control c. Passive recreational uses	
		7.B.1.11 Development not permitted within ECA unless no negative impact on CNH feature or adjacent land has been demonstrated.	
		7.B.1.13 development should be designed to maintain or enhance ecological functions of Potential Natural Heritage Corridors.	
NPCA Land Use Policy Document, 2018	4.2 Policies for Planning and Regulating Flood Hazards (One Zone)	4.2.3 Prohibited uses in flood hazard: a. Sensitive uses (hospitals, nursing homes, schools) b. Uses for disposal/treatment/ production/storage of hazardous substances. c. Any other use deemed inappropriate based on Policy 4.2.1	NPCA mapping shows one regulated floodplain in the southern portion of the study area.
Fish Wildlife Conservation Act, 1997	7 Nests and Eggs	7.1 no person shall destroy, take or possess the nest or eggs of a wild bird	Potential nesting habitat during breeding bird season.
		4.2.1.1.a Development not permitted with in PSW.	

City of Port Colborne Official Plan (2013)	4.2 Environmental Protection Areas	4.2.3.1.a No development permitted within the habitat of Endangered or Threatened Species	The study area contains Municipal ECA and EPA designated lands which includes Significant Woodlands, PSW, a Potential Natural Heritage Corridor and a Natural Hazard Land – Floodplain.
		4.2.4.1.a Development shall generally be directed away from Natural Hazard Area, consisting of the furthest landward limit of flood hazard and erosion hazard limit.	
	4.3 Environmental Conservation Area	4.3.1.f EIS required for development proposed within 50m of ECA. Development only permitted if no negative impacts are determined.	
		4.3.5.1.a development subject within and adjacent to Significant Woodlands must demonstrate no negative impact through an EIS. 4.3.5.1.b Woodland Significance defined by one or more: a. Contain threatened/endangered species. b. Be equal or greater to 2 ha in area. c. Overlap or contain one or more other natural heritage features. d. And/or abut or be crossed by a waterbody greater than 2ha in area	

3.2 Westwood Park Secondary Plan

The subject property is part of the Westwood Park Secondary Plan Area, for which the City of Port Colborne has approved a land use plan and policies. The approved land use plan includes a mix of low, medium, and medium-high density residential lands, Environmental Protection Areas, Environmental Conservation Areas, and a stormwater facility (Figure 2).

The environmental policies for the Secondary Plan were made in coordination with Regional environmental policies at the time of approval and reflect recommendations from ecological assessment, the Ministry of Natural Resources and Forestry and the NPCA.

The plan established the PSWs as Environmental Protection Areas and identified a 30m environmental protection buffer from those features. The Environmental Conservation Area is limited to a linear corridor along the rear lot lines of the adjacent residential development, connecting the two wetland units. Section 5.3.3.7 states that nothing within the plan shall prevent private landowners from undertaking an Environmental Impact Study to evaluate the identified constraints. If the findings vary from the established limits and are accepted by appropriate approval authorities, adjustments to constraint delineation can be made to the plan.

Policy 3.1.30.4 of the new Niagara Official Plan (2022) states, “Where a secondary plan has been approved after July 1, 2012, those portions that are not subject to a draft approved plan of subdivision or plan of condominium shall be approved in accordance with the approved mapping and policies of the secondary plan”.

The Westwood Park Secondary Plan was developed to conform with Regional policy and was approved in 2013, and would therefore not be subject to review under the new Regional Official Plan (2022) policies.

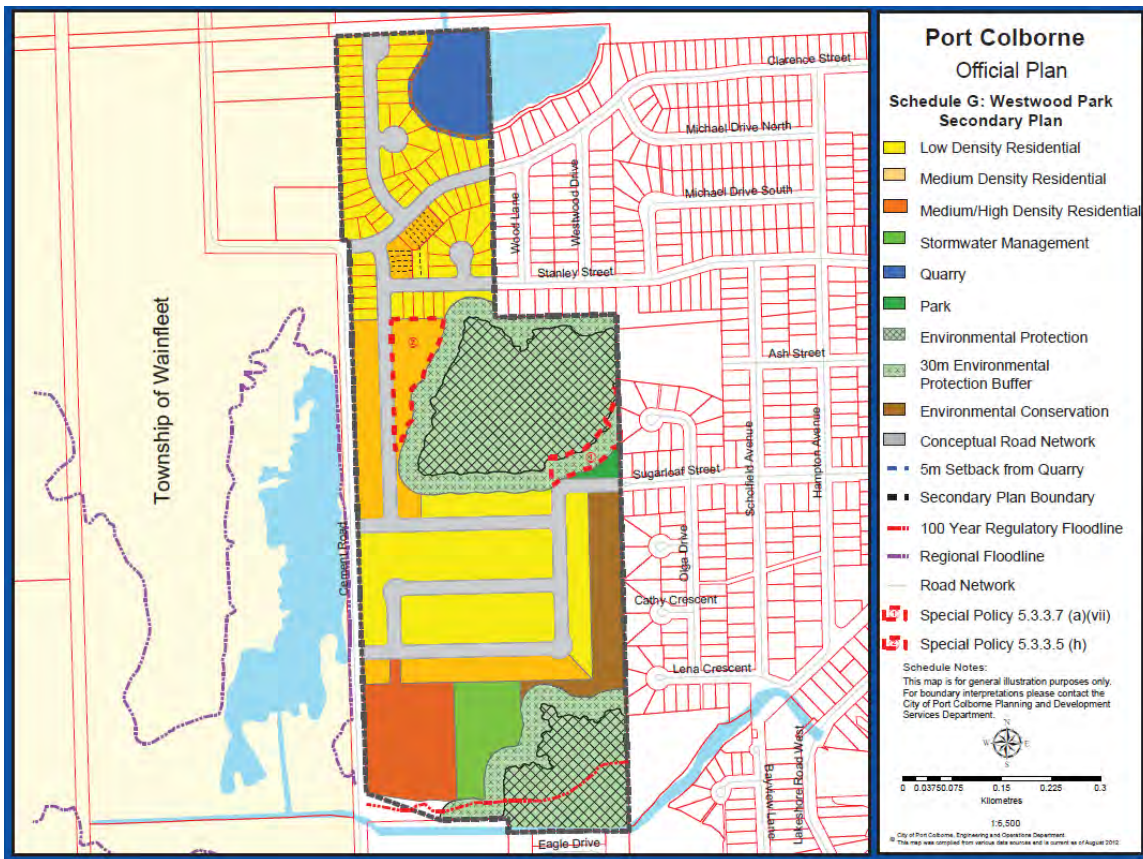


Figure 2: Existing land use plan for the Westwood Park Secondary Plan Area.

4 DESCRIPTION OF EXISTING CONDITIONS

4.1 Existing Data

4.1.1 Site History

The property has a history of agricultural land use, which was the dominant land use in the surrounding landscape, as seen in the 1934 aerial photograph (Figure 3). The property and the land to the east and north were identified as urban area and is now fully developed, except for the existing property. The west side of subject property has been maintained as an active farm field, while the area east of the central channel has been left to regenerate, which can be seen as early as 1965. The channel in the center of the property was originally a drainage feature located in the northwest portion of the property, but it was realigned prior to 2000 to its present location. The intention of the realignment was to accommodate stormwater flows for existing and future development.

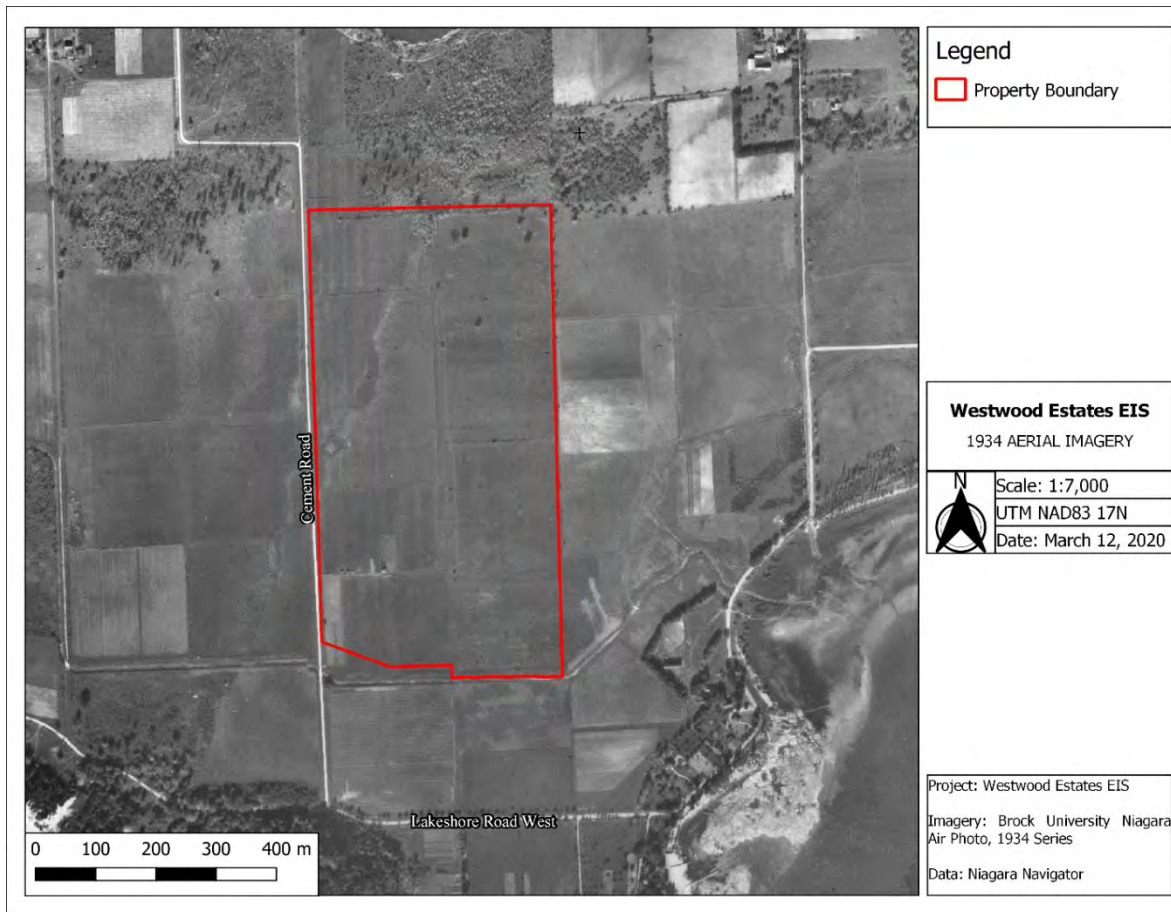


Figure 3: Historical imagery of the study site (1934). Imagery source: Brock University Niagara Air Photo Collection.

4.1.2 Physiography, Soils and Drainage

A preliminary assessment of the soil characteristics and site physiology was conducted through a review of the Soil Survey Report for the Regional Municipality of Niagara, and relevant maps (Ontario Institute of Pedology, 1989). The subject property is situated south of the Onondaga Escarpment and is located within the Haldimand Clay Plains.

The topography of the site is described as smooth basin to level, with a 0-2% slope. According to the Soils of Fort Erie – Port Colborne map, Farmington (FRM), Brooke (BOK), and Welland (WLL) soils characterize the study area. The property is primarily composed of BOK soils, with FRM soils occupying the northwest corner of the property, and WLL soils in the southern portion of the property along the Eagle Marsh Drain and wetland area.

BOK soils are comprised of variable sediments over bedrock and are associated with the Bedrock plains adjacent to the Onondaga Escarpment. The BOK soils on the property are composed of shallow phase (BOK.S) variety. Brooke soils are poorly drained clay to clay-loam and are typically slowly to moderately permeable. Groundwater ponds on the impermeable bedrock which keeps the soil horizons saturated for long periods of time each year. BOK soils have a fairly high water-holding capacity and a moderate surface runoff.

The area occupied by FRM soils is in the north end of the property and limited to the area west of the stormwater drainage channel. They are very shallow phase FRM soils with 20-50cm of soil over limestone bedrock. While they are well-drained with good permeability, the depth of bedrock can lead to drought through the summer.

WLL soils are comprised of mainly reddish hued deep water lacustrine heavy clay and are associated with the Haldimand Clay Plain and Iroquois Plain. The WLL soils on the property are composed of loamy phase (WLL.L) variety. WLL soils are poorly drained and slowly permeably, except during summer when surface cracking increases the permeability. Groundwater levels remain close to the surface except during the summer months. WLL soils have a relatively high water-holding capacity with slow to moderate surface runoff.

4.1.3 Existing Natural Heritage

Provincial, Regional and Municipal designations of the natural heritage features on the subject property have been reviewed and described below.

At the Provincial level, the woodland in the northeast section of the subject property is significant because it overlaps with a Provincially Significant Wetland (PSW) feature. The wetland in this woodland as well as along the southeast edge of the property are part of the Wainfleet Eagle Marsh Drain PSW Complex which has been evaluated for significance and mapped by the Ministry of Natural Resources (MNRF).

At the Regional level the woodland is identified as Environmental Conservation Area (ECA) Significant Woodland because it contains a portion of the PSW. The PSW wetland in the southeast corner of the property, has been designated as Environmental Protection Area (EPA). The NPCA mapping shows one regulated watercourse which flows south and regulated floodplain as the channel exits the subject property. The channel has not been assessed for Fish Habitat by the MNRF.

Although the wetland in the north has been evaluated as PSW, it is not currently identified as an EPA feature in the Regional Core Natural Heritage Mapping and is currently only designated as ECA. There are no other Regionally significant natural heritage features such as wetlands or ANSIs located on or adjacent to the subject property.

At the Municipal level, both the north and south PSW, as well as the floodplain are mapped as EPA on Schedule B of the City of Port Colborne Official Plan. The woodland and potential natural heritage corridor where it extends beyond the current floodplain mapping are designated as ECA.

The existing natural heritage features on or adjacent to the subject property are shown in Figure 4.

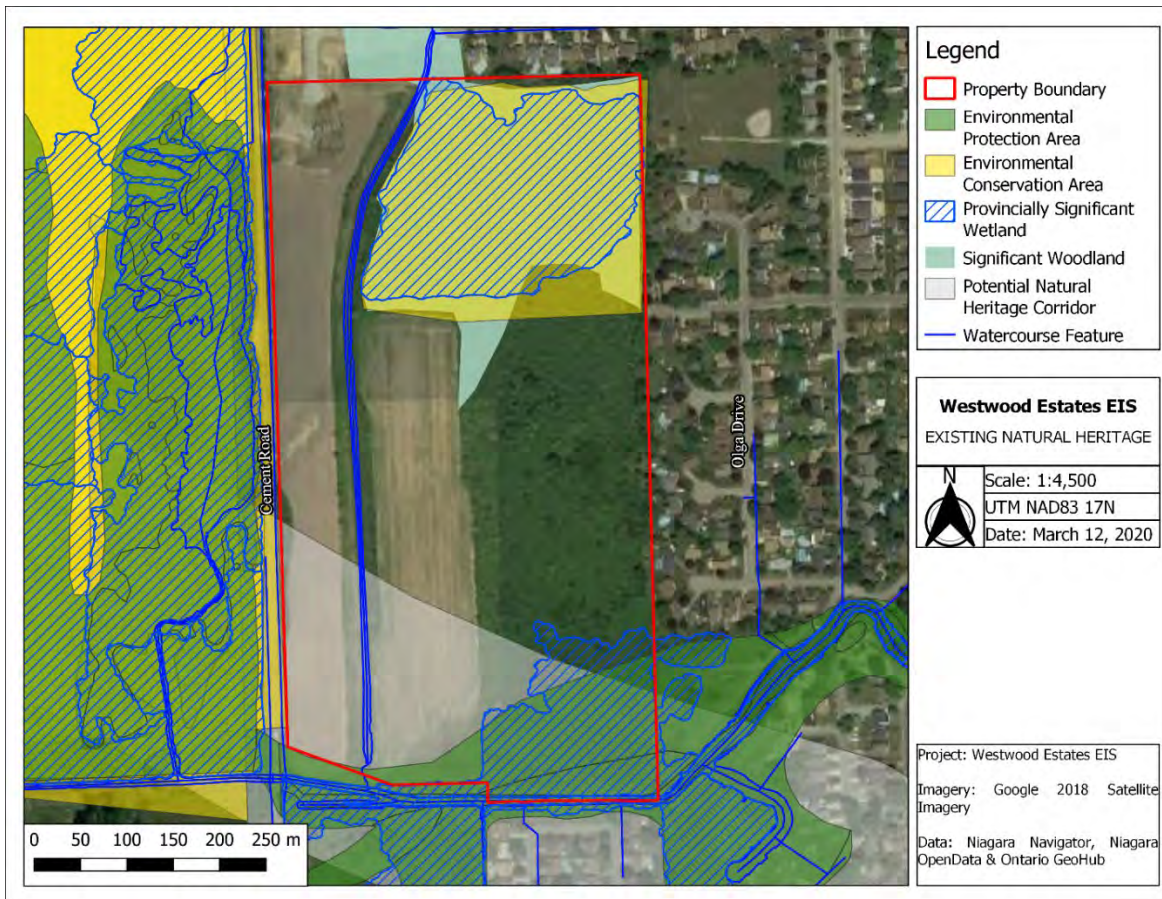


Figure 4: Existing Natural Heritage Features within Westwood Park Secondary Plan area (map included in Appendix A).

4.2 Field Surveys

4.2.1 Ecological Land Classification

The vegetation communities on the subject property were evaluated, inventoried, and classified according to the Ecological Land Classification (ELC) System protocols (Lee et al., 1998) on July 22, 2021. Four polygons were assessed on the subject property (see Figure 5). Table 2 displays the ecosite for each polygon along with its assigned S-rank.

The updated Southern Ontario ELC Vegetation Type List (Lee, 2008) was used to classify the woodland polygon because it provides a wider range of vegetation types and more detailed descriptions of vegetation communities which are common to Southern Ontario. In particular, the updated ELC Vegetation Type List (Lee, 2008) describes many culturally influenced communities including details about dominant species and soil types.

Table 2: Summary of the Vegetation Communities identified within the subject property.

Polygon	Community Class	Ecosite (1998)	Ecosite (2008)	S-Rank
1	Swamp	SWT2-8	SWTM2-2	S3S4
2	Thicket	CUT1	THDM5-6	N/A
3	Swamp	SWT2-6	SWTM5-7	S5
4	Marsh	MAS2-1	MASM2-1	S5

Polygon 1, located in the northeast corner of the subject property, was classified as a Silky Dogwood Thicket Swamp (SWTM2-2) type. The thicket swamp habitat included Ash and Elm as co-dominant in the canopy, with Bur Oak, Sweet Cherry, and Black Walnut associates. The understory was dominated by Dogwood species with Meadowsweet, Highbush Cranberry, and Smooth Arrowood. The ground layer consisted of a combination of wetland species and common weeds such as sedges, Jewelweed, Avens, Fowl Mannagrass, Goldenrod, Strawberry, and Poison Ivy. The soil within the polygon was very moist silty clay with imperfect drainage. The SWTM2-2 habitat is somewhat common in the Niagara Region and has an S-Rank of S3S4 (vulnerable/apparently secure) in the Province of Ontario.

Polygon 2 was classified as a Buckthorn Deciduous Shrub Thicket (THDM2-6) type. The polygon is a young pioneer community which had a few Ash trees in the canopy with invasive European Buckthorn dominating the understory. The THDM2-6 habitat is common within Niagara on sites with a history of disturbance and does not have an associated S-Rank. The soils are moist silty clay with imperfect drainage.

Polygon 3 was classified as a Meadowsweet Deciduous Thicket Swamp (SWTM5-7) type. The polygon has a very sparse canopy which was dominated by Ash. The understory was a dense thicket layer dominated by Meadowsweet, Silky Dogwood, and Pussy Willow, with a few invasive Honeysuckle and European Buckthorn shrubs scattered throughout. The ground layer consisted of facultative species such as sedges, Jewelweed, Sensitive Fern, and Purple Loosestrife and the soil in the polygon was moist clay loam with poor drainage. The SWTM5-7 habitat is common in the Niagara Region and has a Provincial S-Rank of S5.

Polygon 4 is associated with the wetland in the southeast corner of the property and was classified as a Cattail Mineral Shallow Marsh (MASM2-1) type. The marsh habitat was dominated by Cattail species, with some invasive Phragmites in the northern section of the polygon. Emergent wetland species present included Sweetflag, Soft-stemmed Bulrush, Broad-leaved Arrowhead, and Broad-fruited Bur-reed. The water depth in the polygon was about 30cm, with some areas supporting submergent vegetation, and the soil was very moist silty clay with organic accumulations between 5 and 10cm.

The remainder of the property is actively cultivated agricultural land and was not assessed using the ELC protocols.

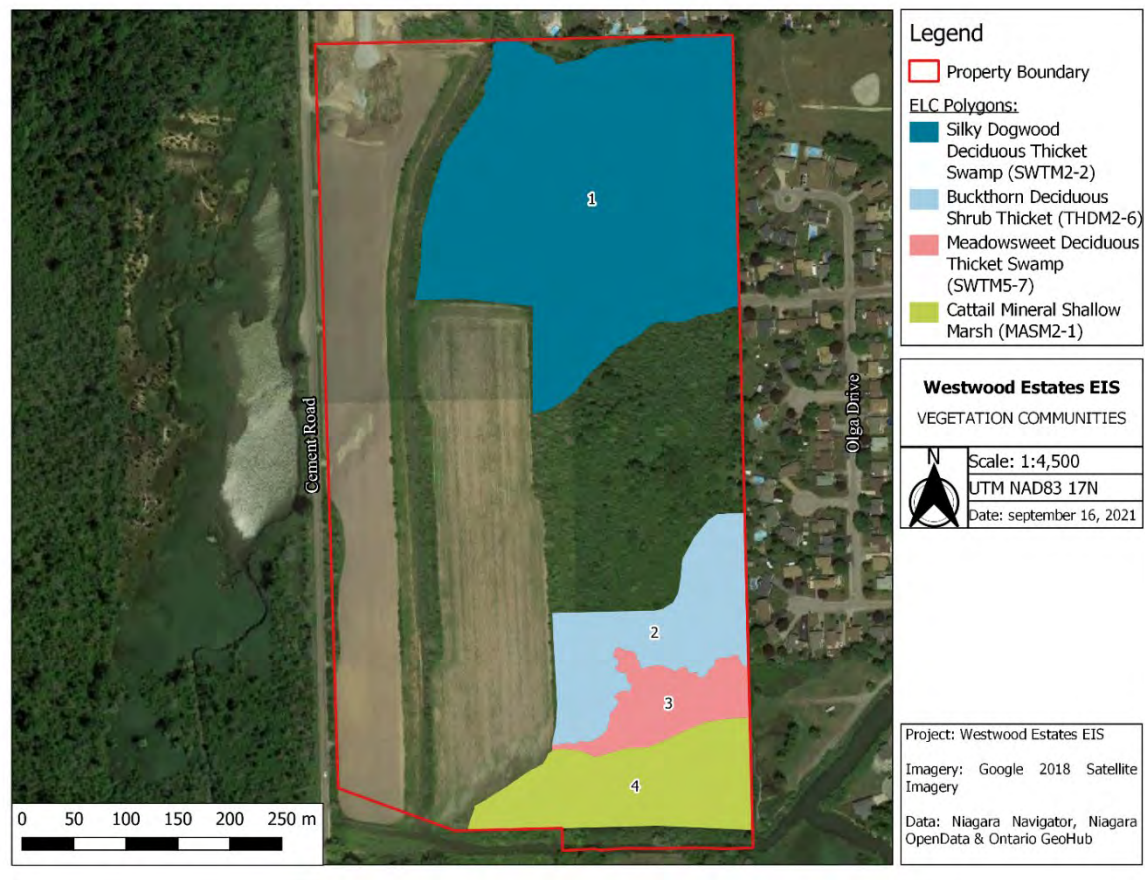


Figure 5: A map of the distribution of community types located in the study area.

4.2.2 Botanical Inventory

A two-season vegetation inventory was completed for each polygon within the study area. Spring vegetation inventories were completed on May 11, 2021, and summer vegetation surveys were completed concurrent with ELC surveys on July 22, 2021. The surveys were carried out as a transect survey, by walking transects through the polygons and identifying all species observed.

A complete list of plant species within the study area was compiled and is included in Appendix D. The Provincial status of each species was classified according to NHIC and Regional status was assessed for the Region of Niagara (Oldham, 2017).

A total of seventy-two (72) species were recorded in the study area. Eight (8) of the species identified are non-native, or introduced to the Region, while the rest are considered native. All the species identified had an S-rank of S4 (apparently secure), S5 (secure), or SNA (non-native). All native species identified are considered common in the Niagara Region, except for Bur Oak (*Quercus macrocarpa*) and Red Osier Dogwood (*Cornus sericea*) which is considered uncommon and Sweet Flag (*Acorus americanus*) whose status is rare (Oldham, 2017).

4.2.3 Amphibian Monitoring

Anuran call surveys were conducted within the study area to provide a general assessment of the composition and densities of the amphibian species within the area, and to identify any possible Species at Risk (SAR) that may be present.

Two amphibian monitoring stations, one at the end of Sugarloaf Street and one at the south end of Cement Road, were surveyed by LCA Environmental Consultants using the current Marsh Monitoring Program (MMP) protocol for monitoring amphibians (Appendix C).

Three surveys were conducted between March 25 and June 4, 2021, to accommodate the required weather conditions and timing windows. Observations for each survey lasted for a total of three minutes, and the time, weather conditions, species, and calling codes were recorded.

Based on the combined results of the amphibian surveys and incidental observations, including amphibian calls recorded during daytime surveys, five (5) species of amphibians were observed within the study area: American Toad (*Anaxyrus americanus*), Spring Peeper (*Pseudacris crucifer*) Western Chorus Frog (*Pseudacris maculata*), Northern Leopard Frog (*Lithobates pipiens*) and Gray Treefrog (*Hyla versicolor*). The individual survey station results have been included in Appendix D. All species have an S-Rank of S5 or S4 in the province of Ontario and are considered ‘secure’ or ‘apparently secure’, respectively. (NHIC, 2018).

The species observed in the north wetland during the MMP had variable abundancies. Western chorus frog had the highest abundance observed in full chorus during two of the survey windows. Spring Peeper was the next most abundant species. The species with the highest abundance in the southern wetland were American Toad and Western Chorus frog which were observed in full chorus each during one survey window, like the north wetland Spring Peeper had the next highest level of abundance.

4.2.4 Reptile Monitoring

Visual searches for turtles and reptile habitat were completed during site visits according to the Survey Protocols for Blanding’s Turtles in Ontario. Visual encounter surveys and hand searches were completed concurrent with vegetation transect surveys. Woody debris, grasses, and other cover items were inspected during surveys for snake activity.

Two (2) different species were found during hand searches throughout March, April and May 2021 including Dekay’s Brown Snake (*Storeria dekayi*) and Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) which are both secure (S5), in the Province of Ontario (NHIC, 2017). More than 12 Garter Snakes were observed on April 6, 2021, throughout the rocky berm on the northeast side of the watercourse.

No Turtles were observed in the adjacent Eagle Marsh Drain, or within the wetlands on the subject property. However, both the cattail marsh and the Eagle Marsh Drain provide potential habitat for turtles.

4.2.5 Avian Monitoring

Breeding Bird Surveys and Marsh bird surveys (MMPs) were completed to monitor bird activity throughout the subject property in accordance with the Terms of Reference approved by the Region of Niagara. Breeding Bird Surveys was completed on June 6, 2021, and concurrent with two Marsh bird surveys on June 18 and July 4, 2021. Point count methods and call playbacks were used for the Breeding Bird Survey and MMP, respectively. A summary of protocols used can be found in Appendix C.

A total of thirty (34) species were observed on the subject property, four of which were only observed overhead. All species observed are listed as secure (S5) or apparently secure (S4) in the province of Ontario, with the exception of one introduced (SNA) species, European Starling (*Sturnus vulgaris*). In addition to the 34 species observed during surveys, an additional eight species were observed incidentally on the property during field investigations, all of which are ranked S4 or S5 in Ontario. For the full list of species identified on the property, see Appendix D.

The global and provincial status ranking of each species according to NHIC was determined, and status listing under SARO was also noted. Two species identified as Species at Risk were observed during field surveys. Barn Swallow and Eastern Wood-Pewee were observed using the study area for foraging but were likely nesting elsewhere, given a lack of suitable nesting habitat. Barn Swallow and Eastern Wood-Pewee are designated as threatened (TH) and Special Concern (SC) in Ontario, respectively (see Table 2).

Table 3: Summary of the Species at Risk observed within the study area and their current provincial status.

Common Name	Scientific Name	SARO Status
Barn Swallow	<i>Hirundo rustica</i>	Threatened
Eastern Wood-Pewee	<i>Contopus virens</i>	Special Concern

The Provincial Endangered Species Act offers immediate protection from harm and harassment for species designated as Threatened or Endangered.

4.2.6 Mammalian Monitoring

Incidental observations were made during all field visits to identify mammalian species present in the study area. Incidental observations included visual encounters and other signs such as calls, tracks, scat, and presence of bones or carcasses. There were signs of mammalian activity throughout the natural area on site with the presence of tracks along the watercourse. Mammalian observations included White-Tailed Deer, Coyote, Northern Raccoon, and Striped Skunk, Muskrat, and Beaver which all have a provincial S-Rank of S5 (secure). A full list of incidental observations is included in Appendix D.

Surveys for bat habitat were carried out in accordance with the MNR approved protocols (included in Appendix C). Snag surveys were completed on March 30, 2021, for the entire property to identify the potential for SAR bats on the property or Significant Wildlife Habitat (SWH). A snag is defined by the MNR as any standing, live or dead tree with a DBH >10cm, and which has

cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark (See Appendix E). There were 4 snags identified within the study area, which offered low quality roosting habitat given the species and condition of the trees. The snags were identified primarily in dead Ash and Elm trees, with low DBH.

Due to the low snag density and the location of the snags within protected PSW, no acoustic monitors were installed in the study area. However, mitigation measures presented will consider impacts to bats which may be roosting in the area.

4.2.7 Significant Wildlife Habitat

The Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNR, 2015) provides guidance on identifying candidate Significant Wildlife Habitat (SWH) within a study area and the criteria which must be met in order to confirm the presence of SWH. Information regarding suitable field studies and timing windows are also provided.

SWH can be classified into four different categories: Seasonal Concentration Areas, Rare Vegetation Communities or Specialized Habitat for Wildlife, Habitat of Species of Conservation Concern, and Animal Movement Corridors.

Presence or absence of the candidate SWH was determined through completion of the required field studies as identified in the EIS scoping. The studies were carried out only in areas where suitable habitat existed. The Candidate SWH identified in the EIS scoping is provided in Appendix B.

Results of the ELC evaluations, anuran call surveys, marsh and breeding bird surveys, bat monitoring, species at risk snake surveys and area searches completed during 2021 were assessed against the current SWH Criteria Schedules for EcoRegion 7E (2015) and findings are discussed in Section 5.5.

5 ASSESSMENT OF NATURAL FEATURES AND FUNCTIONS

5.1 Environmental Protection Areas

Section 4.2 of the City of Port Colborne Official Plan states that EPAs include PSWs, Provincially and Regionally significant ANSIs, Natural Hazard Areas, and habitat of endangered and threatened species. The City of Port Colborne has designated the PSW and the Eagle Marsh Drain floodplain as Environmental Protection Area (EPAs). The PSW is designated by the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNR) and both the wetland and the floodplain are regulated by the Niagara Peninsula Conservation Authority (NPCA).

Currently the Regional Core Natural Heritage map has identified only a portion of the southern PSW as EPA. This includes a small portion of EPA along the southern boundary of the property, which runs along Eagle Marsh Drain. However, the whole southern wetland meets criteria for designation as EPA.

According to Policy 4.2.1.1(a) of the Municipal Official Plan and Policy 7.B.1.10 of the Regional Official Plan development and site alteration are not permitted in PSW. Pursuant to NPCA Policies

8.2.2.1 and 8.2.3.1, development is not permitted within a wetland and is subject to a 30m buffer. Additionally, development within the floodplain is limited to those uses listed under NPCA policy 4.2.2. unless it has been approved by the Niagara Peninsula Conservation Authority (NPCA). In addition, the City of Port Colborne does not permit development in floodplain natural hazard area except where a geotechnical engineering has deemed it feasible per Policy 4.2.4.1(o).

Field studies confirmed the significance of the EPA by verifying the presence of PSW and the Eagle Marsh Drain floodplain. There are no other designated EPAs at the Municipal or Regional level within the study area.

5.1.1 Wetland Water Balance

In accordance with the TRCA Wetland Water Balance Risk Evaluation protocols (2017), the first step of a wetland water balance is to determine which features will be impacted by the proposed development, which is determined through an assessment of the wetland catchment area to determine how much of the catchment will be impacted.

For the northern wetland, historical changes to the adjacent lands have significantly altered the existing catchment area through increased impervious surface area and redirection of surface flows through stormwater management. The wetland is bound by development in the north and east, altering surface overflows contributing to the wetland. Storm flow from the north residential area is redirected towards Eagle Marsh Drain through the large drainage channel, which borders the west side of the wetland.

When the channel was constructed, the banks created a berm along the west side of the wetland, preventing any surface contribution to the wetland. Surface and groundwater both generally flow south through the property towards the Lake, and the natural areas adjacent to the northern wetland offer minimal contribution to the existing catchment. In its current state, the north wetland primarily receives precipitation inputs, and the small existing catchment is not expected to be impacted by the proposal.

For the southern wetland, the catchment area includes approximately 5.41ha from the property. However, as described in the Hydrogeological Assessment (Terra-Dynamics Consulting, January 31, 2023) the wetland is classified as a riverine wetland and the constant supply of groundwater recharge and surface flooding from Eagle Marsh Drain is the primary source of water to the wetland.

For both the north and south wetland, groundwater interactions and recharge capability is limited due to the low permeability soil and the presence of an active groundwater pumping station located at Scholfield Avenue, which has been in operation since 1979 (Terra-Dynamics Consulting, January 31, 2023).

The sensitivity of the wetland is classified based on the vegetation communities, flora, and faunal species present within the wetland. Both the Cattail Mineral Shallow Marsh, and the Meadowsweet Mineral Thicket Swamp communities are listed as medium sensitivity vegetation communities in Appendix 2 of the Wetland Risk Evaluation protocol (TRCA, 2017). Appendix 3 provides

classification for all floral and faunal species. The presence of one high sensitivity faunal species or multiple floral species results in a classification of high sensitivity.

All frog species present within the southern wetland have been identified as high sensitivity. Only one floral species, Sweetflag was identified as high sensitivity, while several medium sensitivity species are present throughout the southern wetland. Consequently, the faunal classification was high sensitivity, while the classification for flora was medium.

Two other criteria for sensitivity include the presence of Significant Wildlife Habitat, and the hydrological classification of the wetland. The wetland contained confirmed SWH for amphibian wetland breeding habitat with full chorus of American Toad and Western Chorus frog observed from MMP survey station 2. Consequently, the classification for SWH is high sensitivity. However, given the location of the wetland adjacent to the Eagle Marsh Drain, the wetland is a riverine wetland, and the hydrological classification is low sensitivity.

According to the Wetland Water Balance Risk Evaluation (TRCA, 2017) the highest magnitude of sensitivity category determines the overall sensitivity of the wetland to change. Based on the above results, the risk associated with the development is high, requiring the design of a SWM plan which aims to maintain water balance to the features.

5.2 Environmental Conservation Area

The Region assigns Environmental Conservation Area (ECA) designation to all significant woodlands, SWH, habitat of species of Special Concern, Regionally significant ANSIs, Locally Significant Wetlands (LSWs), significant valleylands, tall grass prairies, savannahs, alvars, and publicly owned conservation lands.

The Regional Core Natural Heritage map has identified Significant Woodland within the north wetland as ECA. However, the wetland has been evaluated as Provincially Significant and not Locally Significant, and the current mapping does not match the Regional Policy. The PSW in the northern portion of the property satisfies Regional policy 7.B.1.3 for designation as an EPA.

Additionally, the northern polygon was classified as a deciduous thicket swamp and did not meet tree density requirements for designation as a woodland, except for a small area (<0.3ha) in the southwest portion of the polygon that was not large enough to be classified as its own polygon. This area was identified as an inclusion, and represents a cultural woodland, dominated by Black Walnut and Ash, with an understory of Buckthorn and non-native Hawthorn species.

The City of Port Colborne classifies ECA by the same criteria as the Region with the addition of Corridors and Linkages. At the municipal level, the Potential Natural Heritage Corridor on the south end of the subject property and the significant woodlot outside of the PSW in the north has been identified by the City of Port Colborne as ECA on Schedule B in the Municipal Official Plan.

5.3 Fish Habitat

The stormwater drainage channel, which traverses the center of the subject property has been identified as unclassified fish habitat by the MNRF according to the Lake Erie North Shores Watershed Plan. The main tributary of Eagle Marsh Drain south of the subject property has been

assessed as Type 2 Important Fish Habitat by the MNR. Type 2 Important Fish Habitat provides feeding habitat for adult fish and unspecialized spawning habitat. Important Fish Habitat is less sensitive than Type 1 and requires a moderate level of protection.

The watercourse on the subject property was artificially created to provide drainage from the subdivision to the north of the property directly to the main tributary of the Eagle Marsh Drain. Much of this channel has been inundated with European Common Reed (*Phragmites australis australis*), which has caused impediments to flow within the channel. Additionally, at the southern end of the channel, alterations to accommodate movement of farm equipment across the channel has limited connectivity to the Eagle Marsh Drain, impeding the upstream movement of fish. The channel contains pools of standing water, with the largest pools occurring at the upstream end. Inputs to the Type 2 habitat of Eagle Marsh Drain is limited to peak flow conditions. The channel currently conveys pulse flows to the downstream habitat as well as allochthonous material.

Mapping of the Fish Habitat identified in the study area has been included in Appendix A.

5.4 Species at Risk

5.4.1 Endangered or Threatened Species

One Threatened or Endangered species was documented within the vicinity of the study area during 2021 field investigations. The Barn Swallow observed during Breeding Bird Surveys is designated as Threatened in the Province of Ontario (SARO, 2018) and are regulated under the *Endangered Species Act* (ESA, 2007).

5.4.1.1 Barn Swallow

Barn Swallows were observed foraging throughout the subject property. Barn Swallows build their nests almost exclusively on manmade structures. There are no buildings on the subject property, however the residential dwellings and associated accessory buildings surrounding the property may provide potential nesting habitat for the species. No nests were observed on or in the vicinity of the study area.

The nests of Barn Swallows are considered Category 1 habitat and are protected under the ESA, Section 10, Subsection (1)(a). Land within 5m of the nest is considered Category 2 and is considered to have moderate tolerance to disturbance. Land within 5 – 200 m of nests is considered Category 3 habitat, being used for various life processes such as rearing, feeding and resting. Category 3 habitat is considered highly tolerant of site alteration.

5.4.2 Species of Special Concern

One Special Concern species was documented in the study area: Eastern Wood Pewee. Although species of Special Concern do not receive habitat protection under the Provincial ESA, they are protected under Regional Policy 7.B.1.4 as habitat of Species of Concern which is identified as ECA. The full extent of the habitat of the Special Concern Species must be given consideration in the assessment of the function of a natural heritage feature.

5.4.2.1 Eastern Wood-Pewee

The Eastern Wood-Pewee was observed on the subject property and is thought to be using the site for foraging, while nesting elsewhere. It is an aerial insectivore that prefers intermediate to mature woodlands with closed canopies. It has been found in forests dominated by Sugar Maple, Elms, and Oaks, which are not present on the property. Eastern Wood-Pewee will often select sites within those habitats that are more open with fewer trees for nesting to optimize foraging.

The existing natural area on the subject property has low canopy cover and is dominated by dead or dying Ash and Elm trees, which do not provide the cover that Eastern Wood-pewee prefers. The available habitat on the subject property is limited to foraging within the wetland polygons and is not expected to be significantly impacted by proposed future development.

5.5 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (SWHTG), developed by the Ministry of Northern Development, Mines, Natural Resources and forestry, provides detailed information on the identification, description, and prioritization of Significant Wildlife Habitat (SWH) in accordance with Section 2.3 of the Provincial Policy Statement. It is intended to assist those involved in planning and review process to identify and protect SWH. There are four broad categories of SWH: seasonal concentration areas, rare or specialized habitat, habitat of species of conservation concern, and animal movement corridors.

5.5.1 Seasonal Concentration Areas

Candidate Seasonal Concentration Areas on or in the vicinity of the subject property, as identified in the Terms of Reference included waterfowl stopover and staging areas, shorebird migratory stop over area, bat maternity colonies, reptile hibernaculum, and colonially-nesting bird breeding habitat (ground, tree/shrub), migratory butterfly stopover, landbird migratory stopover, and deer wintering congregation areas.

Field studies, including breeding bird surveys, Marsh Monitoring Surveys, MNR Bat monitoring protocols, and area searches revealed that the subject property did not meet the criteria for any of the above mentioned SWH, with the exception of reptile hibernaculum SWH along the northern banks of the drainage channel. Hand searches identified over 15 individuals of snakes (Eastern Garter and Dekay's Brown Snake) present along the west bank of the channel, where it abuts the northern wetland. The bank forms a rocky berm along the wetland, with suitable hibernacula, while the adjacent wetland provides important cover habitat.

No other SWH seasonal concentration areas were confirmed, due to the low snag density, and absence of indicator bird species or suitable habitat for deer wintering.

The surveys for the candidate SWH were completed in all areas where suitable habitat existed according to the protocols outlined in Appendix C and approved by the Region of Niagara.

5.5.2 Rare or Specialized Habitat

The NHIC Plant Community List was reviewed to determine the status of all vegetation communities identified through the ELC classification system for the study area. Three of the four ELC polygons identified on the subject property, SWTM2-2, SWTM5-7, MASM2-1, and THDM2-6, are common in Niagara and are secure (S5) in the province of Ontario. The SWTM2-2 has a status ranking of S3S4 but is not identified as rare vegetation community SWH due to the degree of disturbance and presence of invasive species throughout the eastern portion of the polygon.

Other candidate specialized habitat SWH identified for the subject property included waterfowl nesting, bald eagle and osprey habitat, turtle nesting, and amphibian breeding habitat. Area searches did not confirm the presence of nesting habitat for turtles, waterfowl, bald eagles, or osprey. Although an Osprey was observed overhead, there was no suitable nesting habitat available.

The results of the amphibian call surveys did confirm the presence of amphibian wetland breeding habitat, with both Western Chorus Frog and American Toad being observed in full chorus within the southern wetland. The extent of this breeding habitat is contained within the MASM2-1 habitat, as there was no vernal pooling present within the adjacent swamp thicket.

5.5.3 Habitat of Species of Conservation Concern

The EIS Scoping Checklist identified candidate Special Concern and Rare Wildlife species habitat and Terrestrial Crayfish habitat in the study area. Area searches for chimneys or burrows confirm the presence or absence of terrestrial crayfish species, according to the SWH Criteria Schedules for Ecoregion 7E (2015). No chimneys, burrows or incidental observations of crayfish were documented.

The Provincial ranking of all species on the subject property was reviewed using the NHIC database to determine their status in Ontario and confirm the presence or absence of habitat for Special Concern and Rare Wildlife Species. One Special Concern Species, Eastern Wood-pewee, was identified on the subject property, but as described above, the subject property does not provide suitable nesting habitat, but offers foraging habitat associated with the wetlands and adjacent Eagle Marsh Drain.

No Species of Conservation Concern SWH were observed during field studies.

5.6 Corridors and Linkages

Corridors are naturally vegetated parts of the landscape which are often elongated and allow for dispersal from one habitat to another. Corridors can exist along shorelines, riparian zones, woodlands, or manmade structures such as abandoned roads or rail allowances. Policy 2.1.2 of the Provincial Policy Statement recognizes the significance of corridors, stating that connectivity should be maintained, restored, or enhanced where possible.

The Region of Niagara Core Natural Heritage Map identifies potential corridors throughout the landscape. Core Natural Heritage Mapping has identified a potential corridor connecting the

southern portion of the property and the Eagle Marsh Drain to the PSW located west of Cement Road. Road mortality surveys were completed in accordance with the approved TORs, but there were no mortalities observed. It is likely that wildlife moving east-west across the landscape utilize the Eagle Marsh Drain and benefit from the presence of the large box culvert under Cement Road to facilitate safe movement.

It is also noted that the constructed stormwater drainage channel is a large feature which also provides north-south connectivity through the subject property, directly connecting the north and south PSW features.

5.7 Summary

The following provides a summary of the natural heritage features identified on the subject property.

- **Provincially Significant Wetlands:** The Eagle Marsh Drain PSW and Eagle Marsh Drain floodplain are designated as EPA at the Municipal level. Current designation on the Regional mapping is ECA, but the wetland meets Regional criteria for EPA designation.
- **Species at Risk:** General foraging habitat for Barn Swallow (Threatened) was identified within the wetland habitat on the south portion of the property.
- **Significant Wildlife Habitat:** Reptile hibernaculum SWH was confirmed along the west bank of the drainage channel where it abuts the adjacent wetland. Amphibian wetland breeding SWH was confirmed within the southern PSW.
- **Fish Habitat:** a large stormwater drainage channel through the centre of the property provides indirect habitat, as it contributes water and organics during peak flow periods to the downstream Type 2 Important Fish habitat associated with the Eagle Marsh Drain.
- **Corridor:** The riparian habitat along the drainage channel provides natural cover and a connectivity between the two wetland features to allow faunal species to move through the landscape. A corridor has also been identified along the Eagle Marsh Drain at the southern limit of the property, connecting to the wetland west of Cement Road.

6 CONSTRAINTS ANALYSIS

6.1 Development Constraints

Both the north and south natural areas on the subject property contain Provincially Significant Wetlands (PSWs). The PSWs present high constraints to development on the subject property. Regional Policy 7.B.1.10 and City of Port Colborne Official Plan policy 4.2.1.1.a prohibit development within PSWs, which are classified as Environmental Protection Areas. Pursuant to Regional Policy 7.B.1.11, development adjacent to the PSW will be subject to the findings of an Environmental Impact Study (EIS).

The City of Port Colborne Official Plan policy 4.2.1.1 requires an EIS be prepared for new development proposed within 120m of a PSW which demonstrates that there will be no negative impact to the wetland or its ecological functions. While no minimum wetland buffer is identified, the policy 5.3.3.7 identifies a 30m buffer within the Westwood Park Secondary Plan. This buffer

was recommended to mitigate potential changes to the hydrologic regime and protect the feature from adjacent land use changes.

However, based on the findings of the field investigations, including the condition of the existing buffers, sensitivity of the features, and the hydrologic regime, a 15m buffer from both the north and south PSW would be adequate to protect the form and function of the features. The existing buffer is either actively cultivated lands or is classified as a Buckthorn thicket, leaving opportunities to enhance the buffer through invasive removal and native planting. The 15m buffer is supported by the conclusions of the hydrogeologic study (Terra-Dynamics Consulting, January 31, 2023) which characterized the hydrology of each feature. The northern feature is upgradient of the proposed development, and has a significantly reduced catchment, while the southern wetland is hydrologically sustained by the Eagle Marsh Drain.

Under the Conservation Authorities Act, the NPCA regulates floodplain hazard zones associated with rivers and streams and the Great Lakes. As per NPCA Policy 4.1.1.3, the NPCA defines floodplain hazards as the 100-year flood event, which is the minimum acceptable standard in the Province of Ontario.

The City of Port Colborne Official Plan Schedule B1 shows the extent of the NPCA-regulated floodplain as EPA. Section 4.2.1 of the NPCA Policy Document identifies objectives of regulating floodplains, which focus on health and safety of the public. Pursuant to these objectives, NPCA Policy 4.2.2 identifies uses which are permitted within the floodplain hazard zone. These include, but are not limited to, agricultural uses, accessory structures, recreational uses, flood, erosion and sediment control, and "... any other uses not likely to incur or create damage from flood waters".

In June 2019, the NPCA Policy Document was amended to include Policy Section 4.2.15 *Lot Creation in River and Stream Flood Hazards*, which prohibits lot creation within the flood hazard zone. Therefore, the floodplain hazard zone as currently mapped by the NPCA limits the development potential, including lot creation, within that hazard zone but allows for uses permitted under NPCA Policy 4.2.2. This area is identified as a moderate constraint to development, based on the limited uses permitted.

The Regional Core Natural Heritage Mapping identifies a Significant Woodland within the northern natural area that overlaps with the existing PSW. However, field evaluations classified the northern natural area as a deciduous thicket swamp and determined that the canopy did support woodland designation. A small portion of woodland which extends beyond the PSW and ECA was identified as a cultural woodland inclusion that has been disturbed because of historical and current adjacent agricultural uses. The area has a few mature trees, with a high degree of non-native species within the understory. Consequently, this area has been identified as providing low constraints to development.

The watercourse which flows south through the central portion of the subject property has been classified as a high constraint to development, because it contributes to downstream fish habitat and flow regimes which may impact the riverine wetland which is hydrologically dependent on

water levels within the Eagle Marsh Drain. In addition to contributing to downstream flows, the channel provides a direct corridor to between the two wetlands on site. Pursuant to City of Port Colborne Official Plan Policy 4.7.7.1.g and Regional policy 7.B.1.15, a minimum 15m naturally vegetated buffer must be maintained from the top of bank along Marginal Fish Habitat.

Incorporating these setbacks to the existing drainage channel will provide a north-south corridor between 20 and 30m in width, which will facilitate movement across the site for wildlife.

6.2 Areas of No Constraint

The agricultural fields within the study area, outside of the floodplain hazard zone do not contain any natural heritage features and do not present constraints to development. The west side of the subject property has been actively farmed for over 100 years and do not provide significant habitat. Additionally, on the east side of the property, the scrub layer has recently been removed and no longer contains a natural vegetation community. The vegetation removal was limited to areas not identified as wetland or woodland on the existing mapping and had been previously identified as an area dominated by the invasive European Buckthorn.

Outside of the boundaries of the PSW, there are no significant features or functions affecting the potential for development on the subject property. See Figure 6 below for map of the constraints associated with the subject property.

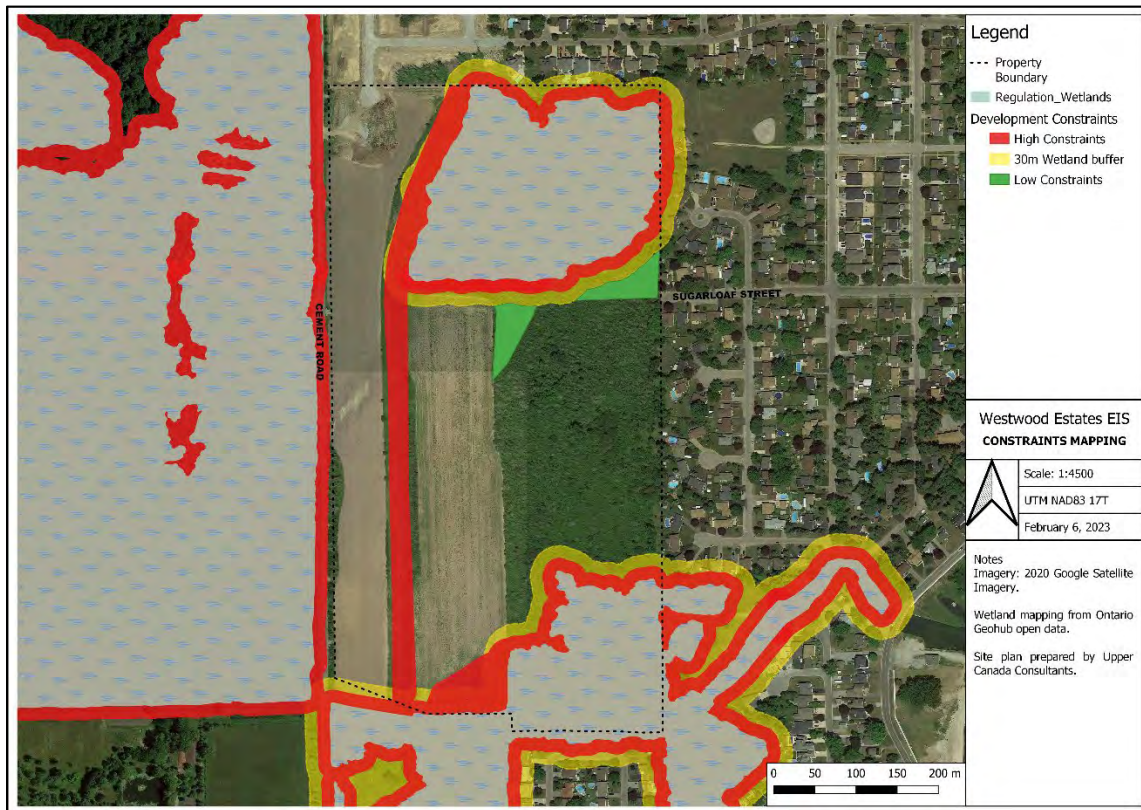


Figure 6: Constraints associated with the subject property.

6.3 Enhancement Opportunities

Portions of the existing 30m wetland buffer zone, including within 15m from the wetland are maintained as an active agricultural operation, while other areas contain invasive species such as European Buckthorn. These buffer zones present potential enhancement opportunities, which could focus on invasive removal and planting of native species.

Areas within the 100-year floodplain are currently actively cultivated lands which are regularly inundated with water when water levels in the Eagle Marsh Drain rise. If cultivation ceased, these areas would naturalize to a self-sustaining wetland community similar to the adjacent cattail marsh and would receive constant hydrologic inputs from the adjacent Drain.

The most significant opportunity for enhancement within the study area is the drainage channel. The establishment of European Common Reed within the channel significantly impedes flow and reduces the quality of habitat within the channel itself. Maintenance of the channel through removal of phragmites and re-establishment of design grades will improve the flow regime, reduce the amount of stagnant water and improve the quality of water entering Eagle Marsh Drain. While some native vegetation was planted along the channel following its construction, there are opportunities to enhance the riparian buffer along the length of the channel through native plantings. Other considerations for wildlife habitat can be incorporated into the enhancement following the draft plan approval.

7 ECOLOGICAL IMPACT ASSESSMENT

7.1 Description of Proposed Development

The plan of subdivision proposes 315 units of mixed density residential development, including 167 single family homes, 52 street townhomes, and 96 medium density units. The central stormwater drainage channel will be maintained, with two street crossings providing connectivity between the lands east and west of the channel. East of the channel, the development is limited to single family and street townhome units, with the single family lots backing on to all natural feature buffers.

The drainage channel block will be 20m wide, and an additional 10m wide block will be added along the west side of the channel to accommodate a pedestrian trail. The 10m trail block will extend from the southern limit of development to the northern PSW block. These features together create a 30m wide corridor from south PSW to the north PSW.

West of the storm drainage channel, the north half of the property will feature single family homes with access along a new roadway, while two medium density buildings are proposed in the south portion, with access only off Cement Road.

Two stormwater management ponds are located in the southwest portion of the site on either side of the drainage channel and will outlet to the Eagle Marsh Drain, located south of the property.

A minimum 15m setback is proposed from both PSW features, and an additional 0.38 hectares of land (plus buffer), which has been historically farmed, has been identified as constraints

associated with the wetlands. Three small parkettes are proposed, totaling 0.535 ha and a 7m wide buffer will be naturalized along the eastern limit of the subdivision.

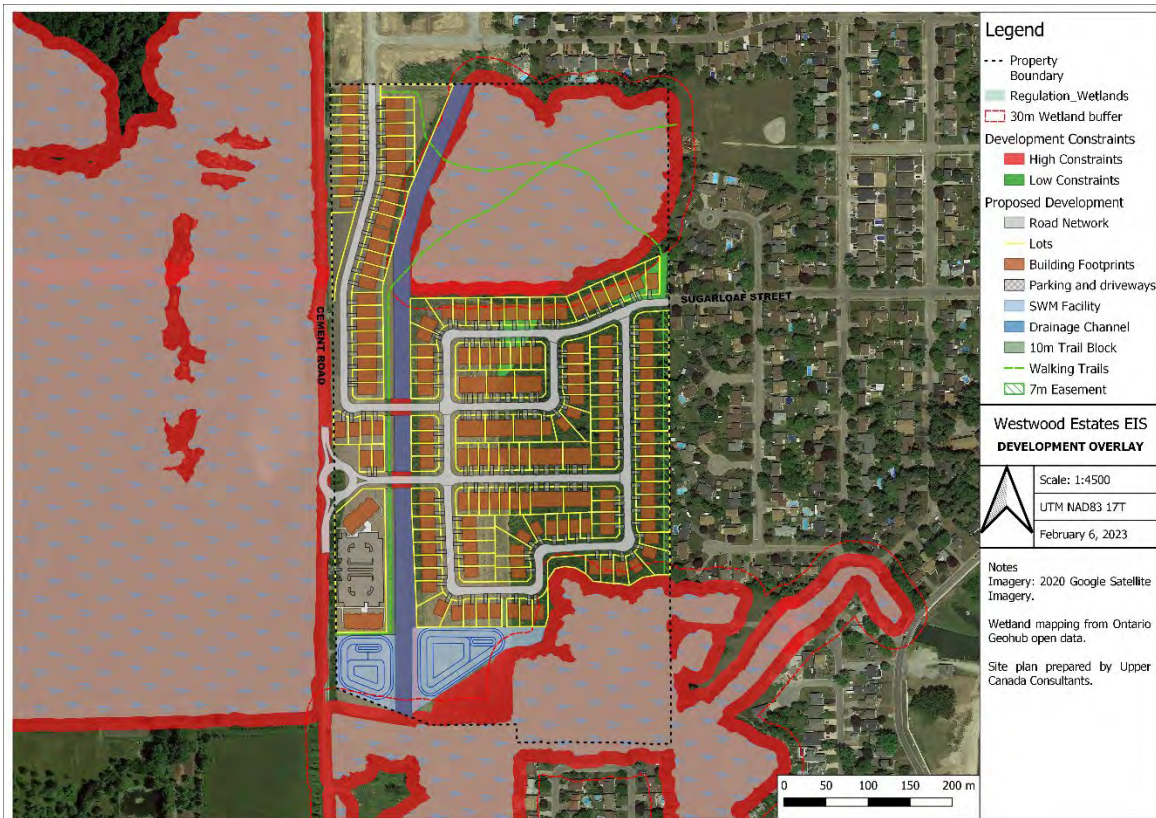


Figure 7: Proposed Westwood Estates Phase 3 plan of subdivision overlaid on the constraints identified for the property.

7.2 Potential Impacts to Natural Heritage Features

7.2.1 Potential Impacts

The proposed development does not result in any direct impact to the north or south PSW, fish habitat, or SWH. A total of 2.52ha of vegetation will be removed to accommodate the proposed subdivision (1.25 ha adjacent to the north wetland and 1.27 ha in the south). These areas were identified as low constraint to development because of the dominance of non-native, invasive species. The removal of these areas will not result in the removal of any significant native species or significant habitat.

7.2.1.1 Provincially Significant Wetlands

The wetland buffers are reduced from 30m to a minimum of 15m, which will reduce the area of surface water contribution to both wetland features. However, according to the Hydrogeological Assessment by Terra-Dynamics Consulting (January 31, 2023), “[t]he Northern Wetland 15 m buffer is sufficient to maintain pre-development conditions” and the hydrologic modelling which suggests 65% of the June runoff contributions to create saturated conditions in the southern wetland is sufficient given that “(a) it is a riverine wetland, (b) subsurface saturated conditions will continue from Eagle Marsh Drain for wetland vegetation, (c) the slope of the upgradient

catchment area is only 0.3% making the pre-development runoff rates conservatively high from a model that was 1.4% slope (Section 3.7) and (d) any pre-development runoff patterns to the swamp from the marsh will continue.”

The site is very flat with a slope of approximately 0.2 to 0.3% and, consequently it is not expected that there will be significant changes to existing drainage patterns on the site. As concluded in the hydrogeological assessment (Terra-Dynamics Consulting, January 31, 2023), residential development of the site should not negatively impact the hydrology of the wetlands because the low permeability soil minimizes groundwater interactions with the wetlands. Instead, precipitation is the primary source of water for the north wetland, and the Eagle Marsh Drain supplies the southern wetland as a constant source of water.

Potential impacts to the wetlands during the construction stage includes the potential for surface runoff to carry sediment from exposed soils during rain events, with a greater risk to the southern PSW, which is downgradient of the proposed development. There is also risk of encroachment of heavy machinery into the wetland or its buffer, impacting the vegetation and soils.

Finally post-construction impacts include increased access to the natural feature leading to general human disturbance. Access to the southern wetlands is limited to a small parkette on the south side of Street C (Block 181). The location of the SWM facility will limit access, as well as the eight lots (137-144) backing onto the feature. The northern feature will have 18 lots backing onto the 15m buffer.

7.2.1.2 Species at Risk

Only one SAR was observed on the subject property. Barn Swallow, which is Threatened Provincially was documented foraging over the southern wetland, but no nesting habitat was available on the property. The southern wetland provides productive foraging areas for Barn Swallow, who are expected to continue to use the subject property for foraging following development.

7.2.1.3 Significant Wildlife Habitat

The existing reptile hibernacula habitat along the drainage channel, adjacent to the north wetland is located within the 15m wetland buffer and along the channel banks. There will be no disturbance to these areas. Additionally, the amphibian breeding SWH was identified within the cattail marsh of the south wetland. The marsh, which is a riverine wetland unit, is hydrologically maintained by the Eagle Marsh Drain with water levels consistent with those of Lake Erie. The marsh habitat will not be hydrologically or ecologically impacted by the proposed development.

7.2.1.4 Fish Habitat

Without mitigation measures, the construction of the proposed development has potential to negatively impact the Eagle Marsh Drain PSW indirectly, both on and adjacent to the property through erosion and sedimentation. Additionally, construction of the trail block adjacent to the existing channel could also result in further sediment accumulation within the channel, increasing impediments to flow and creating stagnant water. During peak flows, when water levels spill over

into the Eagle Marsh Drain, increased sedimentation would reduce the quality of water entering the Type 2 Fish habitat associated with Eagle Marsh Drain.

7.2.1.5 Corridors

The Schedule G of City of Port Colborne Official Plan identifies a 50m wide ECA corridor along the eastern boundary of the subject property to be protected in the long term. Policy 5.3.3.7b of the Official Plan states that the purpose of this corridor is to connect the EPA wetlands within the secondary plan area. It also acknowledges that the proposed corridor has been subject to disturbance from uncontrolled human activity over time. It is noted that the proposed corridor was intended to be located between the existing development, where significant encroachment has occurred, and new low-density development, where it could be subject to further encroachment and disturbance.

The current application has proposed that the existing north-south channel, which currently provides connectivity between the EPA wetlands be maintained as a natural corridor, rather than utilizing an area which will continue to be subject to human disturbance, however the dense riparian vegetation and the depth of the channel will deter human encroachment. Additionally, a 10m wide block with a 3m wide walking trail is proposed along the west side of the channel. The minimum width of this proposed alternate corridor is 30m, however opportunities for encroachment are significantly reduced.

The Region of Niagara's Core Natural Heritage map identifies a potential natural heritage corridor which extends from Lake Erie to the east, along the Eagle Marsh Drain, across Cement Road and north through the adjacent wetlands. There is no anticipated impacts to the Eagle Marsh Drain as a natural heritage corridor.

7.2.2 Proposed Mitigation

7.2.2.1 Design Considerations

Early development concepts, including the Land Use Schedule for Westwood Park Secondary Plan Area (Schedule G, Port Colborne OP) proposed piping of the existing open stormwater drainage channel traversing the subject property. However, it was identified as a constraint to development because of the connectivity it provided between the PSW features, contributions to downstream Fish Habitat, as well as providing SWH for hibernating reptiles. Revisions to the plan resulted in maintaining the open channel and providing two road crossings.

In accordance with City of Port Colborne Official Plan Policy 5.3.6c, it is recommended that chainlink fencing is installed along the rear boundary of lots backing onto natural areas, including the stormwater channel corridor, and PSW buffers. To further reduce disturbance within the wetland features, a series of walking trails has been proposed for the northern wetland to connect the subdivision to the adjacent Sunset Park. A woodchip trail will prevent trampling of native vegetation through the creation of new footpaths and will not negatively impact infiltration of precipitation.

The prevent disturbance within the southern wetland, the parkette in Block 181 can promote appreciation of nature while also providing educational signage on the significance of the wetland and the native species it supports.

Finally in accordance with the recommendations of the Hydrogeologic Study (Terra-Dynamics Consulting, January 31, 2023), it is recommended that roof leaders and rear lot runoff of lots 137-144 be directed to the adjacent PSW block to provide supplemental surface overflow to the wetland. It was determined that this will be sufficient to maintain the hydrology of the wetland through the month of June, while the constant water supply from Eagle Marsh Drain will be the source of soil saturation throughout the season.

7.2.2.2 Invasive Species Management

The existing 15m wetland buffers are dominated by non-native invasive species such as European Buckthorn. Where possible, selective removal of Buckthorn and planting of native species enhance existing buffers, improve diversity and provide longer-term protection of features.

Some areas of the existing drainage channel are heavily vegetated with the invasive European Common Reed (*Phragmites australis*). It is recommended that the *Phragmites* be removed from the channel and that the channel bottom be returned to design grade. This will improve water flow within the channel and the quality of water entering the Eagle Marsh Drain. Mowing and dredging of the channel will remove *Phragmites* in the short term, but regular mowing of *Phragmites* will be required to control the population. Alternative chemical methods may be available but given that chemical application would impact an aquatic system, consultation with the Ministry of Environment, Conservation and Parks (MECP) would be required.

7.2.2.3 Construction Considerations

Although there are no significant woodlands or treed habitat being removed to accommodate construction, it is recommended that all vegetation removal occur between September 15 and May 1 to avoid the active breeding bird period.

Finally, silt fencing shall be installed along the perimeter of all natural feature buffers, including the 15m wetland buffer, the storm drainage channel, and the southern boundary of stormwater management block 190 to avoid transport of sediments into any natural features. It is strongly recommended that in addition to the silt fencing, high-visibility limit of work fencing be installed along the 15m wetland buffers to prevent encroachment of machinery.

Silt fencing must be installed prior to any vegetation removal or site grading and shall remain installed and maintained in proper condition until construction is complete.

7.3 Residual Impacts and Policy Compliance

The implementation of the above mitigation measures will prevent the potential impacts to natural features described above. The following residual impacts are expected:

- **Regionally Significant Woodlands** – northern portion of site identified as thicket swamp, rather than woodland. Small portion (0.25 ha) of non-significant treed area to be removed.
- **Provincially Significant Wetlands** –No expected impacts to ecological function or hydroperiod of north or south PSW.
- **Fish Habitat** – SWM facilities to maintain volume outputs from site; improved water quality entering Eagle Marsh Drain through clean up and regrading of storm drainage channel.
- **Wildlife Habitat** – No impact to Significant wildlife habitat.
- **Wildlife Corridor** – No impact to Eagle Marsh Drain Corridor. Storm drainage channel to maintain 30m corridor between north and south wetlands.
- **Flora and Fauna** - No impact to significant species.

The information gathered through background review and field investigations was assessed against current policies to ensure compliance with Regional, Municipal, and Provincial legislation. Table 4 below provides a summary of the applicable policies identified in Section 3.0 and an assessment of compliance based on current conditions, proposed work, and recommended mitigation.

Table 4: Summary of applicable policies and analysis of compliance of the proposed construction, with consideration to proposed mitigation measures.

Policy Document	Policy Summary	Compliance
Provincial Policy Statement, 2020	2.1.2 Diversity, connectivity, and function of natural systems should be maintained, restored, or improved	Yes , development avoids PSWs, Significant Wildlife Habitat. No habitat of threatened or endangered species observed. No negative impact to PSW hydrology or ecology or to fish habitat.
	2.1.5 No development in significant wetlands, woodlands, valleylands, wildlife habitat, or ANSIs unless no negative impacts have been demonstrated	
	2.1.7 Development not permitted in habitat of endangered/threatened species	
	2.1.8 No development on lands adjacent to natural heritage features unless no negative impacts have been demonstrated.	
Endangered Species Act (2007)	10.1 Prohibits damage or destruction to the habitat of any species listed as endangered, threatened, or extirpated under SARO.	Yes ; No SARs using property other than aerial foraging, which will not be impacted.
MBCA, 1994	4 protect and conserve migratory birds and their nests.	Yes ; vegetation removal to avoid breeding birds.
Niagara Region Official Plan, 2014	7.B.1.1 Core Natural Heritage includes: e. Core Natural Area, classified as either EPA or ECA. f. Potential Natural Heritage Corridors. g. Greenbelt Natural Heritage and Water Resources System; and h. Fish Habitat	Yes ; No development within EPAs (except passive recreational trail) or Regional ECAs. No negative impacted demonstrated through hydrogeological assessment; opportunities to enhance features through invasive
	7.B.1.10 Development not permitted within EPAs, except: d. Forest, fish, wildlife management	

*Environmental Impact Study
Westwood Estates Phase 3, Port Colborne*

	<ul style="list-style-type: none"> e. Flood or erosion control f. Passive recreational uses <p>7.B.1.11 Development not permitted within ECA unless no negative impact on CNH feature or adjacent land has been demonstrated.</p> <p>7.B.1.13 development should be designed to maintain or enhance ecological functions of Potential Natural Heritage Corridors.</p>	management and native planting.
NPCA Land Use Policy Document, 2018	<p>4.2.3 Prohibited uses in flood hazard:</p> <ul style="list-style-type: none"> d. Sensitive uses (hospitals, nursing homes, schools) e. Uses for disposal/treatment/ production/storage of hazardous substances. f. Any other use deemed inappropriate based on Policy 4.2.1 	Yes , No residential development proposed within 100-year flood line.
Fish Wildlife Conservation Act, 1997	7.1 no person shall destroy, take or possess the nest or eggs of a wild bird	Yes , vegetation removal to avoid breeding birds.
City of Port Colborne Official Plan (2013)	4.2.1.1.a Development not permitted with in PSW.	Yes: Development avoids PSW, SAR habitat, hazard lands, and woodlands. Generally conforms to Westwood Park Land use plan, with minor change in constraint boundary (15m wetland buffer).
	4.2.3.1.a No development permitted within the habitat of Endangered or Threatened Species	
	4.2.4.1.a Development shall generally be directed away from Natural Hazard Area, consisting of the furthest landward limit of flood hazard and erosion hazard limit.	
	4.3.1.f EIS required for development proposed within 50m of ECA. Development only permitted if no negative impacts are determined.	
	4.3.5.1.a development subject within and adjacent to Significant Woodlands must demonstrate no negative impact through an EIS.	
4.3.5.1.b Woodland Significance defined by one or more: <ul style="list-style-type: none"> c. Contain threatened/endangered species. d. Be equal or greater to 2 ha in area. d. Overlap or contain one or more other natural heritage features. e. And/or abut or be crossed by a waterbody greater than 2ha in area 		

The application proposes changes to the environmental designations identified in the City of Port Colborne Official Plan, Schedule G: Westwood Park Secondary Plan. The changes include removal of the 50m ECA corridor along the east property boundary, maintaining the existing storm drainage channel as a 30m wide corridor which will be subject to fewer human disturbances and encroachment.

The other proposed change includes reduction of the 30m EPA buffer to 15m. It is our conclusion that based on the studies completed for the EIS and the conclusions of the hydrogeological study (Terra-Dynamics Consulting, January 31, 2023) that this reduction will result in negative impacts to the PSW features and is in compliance with Regional and Municipal EPA policies.

8 RECOMMENDATIONS AND CONCLUSION

All natural features within the study area have been evaluated in accordance with the approved Terms of Reference and assessed against current policies and guidelines, to inform development of site plans in a way which protects the integrity of the natural heritage system. Site plans have been reviewed and impacts have been assessed based on the existing conditions and significance of the features and their functions.

The northern wetland is an precipitation-fed feature with a reduced catchment resulting from surrounding development and is generally upgradient of the proposed development. The southern wetland is characterized as riverine, sustained by the constant access to groundwater recharge from the adjacent Eagle Marsh Drain and occasional flooding. The marsh habitat along the banks of the Eagle Marsh Drain contained Significant Amphibian Breeding habitat, and although no turtles were observed during field studies, the marsh also provides potential habitat for native turtles. Hydrologic assessments and water balance confirm that there is minimal groundwater interaction in the wetlands, and that the proposed development is not expected to have a negative impact on the hydrology of either feature.

The storm drainage channel through the centre of the site was not identified as fish habitat but does contribute flows to the Type 2 Important Fish habitat associated with the Eagle Marsh Drain. It also provides a continuous linear corridor between the north and south wetlands on site, and the rocky west bank of the channel, adjacent to the northern wetland provides SWH for reptile hibernation.

The proposed site plan aims to meet density goals identified in the City of Port Colborne Secondary Plan policies, while protecting the natural resources on the site. The proposed changes to the environmental areas in the Westwood Park Secondary land use plan continue to support the integrity of the natural environment by ensuring protection of ecological and hydrologic function while also ensuring connectivity between the features that will be preserved in the long term.

The findings of the EIS and evaluation of compliance with current policies support the proposed plan of subdivision for Phase 3 of Westwood Estates. No negative impacts to the PSWs are expected and there is no disruption to any Species at Risk, Significant Wildlife Habitat, or any other Significant natural heritage feature. We trust that the information contained in this report meets your requirements. Should you have any questions, please contact our office.

Report prepared by:



Anne McDonald, B.Sc, EP
Principal
Ecological & Environmental Solutions



Savannah Cowherd, B.Eng, ERPG
Junior Ecologist

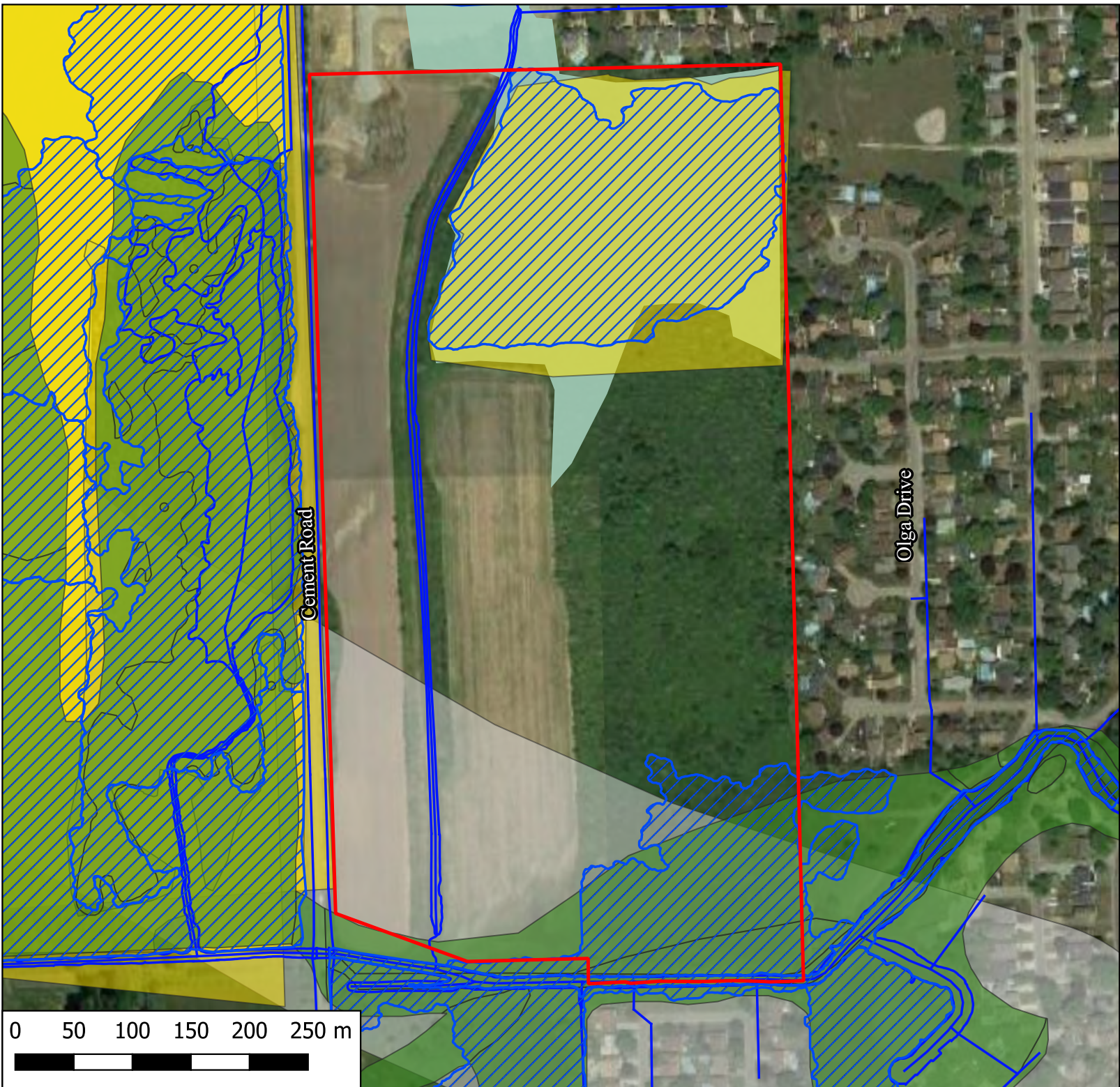
9 LITERATURE REVIEWED

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- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2016. Survey Protocol for Ontario's Species at Risk Snakes. Ontario Ministry of Natural Resources and Forestry, Species Conservation Policy Branch. Peterborough, Ontario. ii + 17 pp.
- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2015. Survey Protocol for Blanding's Turtle (*Emydoidea blandingii*) in Ontario. Species Conservation Policy Branch. Peterborough, Ontario. ii + 16 pp.
- Provincial Policy Statement. 2014. Province of Ontario. Issued under Section 3 of the Planning Act. Came into effect April 30, 2014.
- Regional Municipality of Niagara Environmental Impact Study Guidelines v2. Approved January 2018.
- Regional Municipality of Niagara. 2014. Consolidated Regional Official Plan.
- Species at Risk Act (SARA) (S.C. 2002, c. 29)
- Terra-Dynamics Consulting Limited. January 31, 2023. Feature-Based Wetland Water Balance, Westwood Estates Phase 3, Port Colborne, ON

Appendix A

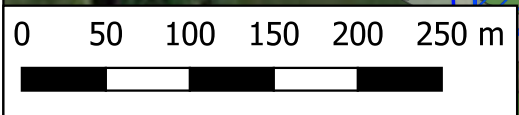
Mapping



- ### Legend
- Property Boundary
 - Environmental Protection Area
 - Environmental Conservation Area
 - Provincially Significant Wetland
 - Significant Woodland
 - Potential Natural Heritage Corridor
 - Watercourse Feature

Westwood Estates EIS
EXISTING NATURAL HERITAGE

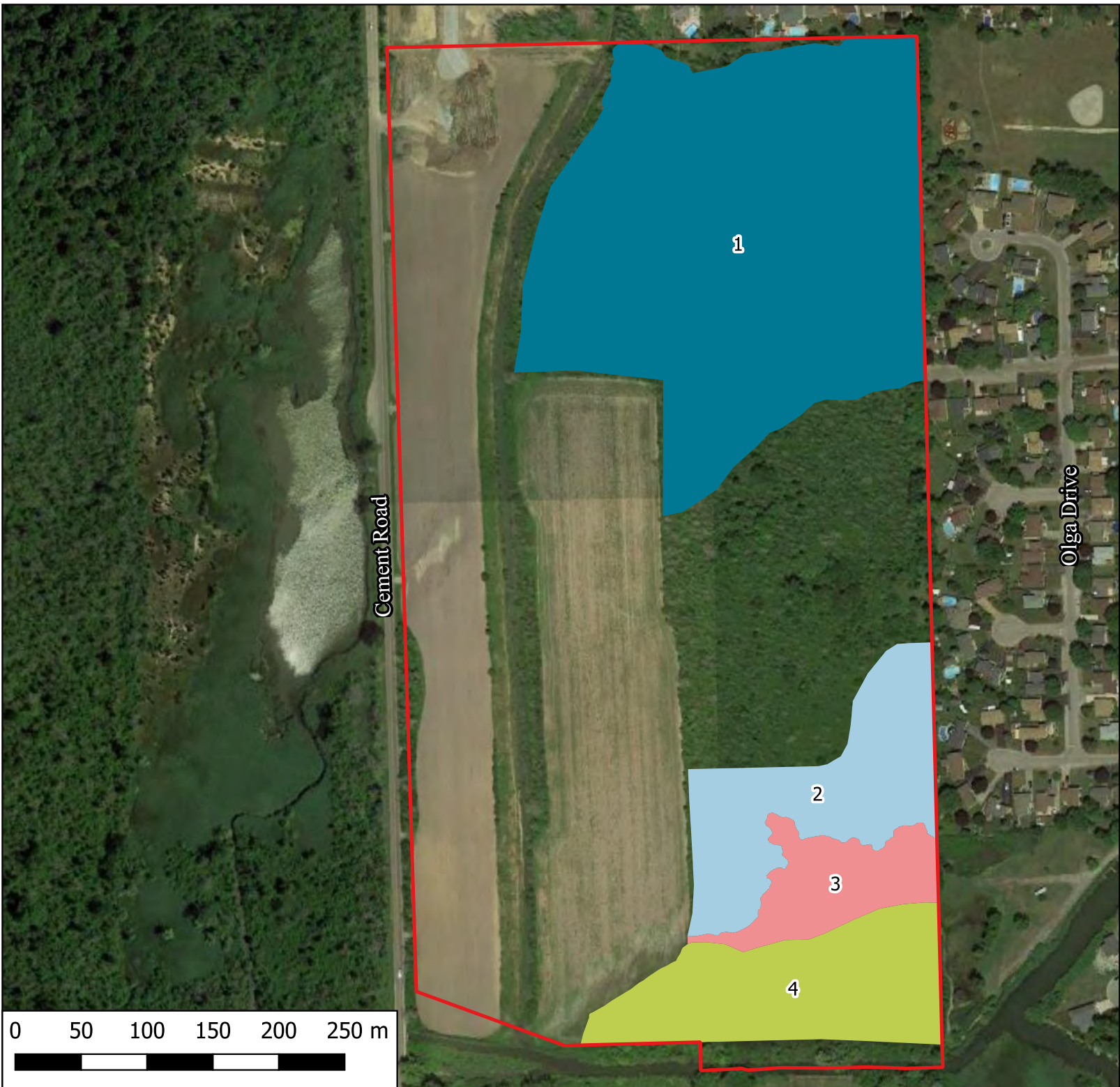
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	Date: March 12, 2020



Project: Westwood Estates EIS

Imagery: Google 2018 Satellite Imagery

Data: Niagara Navigator, Niagara OpenData & Ontario GeoHub



Legend

- Property Boundary

ELC Polygons:

- Silky Dogwood Deciduous Thicket Swamp (SWTM2-2)
- Buckthorn Deciduous Shrub Thicket (THDM2-6)
- Meadowsweet Deciduous Thicket Swamp (SWTM5-7)
- Cattail Mineral Shallow Marsh (MASM2-1)

Westwood Estates EIS

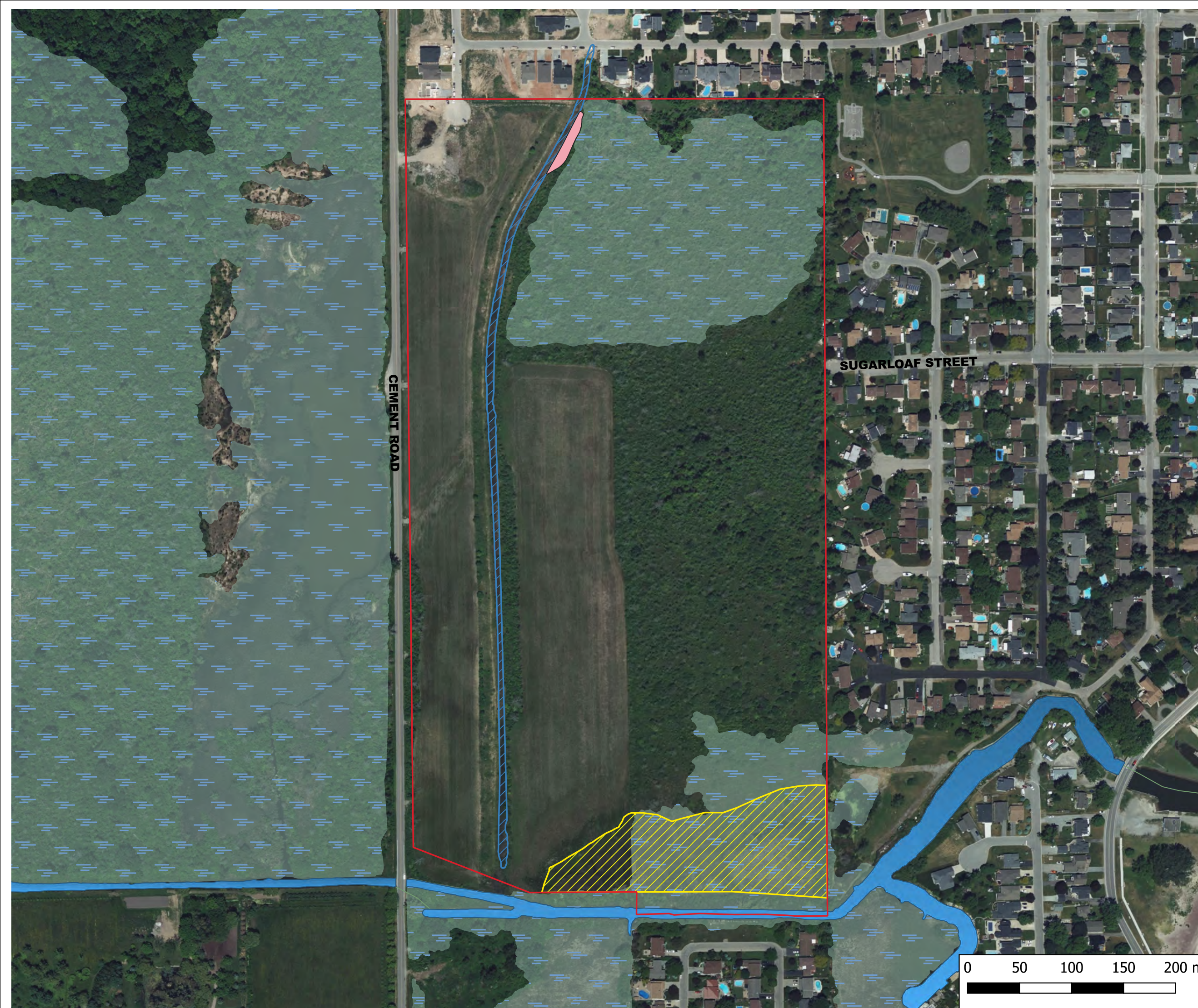
VEGETATION COMMUNITIES

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	Date: september 16, 2021

Project: Westwood Estates EIS

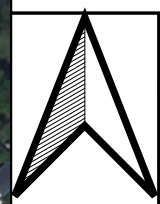
Imagery: Google 2018 Satellite Imagery

Data: Niagara Navigator, Niagara OpenData & Ontario GeoHub



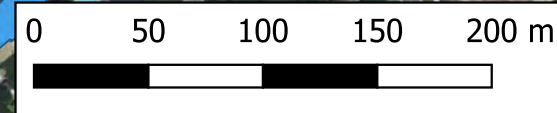
- ### Legend
- Property Boundary
 - Provincially Significant Wetland
 - Important Fish Habitat
 - Contributing Habitat
 - Amphibian Breeding SWH
 - Reptile Hibernacula SWH

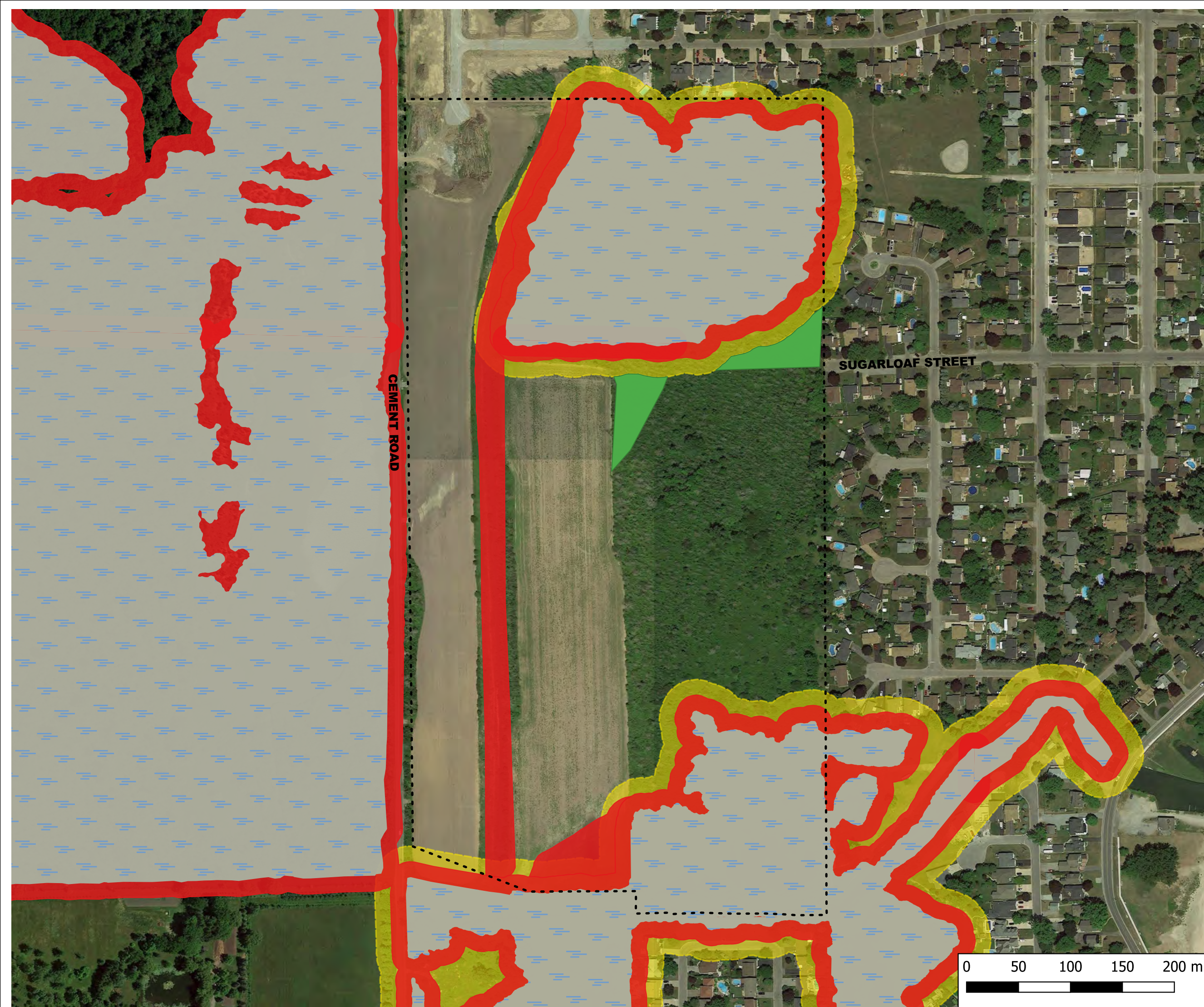
Westwood Estates EIS HABITAT MAPPING



Scale: 1:4500
UTM NAD83 17T
February 6, 2023

Notes
 Imagery: 2020 Google Satellite Imagery.
 Wetland mapping from Ontario Geohub open data.
 Site plan prepared by Upper Canada Consultants.





Legend

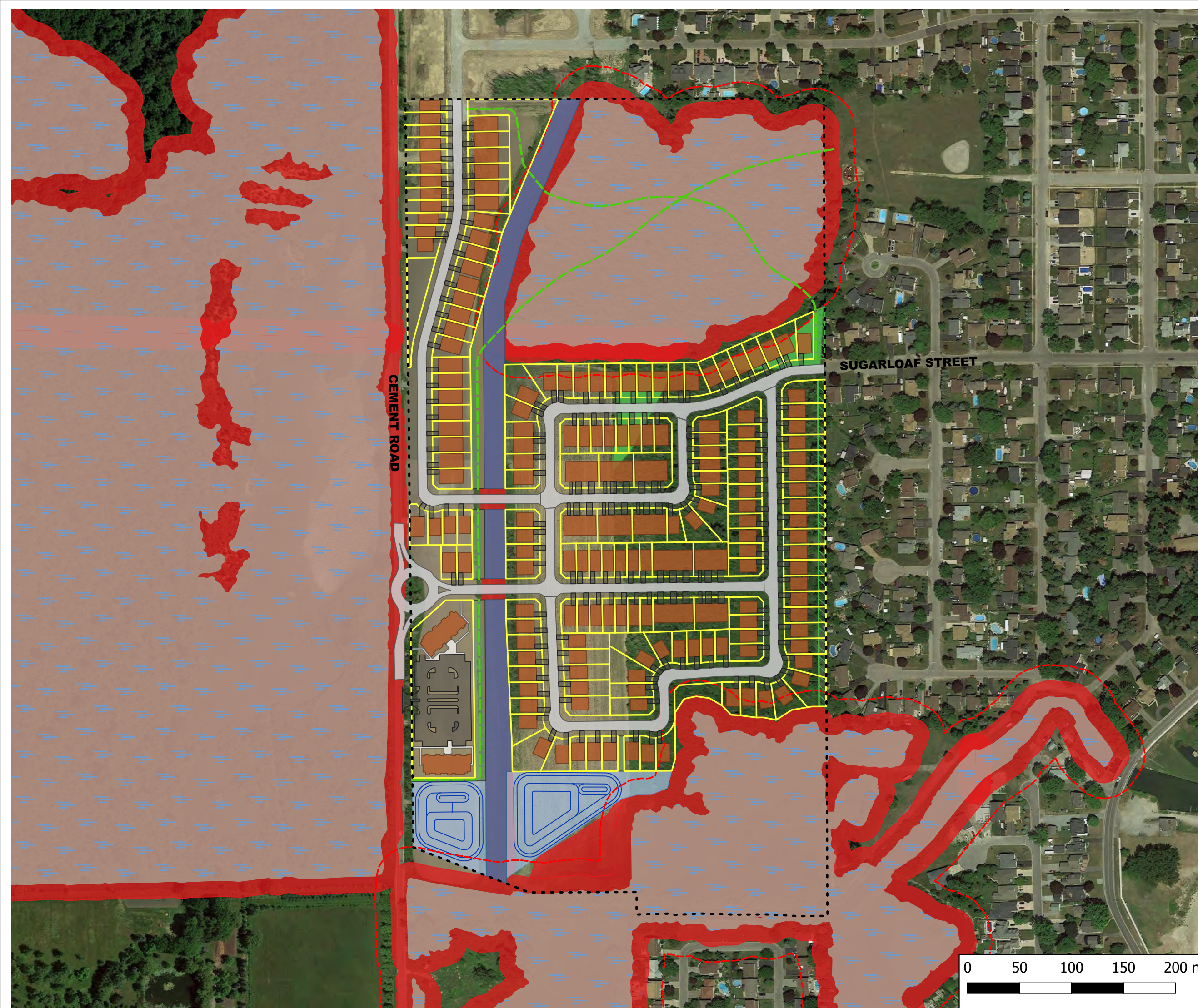
- Property Boundary
- Regulation_Wetlands
- Development Constraints**
- High Constraints
- 30m Wetland buffer
- Low Constraints

Westwood Estates EIS CONSTRAINTS MAPPING

	Scale: 1:4500
	UTM NAD83 17T
	February 6, 2023

Notes
 Imagery: 2020 Google Satellite Imagery.
 Wetland mapping from Ontario Geohub open data.
 Site plan prepared by Upper Canada Consultants.





Legend

- Property Boundary
- Regulation_Wetlands
- 30m Wetland buffer
- Development Constraints**
 - High Constraints
 - Low Constraints
- Proposed Development**
 - Road Network
 - Lots
 - Building Footprints
 - Parking and driveways
 - SWM Facility
 - Drainage Channel
 - 10m Trail Block
 - Walking Trails
 - 7m Easement

Westwood Estates EIS DEVELOPMENT OVERLAY



Scale: 1:4500
UTM NAD83 17T
February 6, 2023

Notes
 Imagery: 2020 Google Satellite Imagery.
 Wetland mapping from Ontario Geohub open data.
 Site plan prepared by Upper Canada Consultants.



Appendix B

Agency Correspondence and EIS Scoping

Anne McDonald

From: Boudens, Adam <Adam.Boudens@niagararegion.ca>
Sent: March 29, 2021 2:29 PM
To: aemcdonald@lcaenvironmental.ca
Cc: Lampman, Cara; Sarah Mastroianni; Lisa Price
Subject: RE: Terms of Reference for EIS - Westwoods Estates
Attachments: Westwoods Estates TOR.pdf

Hi Anne,

Environmental Planning staff have reviewed the TOR prepared for the subject lands located on Cement Road, Port Colborne, and are satisfied with the proposed work plan.

Kind regards,
Adam

Adam Boudens
Senior Environmental Planner/Ecologist

Planning and Development Services, Niagara Region
1815 Sir Isaac Brock Way, P.O. Box 1042
Thorold, ON L2V 4T7
Phone: **905-980-6000 ext. 3770** Toll-free: 1-800-263-7215
Adam.Boudens@niagararegion.ca

From: aemcdonald@lcaenvironmental.ca <aemcdonald@lcaenvironmental.ca>
Sent: Friday, March 19, 2021 3:28 PM
To: Lampman, Cara <Cara.Lampman@niagararegion.ca>; 'Sarah Mastroianni' <smastroianni@npca.ca>
Cc: lprice@lcaenvironmental.ca
Subject: Terms of Reference for EIS - Westwoods Estates

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Good afternoon,

Please see attached our proposed Terms of reference for the completion of an EIS for the property located at Cement Road in the Town of Port Colborne. The EIS will assess impacts of the proposed draft plan for the final phase of the Westwoods Estates subdivision. Please let us know if you have any comments or questions.

Thank you,
Anne

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LCA Environmental Consultants

June 16, 2021

Jessica Abrahamse, M.E.S.
Watershed Planner
Niagara Peninsula Conservation Authority (NPCA)
250 Thorold Road West, 3rd Floor
Welland, ON L3C 3W2

Dear Ms. Abrahamse,

Re: Clarification on NPCA TOR Review Comments
Westwoods Estates, Cement Road, City of Port Colborne

LCA Environmental have reviewed the comments provided by the NPCA ecology department with respect to proposed plan of subdivision for Westwoods Estates on Cement Road, in the City of Port Colborne. The following is provided in response to those comments, given the approval of the TORs received from the Region of Niagara on March 29, 2021.

1. As part of the proposed Terms of Reference, assessment and characterization of the wetlands will take place by way of ELC evaluation, SAR assessments, and area searches and inventory of all species present within the wetland. Hydrogeological studies are also being completed for the study area to identify and classify groundwater resources. The studies completed as part of the EIS will be used in combination with the findings of the Hydrogeological study to describe all potential impacts to the wetlands in the northern and southern portion of the subject property, and suitable mitigation measures and any recommendations for future monitoring will be identified.

Additionally, environmental studies were completed prior to submission and subsequent approval of the Secondary Plan Area (City of Port Colborne Official Plan, Schedule G) in 2017. These studies have established the wetlands as Environmental Protection and prescribed a 30m buffer to protect the features. Given the prior approval of the Secondary Plan area, as well as the location of the wetlands within an existing urban landscape, LCA is confident that completion of the EIS and review of previous studies will provide sufficient information to characterize the wetlands within the study area and there is no need for multiple years of data collection given the existing and current data available for this site.

2. Active hand searches have been completed throughout the spring and early summer to identify amphibian and reptile species using the subject property, in accordance with the TORs approved by Regional staff (see attached). Field studies have revealed that the wetlands and woodland do not provide vernal pooling which would be suitable for salamander breeding. As such, salamander searches are limited to hand searches.
3. The channel which flows through the centre of the property is an engineered drainage ditch, designed to handle the stormwater flows from the adjacent urban development. However, LCA does acknowledge that the channel contributes to downstream fish habitat

LCA Environmental Consultants

and will therefore assess the flow regime, temperature regime, and habitat for the watercourse to characterize potential impacts to downstream fish habitat.

4. Basking surveys were included in the TORs under the screening table for Species at Risk provided in Appendix B. Table 2 confirmed the potential for Blanding's turtle, Snapping Turtle and Spotted Turtle to occur within the study area and specified use of the Survey Protocol for Blanding's Turtle in Ontario to confirm presence or absence.
5. Breeding Bird Surveys were scoped as this is the standard accepted protocol for identifying avian species using the subject property. Protocols for some species require callback surveys, such as Marsh Monitoring protocols for birds, and those protocols are employed when suitable habitat is present. As noted in Table 1 of Appendix B of the TORs, candidate Marsh Breeding Bird Habitat was identified, and Monitoring Protocols were scoped for the EIS. Other specialized habitat such as habitat for crepuscular bird species is not present in the study area and the standard protocol for Breeding Birds has been used to identify all other species using the area. The Region of Niagara provided approval of this approach on March 29, 2021.
6. Road mortality surveys are completed regularly during site visits to identify any potential movement corridors. This is standard practice for LCA Environmental when amphibian habitat is present, and was scoped in the Terms of Reference under *Section 1.4 Animal Movement Corridors* of Table 1 in Appendix B.
7. As far as LCA Environmental is aware, there are no plans for expansion or enhancement of Cement Road to accommodate the subdivision and any future plans to do so are outside of the scope of this EIS, as Cement Road is a Municipal Road.

We trust the above information has provided clarification to the comments presented by the NPCA in response to the proposed Terms of Reference for Westwoods Estates on Cement Road in the City of Port Colborne. Please confirm receipt and approval of these amendments and let us know if you require further clarification or have any additional comments.

Sincerely,



Lisa Price, Project Manager
LCA Environmental



Anne McDonald, Project Coordinator
LCA Environmental

Appendix

Regionally Approved TORs

Anne McDonald

From: Boudens, Adam <Adam.Boudens@niagararegion.ca>
Sent: March 29, 2021 2:29 PM
To: aemcdonald@lcaenvironmental.ca
Cc: Lampman, Cara; Sarah Mastroianni; Lisa Price
Subject: RE: Terms of Reference for EIS - Westwoods Estates
Attachments: Westwoods Estates TOR.pdf

Hi Anne,

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Kind regards,
Adam

Adam Boudens
Senior Environmental Planner/Ecologist

Planning and Development Services, Niagara Region
1815 Sir Isaac Brock Way, P.O. Box 1042
Thorold, ON L2V 4T7
Phone: **905-980-6000 ext. 3770** Toll-free: 1-800-263-7215
Adam.Boudens@niagararegion.ca

From: aemcdonald@lcaenvironmental.ca <aemcdonald@lcaenvironmental.ca>
Sent: Friday, March 19, 2021 3:28 PM
To: Lampman, Cara <Cara.Lampman@niagararegion.ca>; 'Sarah Mastroianni' <smastroianni@npca.ca>
Cc: lprice@lcaenvironmental.ca
Subject: Terms of Reference for EIS - Westwoods Estates

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Thank you,
Anne

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LCA Environmental Consultants

March 12, 2021

Cara Lampman

Manager, Environmental Planning

Region of Niagara

1815 Sir Isaac Brock Way

P.O. Box 1042

Thorold, ON L2V 4T7

Dear Ms. Lampman,

Re: Environmental Impact Study Terms of Reference

Cement Road, Port Colborne, ON

Assessment Roll No: 271101002709301

LCA Environmental is pleased to provide the Region of Niagara and the Niagara Peninsula Conservation Authority (NPCA) the following proposed Terms of Reference to outline the intended approach of the Environmental Impact Study (EIS) for the proposed future development of the above-mentioned property. The property is located within the urban area boundary on Cement Road in the City of Port Colborne and forms part of Lot 33 of Concession 1 of Humberstone Township (Figure 1).

The following Terms of Reference have been prepared in accordance with the Niagara Region's Environmental Impact Study Guidelines (2018). The proposed work will be carried out as part of a comprehensive Environmental Impact Study (EIS), which will provide an analysis of constraints associated with the existing natural heritage features. The constraints will then provide the basis for the assessment of impacts of the proposed development.

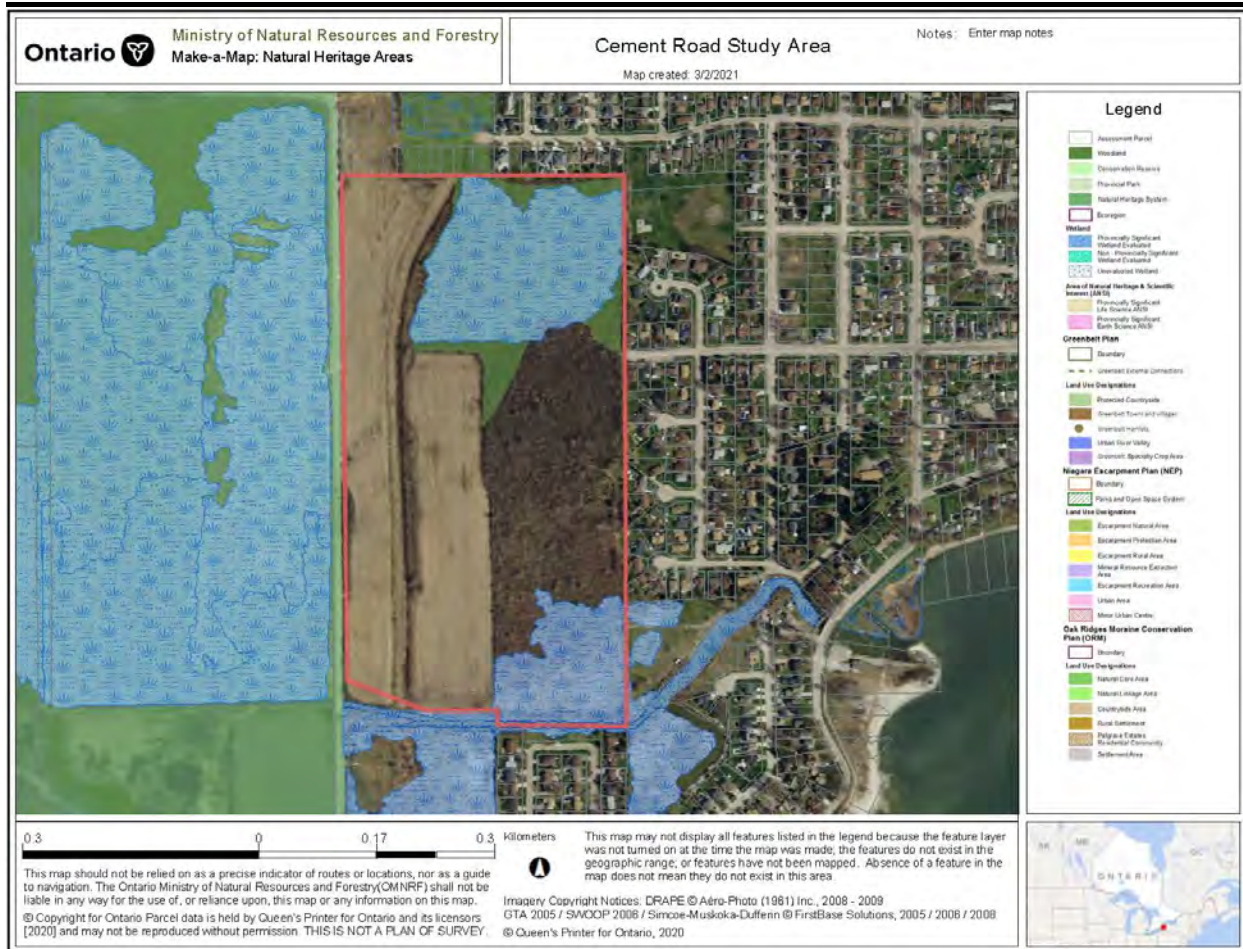


FIGURE 1: LOCATION OF THE STUDY AREA AND ASSOCIATED NATURAL HERITAGE FEATURES.

1.0 Background Information and Literature Review

A background review will be completed for the study in accordance with Sections 3.1 and 3.2 of the Niagara Region EIS Guidelines. This review will include a summary of existing studies and information on the property, as well as a discussion of all policies and regulations applicable to the study area.

An assessment of existing data and natural heritage mapping has been completed to guide the current field schedule. The subject property is located within the urban area boundary and is currently zoned as secondary plan area with Environmental Protection Area overlay. The following features are located on or within the subject property boundaries:

- Regionally Significant Woodlands
- Wainfleet Eagle Marsh Drain Provincially Significant Wetland Complex
- NPCA-regulated branch of Eagle Marsh Drain (not evaluated for fish habitat)

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The study area has also been screened for Significant Wildlife Habitat (SWH) and Species at Risk (SAR) to identify the need for additional field studies. Screening involved a review of the Natural Heritage Information Center (NHIC) database, 'Herps of Ontario' (inaturalist.org), and the Atlas of the Breeding Birds of Ontario. The complete SWH and SAR screenings are included in Appendix B.

Resources and databases consulted to obtain relevant natural heritage and policy information will include, but are not limited to:

- Natural Heritage Information Centre database (MNR)
- City of Port Colborne Official Plan (2013)
- Lake Erie North Shore Watershed Plan (2010)
- Endangered Species Act (2007)
- Consolidated Regional Official Plan (2014)
- Provincial Policy Statement (2020)

2.0 Description of Existing Environment and Analysis of Natural Features

To assess constraints in the study area, flora and fauna surveys will be completed according to standardized protocols and acceptable methods. The proposed schedule of field assessments has been summarized in Table 1.

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TABLE 1: WORK PLAN FOR CEMENT ROAD, IN THE CITY OF PORT COLBORNE

Survey	Protocol/Method	Timing	Notes
Vegetation Surveys			
Ecological Land Classification	Lee et al. (1998)	June through August	
2-season Flora Inventory	Transect surveys and area searches	Spring Ephemeral survey in May	Concurrent with SAR and/or ELC surveys.
		Summer vegetation surveys June-August	
Feature Delineation	Dripline GPS of natural feature(s)	Leaf on summer period	
Species at Risk Survey	Transect surveys	May to September	Concurrent with Flora inventories
Faunal Surveys			
Breeding Bird Survey	Ontario Breeding Bird Atlas Point count method	End of May to July	Include SWH searches
Marsh Bird Survey	Marsh Monitoring Protocol	End of May to July	
Reptile/amphibian Visual Searches	Milk Snake protocol - hand search	April through August	
Anuran Call Surveys	Marsh Monitoring Program	End of April to June	
Bat Monitoring	MNRFP Survey Protocol for Species at Risk Bats	Leaf off survey: April	Acoustic monitoring in June if roosting habitat is present
		Leaf on survey: May	
Incidental Observations	Regularly recorded during site visits	Ongoing	Including searches for SAR
Hydrological Assessments			
Wetland evaluations	Ontario Wetland Evaluation System	June	To verify the extent of the wetlands

3.0 Assessment of Features and Functions

All data collected through background review and field studies will be summarized and reviewed in the context of current Provincial and Federal legislation for significance. Site constraints and recommended feature setbacks will be discussed with any opportunities for enhancement of natural features. The Constraints Analysis will then inform the assessment of impacts expected from the proposed development of the property.

The significance of the features identified on the subject property will be evaluated in accordance with Provincial, Regional, and Municipal planning policies, the Endangered Species Act (2007),

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SWH Criteria for Ecoregion 7E, and all other applicable natural heritage guidelines. Evaluation of significance will include assessment of potential or existing natural corridors.

The Significant Woodlands will be reviewed with regard to Regional Policy 7.B.1.5, Policy 4.3.5.1 of the City of Port Colborne Official Plan and the Regional Woodland Conservation By-law.

4.0 Mapping

The data collected will be compiled and results will be presented in the following maps:

- Vegetation Community Map
- Natural Heritage Features including any identified Significant Wildlife Habitat
- Corridors and linkages
- Location of all Threatened or Endangered SAR and Associated Habitat
- Constraints Map
- Proposed development overlay

The above Terms of Reference outline the basis of the Environmental Impact Study to be completed for the proposed development of Cement Road. We trust that these meet the requirements of the Region of Niagara EIS Guidelines and address the natural heritage features on and adjacent to the site as they appear on Regional and Municipal mapping. Natural heritage mapping for the study area is included in Appendix A.

Sincerely,



Anne McDonald, Project Coordinator
LCA Environmental

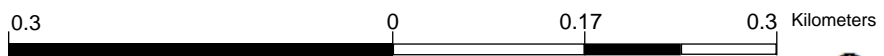
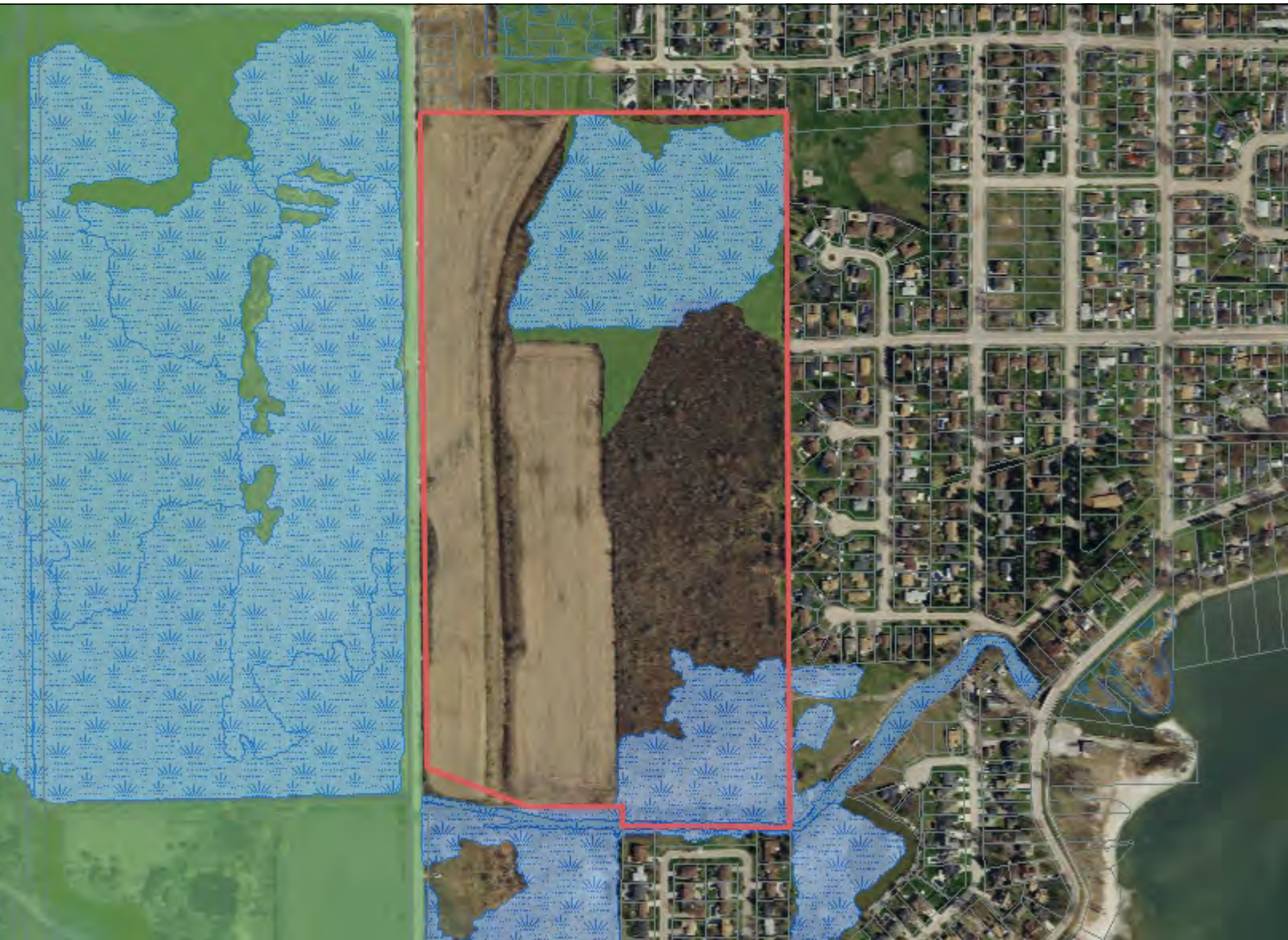


Lisa Price, Project Manager
LCA Environmental

Appendix A
Study Area Map

Legend

-  Assessment Parcel
-  Woodland
-  Conservation Reserve
-  Provincial Park
-  Natural Heritage System
-  Ecoregion
- Wetland**
 -  Provincially Significant Wetland Evaluated
 -  Non - Provincially Significant Wetland Evaluated
 -  Unevaluated Wetland
- Area of Natural Heritage & Scientific Interest (ANSI)**
 -  Provincially Significant Life Science ANSI
 -  Provincially Significant Earth Science ANSI
- Greenbelt Plan**
 -  Boundary
 -  Greenbelt External Connections
- Land Use Designations**
 -  Protected Countryside
 -  Greenbelt Towns and Villages:
 -  Greenbelt Hamlets
 -  Urban River Valley
 -  Greenbelt Specialty Crop Area
- Niagara Escarpment Plan (NEP)**
 -  Boundary
 -  Parks and Open Space System
- Land Use Designations**
 -  Escarpment Natural Area
 -  Escarpment Protection Area
 -  Escarpment Rural Area
 -  Mineral Resource Extraction Area
 -  Escarpment Recreation Area
 -  Urban Area
 -  Minor Urban Centre
- Oak Ridges Moraine Conservation Plan (ORM)**
 -  Boundary
- Land Use Designations**
 -  Natural Core Area
 -  Natural Linkage Area
 -  Countryside Area
 -  Rural Settlement
 -  Palgrave Estates Residential Community
 -  Settlement Area



This map may not display all features listed in the legend because the feature layer was not turned on at the time the map was made; the features do not exist in the geographic range; or features have not been mapped. Absence of a feature in the map does not mean they do not exist in this area.

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

Table 1: Significant Wildlife Habitat Screening for Cement Road, in the City of Port Colborne.

Significant Wildlife Habitat (SWH) Type	Known/Candidate SWH present	Rationale	Field Studies Required
1.1 Seasonal Concentration Areas for Wildlife Species			
Waterfowl Stopover and Staging Areas (Terrestrial)	No	Lack of suitable habitat	None
Waterfowl Stopover and Staging Areas (Aquatic)	Yes	Presence of wetland and marsh habitat within property boundaries	Area Searches in accordance with Bird and “Bird Habitats: Guidelines for windpower projects” (MNRF 2011)
Shorebird Migratory Stopover Area	Yes	Wetland habitat located off Lake Ontario Shoreline	Area Searches in accordance with Bird and “Bird Habitats: Guidelines for windpower projects” (MNRF 2011)
Raptor Wintering Area	No	Lack of mature forest habitat	None
Bat Hibernacula	No	Habitat not available (caves, mines, Karsts)	None
Bat Maternity Colonies	Yes	Dead or dying trees in woodland habitat with potential standing snags	MNRF Survey Protocol for SAR Bats within Treed Habitats (MNRF, 2017)
Turtle Wintering Areas	No	Lack of open water habitat	None
Reptile Hibernaculum	Yes	Potential for slopes and burrows	Milk Snake Protocol – hand searches
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	No	Lack of exposed banks or cliffs	None
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	Yes	Potential nesting trees within wetland habitat	Area Searches in accordance with Bird and “Bird Habitats: Guidelines for windpower projects” (MNRF 2011)
Colonially-Nesting Bird Breeding Habitat (Ground)	Yes	Watercourse located in open field	Area Searches in accordance with Bird and “Bird Habitats: Guidelines for windpower projects” (MNRF 2011)
Migratory Butterfly Stopover Areas	Yes	Suitable habitat within 5km from Lake Erie	Area searches - spring
Landbird Migratory Stopover Areas	Yes	Woodland exceeding 5ha within 5km of Lake Erie	Breeding Bird Surveys
Deer Winter Congregation Areas	Yes	Deer Winter Congregation area identified by MNRF	Winter mammal tracking survey
1.2 Rare Vegetation Communities or Specialized Habitat for Wildlife			
Cliffs and Talus Slopes	No	Not Applicable	None
Sand Barren	No	Not Applicable	None
Alvar	No	Not Applicable	None
Old Growth Forest	No	Lack of Habitat	None
Savannah	No	Not Applicable	None
Tall Grass Prairie	No	Not Applicable	None
Other Rare Vegetation Communities	Yes	Variable ELC Ecosites present	ELC surveys
Waterfowl Nesting Area	Yes	NHIC record	Nest surveys in accordance with Bird and “Bird Habitats: Guidelines for windpower projects” (MNRF 2011)

Significant Wildlife Habitat (SWH) Type	Known/Candidate SWH present	Rationale	Field Studies Required
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Yes	Wetland community adjacent to riparian area and near Lake Erie	Area Searches in accordance with Bird and "Bird Habitats: Guidelines for windpower projects" (MNRF 2011)
Woodland Raptor Nesting Habitat	No	Lack of interior habitat	None
Turtle Nesting Areas	Yes	Marsh habitat present	Area searches
Seeps and Springs	No	Lack of forested headwaters	None
Amphibian Breeding Habitat (Woodland)	Yes	Wetland habitat adjacent to woodland	Marsh Monitoring Program – Anuran Call surveys
Amphibian Breeding Habitat (Wetlands)	Yes	Presence of wetland habitat	Marsh Monitoring Program – Anuran call surveys
Woodland Area- Sensitive Bird Breeding Habitat	No	No interior habitat available	None
1.3 Habitats of Species of Conservation Concern			
Marsh Breeding Bird Habitat	Yes	Marsh habitat available	Marsh Monitoring Program for Marsh Birds
Open Country Bird Breeding Habitat	No	Lack of grassland habitat	None
Shrub/Early Successional Bird Breeding Habitat	No	Successional habitat <10ha	None
Terrestrial Crayfish	Yes	Presence of marsh habitat	Search for chimneys or burrows from April – August
Special Concern and Rare Wildlife Species	Yes	MNRF known EOs provided (NHIC). See SAR screening below	Area inventories
1.4 Animal Movement Corridors			
Amphibian Movement Corridor	Yes	Candidate amphibian woodland and wetland breeding habitat identified	Area searches/ road mortality surveys

Table 2: Species at Risk Screening for Cement Road, in the City of Port Colborne.

Common Name	Species Scientific Name	Potential to occur	Rationale	Survey Required
BIRDS				
Acadian Flycatcher	<i>Empidonax vireescens</i>	No	Lack of interior Habitat	None
Bank Swallow	<i>Riparia riparia</i>	No	Lack of suitable habitat	None
Barn Owl	<i>Tyto alba</i>	No	Lack of roosting structures	None
Barn Swallow	<i>Hirundo rustica</i>	Yes	Breeding Bird Atlas, foraging habitat	Breeding Bird Surveys
Black Tern	<i>Chlidonias niger</i>	Yes	Breeding Bird Atlas, suitable habitat	Marsh Monitoring Program for Marsh Birds
Bobolink	<i>Dolichonyx oryzivorus</i>	Yes	Grassland habitat present	Breeding Bird Surveys
Canada Warbler	<i>Cardellina canadensis</i>	Yes	Breeding Bird Atlas	Breeding Bird Surveys
Chimney Swift	<i>Chaetura pelagica</i>	Yes	Breeding Bird Atlas, foraging habitat	Breeding Bird Surveys
Common Nighthawk	<i>Chordeiles minor</i>	No	Lack of suitable habitat	None
Eastern Meadowlark	<i>Sturnella magna</i>	Yes	Breeding Bird Atlas	Breeding Bird Surveys
Eastern Wood-Pewee	<i>Contopus virens</i>	Yes	Breeding Bird Atlas	Breeding Bird surveys
Eastern Whip-poor-will	<i>Caprimulgus vociferous</i>	No	Lack of habitat	None
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Yes	Suitable habitat	Breeding Bird surveys
Least Bittern	<i>Ixobrychus exilis</i>	Yes	Breeding Bird Atlas	Marsh Monitoring Program for Marsh Birds
Northern Bobwhite	<i>Colinus virginianus</i>	No	Lack of historical evidence	Breeding Bird Surveys
Peregrine Falcon	<i>Falco peregrinus</i>	No	Lack of habitat	None
Red-Headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Yes	Breeding Bird Atlas	Breeding Bird Surveys
Short-eared Owl	<i>Asio flammeus</i>	No	Lack of historical evidence	None
Wood Thrush	<i>Hylocichla mustelina</i>	Yes	Breeding Bird Atlas	Breeding Bird Surveys
Yellow-breasted Chat	<i>Icteria virens</i>	Yes	Breeding Bird Atlas	Breeding Bird surveys
INSECTS				
Monarch Butterfly	<i>Danaus plexippus</i>	Yes	Habitat availability	Incidental
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	Yes	Habitat availability	Incidental
West Virginia White	<i>Pieris virginiensis</i>	Yes	Habitat availability	Incidental
MAMMALS				
Eastern Small-footed myotis	<i>Myotis leibii</i>	Yes	Potential habitat	MNRF SAR protocols Phase I&II
Gray Fox	<i>Urocyon cinereoargenteus</i>	Yes	Habitat availability	Incidental
Little Brown Myotis	<i>Myotis lucifugus</i>	Yes	Potential habitat	MNRF SAR protocols Phase I&II
Northern Myotis	<i>Myotis septentrionalis</i>	Yes	Potential habitat	MNRF SAR protocols Phase I&II
Tri-colored Bat	<i>Perimyotis subflavus</i>	Yes	Potential habitat	MNRF SAR protocols Phase I&II
MOLLUSC				
Snuffbox	<i>Epioblasma triquetra</i>	Yes	NHIC	None – outside of area of disturbance
PLANTS				
Butternut	<i>Juglans cinerea</i>	Yes	NHIC, habitat availability	Summer flora inventory
Common Hoptree	<i>Ptelea trifoliata</i>	No	Lack of habitat	None
Eastern Flowering Dogwood	<i>Cornus florida</i>	No	Lack of habitat	None

Common Name	Species Scientific Name	Potential to occur	Rationale	Survey Required
PLANTS				
Swamp Rose-mallow	<i>Hibiscus moscheutos</i>	Yes	Habitat availability	Summer flora inventory
White Wood Aster	<i>Eurybia divaricata</i>	No	Lack of habitat	None
REPTILES AND AMPHIBIANS				
Blanding's Turtle	<i>Emydoidea blandingii</i>	Yes	Habitat availability	Survey Protocol for Blanding's Turtle in Ontario
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	Yes	Habitat availability	Milksnake Protocol - Hand searches
Eastern Milksnake	<i>Lampropeltis triangulum</i>	Yes	NHIC	Milksnake Protocol - Hand searches
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	Yes	Habitat availability	Milksnake Protocol - Hand searches
Massassauga Rattlesnake	<i>Sistrurus catenatus</i>	Yes	Habitat availability	Milksnake Protocol - Hand searches
Snapping Turtle	<i>Chelydra serpentina</i>	Yes	NHIC, Habitat availability	Survey Protocol for Blanding's Turtle in Ontario
Spotted Turtle	<i>Clemmys guttata</i>	Yes	Habitat availability	Survey Protocol for Blanding's Turtle in Ontario

Appendix C

Field Assessments and Survey Protocols

Summary of Survey dates on the subject property.

Date	Weather	Survey	Protocol	Surveyors
March 4, 2021	Temp: Cloud Cover: Wind:	Site Recon		A. McDonald & S. Cowherd
		Prelim feature delineation		
March 25, 2021	Temp: 13°C Cloud Cover: 100% Wind: 1	Anuran Call Survey	Marsh Monitoring Program (MMP)	A. McDonald & S. Cowherd
March 30, 2021	Temp: 18°C Cloud Cover: 25% Wind: 2	Amphibian and Reptile Survey	Area searches and Hand searches (Blanding's Turtle/Milk Snake)	A. McDonald & S. Cowherd
		Leaf off Snag Survey	MNRF Survey Protocol for SAR Bats	
		Movement Corridors	Road Mortality Survey	
April 6, 2021	Temp: 16°C Cloud Cover: 25% Wind: 2	Amphibian and Reptile Survey	Area searches and Hand searches (Blanding's Turtle/Milk Snake)	A. McDonald & S. Cowherd
		Movement Corridors	Road Mortality Survey	
April 13, 2020	Temp: 9°C Cloud Cover: 100% Wind: 1	Amphibian and Reptile Survey	Area searches and Hand searches (Blanding's Turtle/Milk Snake)	A. McDonald & S. Cowherd
		Movement Corridors	Road Mortality Survey	
April 19, 2021	Temp: 12°C Cloud Cover: 25% Wind: 2	Amphibian and Reptile Survey	Area searches and Hand searches (Blanding's Turtle/Milk Snake)	A. McDonald & S. Cowherd
		Movement Corridors	Road Mortality Survey	
May 4, 2021	Temp: 12°C Cloud Cover: 100% Wind: 1	Anuran Call Survey	MMP	A. McDonald & S. Cowherd
May 5, 2021	Temp: 11°C Cloud Cover: 100% Wind: 2	Amphibian and Reptile Survey	Area searches and Hand searches (Blanding's Turtle/Milk Snake)	A. McDonald & S. Cowherd
		Movement Corridors	Road Mortality Survey	
May 11, 2021	Temp: 9°C Cloud Cover: 50% Wind: 2	Amphibian and Reptile Survey	Area searches and Hand searches (Blanding's Turtle/Milk Snake)	A. McDonald & S. Cowherd
		Spring Vegetation	Transect Survey	
June 4, 2021	Temp: 17°C Cloud Cover: 0% Wind: 1	Anuran Call Survey	MMP	A. McDonald & S. Cowherd
June 6, 2021	Temp: °C Cloud Cover: % Wind:	Breeding Bird Survey	Ontario Breeding Bird Atlas (OBBA)	N. Litwin & A. Brunning
June 18, 2021	Temp: 19°C Cloud Cover: 10% Wind: 3	Marsh Bird Survey	MMP	N. Litwin & A. Brunning
		Breeding Bird Survey	OBBA	
July 4, 2021	Temp: 17°C Cloud Cover: 0% Wind: 0	Marsh Bird Survey	MMP	N. Litwin & A. Brunning
		Breeding Bird Survey	OBBA	
July 22, 2021	Temp: 22°C Cloud Cover: 50% Wind: 1	ELC	Lee et al. (1998)	A. McDonald & S. Cowherd

Ecological Land Classification

The vegetation communities on the subject lands are identified and categorized based on the Ecological Land Classification (ELC) System according to the guidelines in the SCSS Field Guide FG-02 (Lee et al. 1998). Ecological Land Classification is a protocol established for Southern Ontario that considers distribution and abundance of plants in combination with related topography and soil conditions to classify plant communities. It was developed for the purpose of creating a comprehensive and consistent province-wide approach for ecosystem description, inventory and interpretation.

Aerial images are consulted to delineate homogeneous polygons within the site. During site visits to these polygons, vegetation communities are classified according to Community Units, which are identified based on the dominant vegetation species present, soil characteristics, and hydrology. Plant lists for each vegetation layer are compiled and vegetation is ranked according to its abundance. The plants are identified to the species level and vouchers are taken for species whose identity is unknown to be identified at a later date. Representative soil cores are taken using a soil auger to evaluate texture, moisture regime and drainage values. Prism sweeps are conducted to calculate the basal area cover of trees, which allows for determination of the stand composition within each polygon. Trees are also categorized into size classes and estimates are made for prevalence of standing snags and deadfall. The vegetation community of each ELC polygon is then identified based on the data collected.

Breeding Bird Survey

Breeding Bird Surveys were conducted using the Ontario Breeding Bird Atlas (OBBA) Point Counts method, which involves standing in one place and recording all the species that are seen or heard for a minimum of five minutes. Surveys should be conducted between May 24th and July 10th, with at least 10 days between each survey. Point count surveys are completed early in the morning, with the best time for coverage occurring within the first five hours after dawn.

Variations to the OBBA Point Count methods were adapted from the Marsh Monitoring Program Bird Survey Protocols. Point Count stations were established a minimum of 250m apart, and surveys were conducted for a total of fifteen minutes, using a fixed distance sample area of a 100m circle.

Area searches are also conducted, which occur in a series of three, twenty-minute point counts, according to the OBBA 2001-2005 list in accordance with the American Ornithologists Union (AOU) 7th Edition (42nd-47th supplements).

MARSH BIRD SURVEYS

Human activity in the densely-populated Great Lakes basin has resulted in the degradation and loss of many wetlands, particularly marsh complexes. This decline in marsh habitat has resulted in the population decline of many marsh-dependent bird species. Among these are a group of “focal” marsh bird species that rely on marshes as breeding habitat, and whose presence is recognized as an important indicator of marsh health. Long-term monitoring of marsh bird presence and abundance is thus an effective means to estimate and track the ecological integrity of marshes. Marsh bird monitoring data collected by Marsh Monitoring Program (MMP) participants contribute toward wetland conservation and management initiatives at a variety of spatial scales across the Great Lakes basin.

You don't need to be an ace-birder to conduct the marsh bird survey. On the other hand, the survey is not suitable for novices. As a general guideline, participants should be able to correctly identify at least 50 species of common birds, by sight and sound, especially those living in and around marshes. The Training CD will serve as a useful memory refresher and to fine-tune your skills, but it alone will not be sufficient to learn all that's required.

The Marsh Monitoring Program (MMP) marsh bird survey instructions have been revised to align with North American marsh bird monitoring standards. Both new and returning participants should read and follow these instructions carefully and listen to the Training CD prior to conducting their first survey visits

When Should I Conduct My Surveys?

- Marsh bird routes are surveyed **two times** each year between May 20 and July 5. Surveys must be conducted at least **10 days apart**.
- Survey time (morning or evening) is determined at the time of route creation and must remain the same for that route for both visits and all subsequent years of surveying. Differences in bird activity during morning and evening require that data from a survey be collected consistently during the same period of the day. As such, evening routes **must remain** evening routes, and morning routes **must remain** morning routes.
- Morning surveys can **begin 30 minutes before sunrise and end no later than 10:00 h**. Evening surveys can **begin no earlier than four hours before sunset and must be completed by dark**. The “clock time” for sunrise and sunset is dependent on both the survey date and route location (i.e., latitude). Check your local weather station for this information. For each visit, a route must be surveyed in its entirety and in the same station order.
- **Each station is surveyed for 15 minutes**. A typical route of four stations may take up to two hours to survey. Survey period length will also vary depending on the distance between stations and site accessibility. It is a good idea to “test” how long it will take you to travel between your station focal points.
- Surveys should be undertaken in weather that is favourable for surveying birds: **good visibility, warm temperatures (at least 16°C or 60°F), no precipitation and little or no wind**. If the weather does not meet these guidelines or if during your survey conditions cease to meet these guidelines, you should cancel the survey and re-do it later.

Marsh Bird Surveys

- Strong wind not only suppresses bird-calling activity, it also reduces your ability to hear and distinguish bird calls. To reduce the influence of wind on survey accuracy we require that surveys be conducted when the wind strength is Code 0, 1, 2 or 3 on the Beaufort Wind Scale (see Appendix 4). If the wind is strong enough to raise dust or loose paper and move small tree branches, wait for calmer weather.
- All but the lightest drizzle suppresses bird activity and interferes with your ability to hear, not to mention soaking you and your forms, and generally making you miserable! We want you to find these surveys interesting and pleasant, not a burden. Pick a **nice** morning or evening!

Conducting the Survey

Getting Started

Field Checklist

It's best to be prepared! Below is a list of items you will require for each field visit and a selection of recommended items you may find useful. Feel free to supplement this list with other items you feel you might need.

Required Items:

- MMP Bird Survey Form(s)
- Pens or pencils (bring a back-up)
- Watch
- Clipboard (or something else hard to write on)
- Broadcast unit (e.g., portable MP3 player with speakers and fresh batteries/full charge)
- Marsh Bird Broadcast MP3 File
- Binoculars
- Spare batteries

Recommended Items:

- GPS unit or GPS App
- Cell phone
- Compass or map
- Bird field identification guide
- Thermometer
- This instruction booklet
- Flashlight/headlamp
- Mosquito repellent
- Water and snacks (Be sure to carry out any garbage!)

You might want to bring an assistant along for company and to share in the experience. This person can help you find your stations, hold your broadcast unit, and document information such as the weather conditions. Your assistant may even be able to take over for you in future years. However, **you must find, identify, and count all the birds unaided**. More than one observer will bias the results.



King Rail
- by Christine Friedrichsmeier

Marsh Bird Broadcast MP3 File

Secretive marsh birds can often be coaxed into responding to a recorded broadcast of their call. In order to ensure data are collected for some important but secretive marsh birds, you have access to a Broadcast MP3 file that contains a 5-minute sequence of call recordings of the following species: Least Bittern, Sora, Virginia Rail, a combination of Common Moorhen/American Coot, and Pied-billed Grebe. Each species call broadcast is 30 seconds long followed by 30 seconds of silence. The MP3 or broadcast player that you use to broadcast the calls must be loud enough to be heard well at a distance of 100 m (110 yards). Many of the small, low-cost players or phones combined with speakers should work but both devices must be capable of attaining the appropriate volume. Many battery-powered speakers are appropriate, but you should test the effective broadcast distance before using the unit in the field. Recruit a friend to help you establish that you can hear the calls at the appropriate distance. It's also important to ensure both devices are fully charged and low battery will decrease the loudness. Also make sure to always carry new spare batteries or a battery pack. Please contact Kathy Jones for further information using the contact information at the end of this booklet.

The 15-minute MMP marsh bird survey is sub-divided into three 5-minute components: a 5-minute passive (silent) observation period, a 5-minute call playback period, and a second 5-minute passive observation period. The MMP Broadcast MP3 that you download has a 15-minute running time with prompts to indicate different components of the survey. When you are ready to begin your survey at a station, press play on your broadcast player making sure that the volume is at full. **A double-tone will mark the start and end of the 15-minute survey. The call of the Least Bittern will mark the start of the 5-minute call broadcast period, while a single-tone will mark the start of the second 5-minute passive period.**

Marsh Monitoring Program - Bird Survey Form

The primary objective of this program is to track observations of “focal” marsh bird species. Focal species are those species that rely on marsh habitats for one or more stages of their life cycle. For the purposes of the Marsh Monitoring Program, the focal species are:

American Bittern (AMBI)
American Coot (AMCO)
Black Rail (BLRA)
Common Moorhen (COMO)

King Rail (KIRA)
Least Bittern (LEBI)
Pied-billed Grebe (PBGR)

Sora (SORA)
Virginia Rail (VIRA)
Yellow Rail (YERA)

Non-focal, or “secondary” species are birds that touch down or are landed within the station area, but are not focal species, and are recorded through this protocol as mapped observations. Aerial foragers, outside observations and fly-throughs of secondary species are also recorded. Aerial foragers are birds that are foraging in flight within your study area for items such as fish, insects or other birds. Outside observations are secondary species that you observe beyond the 100-m (110-yard) survey station area. Fly-throughs are birds that pass through your survey area but do not use it (no touch-down or foraging). Each of these groups is tracked and recorded differently on the MMP Bird Survey Form.

The front of the Bird Survey Form can be visually divided into four sections. The first section consists of site and visit information; the second is the main table used for recording focal species observations. Below the main table, the third section includes all secondary species components: a station map for mapping secondary species, and two small tables for recording aerial foragers and outside/fly-through observations. The fourth section, located at the bottom of the form, is a summary table for secondary species used to condense the information recorded on the Secondary Species Map. **This last section can be completed as soon as you finish each station’s survey.**

Amphibian Surveys Overview (Bird Studies Canada)

For decades, scientific studies have shown that amphibian populations have been in steady decline across North America, and particularly in the heavily populated and industrialized Great Lakes region. Amphibians are very sensitive to environmental stresses, such as air and water pollution, thus their decline or disappearance in a region is indicative of environmental degradation. Consequently, the presence or absence of amphibians in marshes is a good indicator of marsh habitat health. The Marsh Monitoring Program (MMP) uses aural (hearing-based) surveys to detect the presence or absence and relative abundance of calling amphibians (frogs and toads). Data collected by MMP volunteers are used to determine relative annual population trend changes for calling amphibians at local, regional, and Great Lakes basin levels.

To conduct amphibian (frog and toad) surveys:

- Survey three times per year between April and July 5th, with at least fifteen days between each survey;
- Begin surveying one half-hour after sunset and end by midnight during evenings with little wind and minimum night air temperatures of 5°C (50°F), 10°C (50°F) and 17°C (63°F) for each of the three respective survey periods. These temperature requirements are in place because amphibian calling intensity is strongly associated with season, time of day, and weather conditions;
- Establish monitoring stations at least 500 meters apart to minimize the possibility of double-counting calls. Unlike marsh bird survey stations, amphibian survey stations can be placed back-to-back because the amphibian survey protocol is entirely passive (i.e. call responses are not elicited through use of a call broadcast tape/CD);
- Conduct surveys using an unlimited distance semi-circular sampling area. However, in order to associate calls heard within the defined 100 meter area surveyed with habitat composition within these same areas, surveyors are asked to ascertain and record whether calls were heard outside the 100 meter radius or within this radius.
- Complete a 3-minute survey at each station. Call level codes are assigned to all calling frog and toad species:
 - Code 1: individual calls do not overlap and calling individuals can be discretely counted;
 - Code 2: calls of individuals sometimes overlap, but numbers of individuals can still be estimated;
 - Code 3: overlap among calls seems continuous (full chorus), and a count estimate is impossible;

Bat Monitoring Protocols

Snag surveys were completed on the subject property to determine the density and location of suitable maternal roosting habitat in accordance with the MNRF's Survey Protocol for Species at Risk Bats within Treed Habitats, which are summarized below. Following completion of the snag survey, locations for acoustic monitors were selected based on the criteria in the survey protocols to select optimal locations for monitoring stations. The monitoring location plan was submitted to the Ministry and approved prior to the installation of the acoustic monitors.

Full-spectrum Wildlife Acoustics SongMeter SM4™ monitors were installed during the month of June. Monitors are affixed to trees at a height of four – five meters and microphones are extended approximately three feet away from the unit. Microphones are positioned towards a clearing in the canopy or understory to minimize obstruction of calls and ensure high recording quality. The monitors are set to record for five hours each night, and weather was monitored via Buffalo International Airport data. The scheduling and audio settings used on each monitor are summarized in the Table below.

Table: Settings employed for acoustic monitors.

Setting	
Start Time	20:00 est
End Time	01:00 est
Gain Level	12 dB
Sample Rate	256 kHz
Minimum Duration	1.5 ms
Maximum Duration	none
Minimum Trigger Frequency	16 kHz
Trigger Level	12 dB

Based on consultation with Toby Thorne (Bat Biologist), and studies presented by Tyburec and Chengler (2014), which compared the accuracy and reliability of the leading call analysis software programs, SonoBat 4 software was used to process the data compiled from the SM4 monitors. Version 4.2.0 of the software was installed with the Northeast United States regional suite, which includes call repertoires for all species of bats present within Ontario.

Data files from each monitor were processed through batch analysis and classified to species level. Using the batch data, SonoBat will calculate an estimated likelihood of presence for each species known based on the number of classified species and their known overlap and ambiguity of classification. The likelihood estimate

provides a probabilistic estimate and does not convey certainty. The SonoBat Classification Notes document included in this Appendix provides additional information and interpretation of bat acoustic data (SonoBat, 2017).

Manual vetting of files was completed in addition to using the auto-ID feature due to the limitations of the software that results from the inherent variability of bat calls and the overlap that can occur in frequency characteristics between species. A species with similar call characteristics can occasionally (or often depending on the overlap) produce calls with data on the fringes of its parameter space that intrudes into the parameter space of another species, or even falls at the centroid of the other species' parameter space (SonoBat, 2017).

The summary table produced by SonoBat states the caveat that statistical probability of presence requires a sufficient sample size for reliability. For most species, this requires more than ten accepted decisions. As a rule of thumb, any species decision summary count numbering less than ten should be considered to require manual vetting to establish presence. For each batch of files, species with a probability of > 0.80 and with more than ten accepted decisions were considered present on the subject property. Where fewer than ten species decisions were found, call structure and timestamps of individual files were analyzed to determine if there was overlap with other species which had a higher probability of presence on the site

The MNRF approved protocols for the passive monitoring of bats within treed habitats are summarized below.

Survey Protocol for Species at Risk Bats within Treed Habitats

Phase I: Bat Habitat Suitability Assessment

Little Brown Myotis, Northern Myotis and Tri-colored Bat establish maternity roosts in treed areas consisting of deciduous, coniferous or mixed tree species. The study area should be classified using the Ecological Land Classification (ELC) system. Any wooded ecosite containing deciduous, mixed, or coniferous tree species with a diameter at breast height (DBH) $>10\text{cm}$ is considered suitable habitat.

If suitable habitat is to be impacted by a proposed activity, project proponents should proceed to Phase II.

Phase II: Identification of Suitable Maternity Roost Trees

The timing of field visits is important in order for an observer to be able to clearly identify tree attributes that are suitable for the establishment of maternity roosts. Field visits during leaf-on season should be conducted so foliage characteristics can be observed, while leaf-off surveys should be conducted to identify trees with cracks or hollows.

i) Tri-colored Bat

Within each ecosite identified as suitable maternity roost habitat in Phase I, the following trees should be documented on the field data sheet:

- any oak tree $\geq 10\text{cm}$ dbh
- any maple tree $\geq 10\text{cm}$ dbh **IF** the tree includes dead/dying leaf clusters
- any maple tree $\geq 25\text{cm}$ dbh

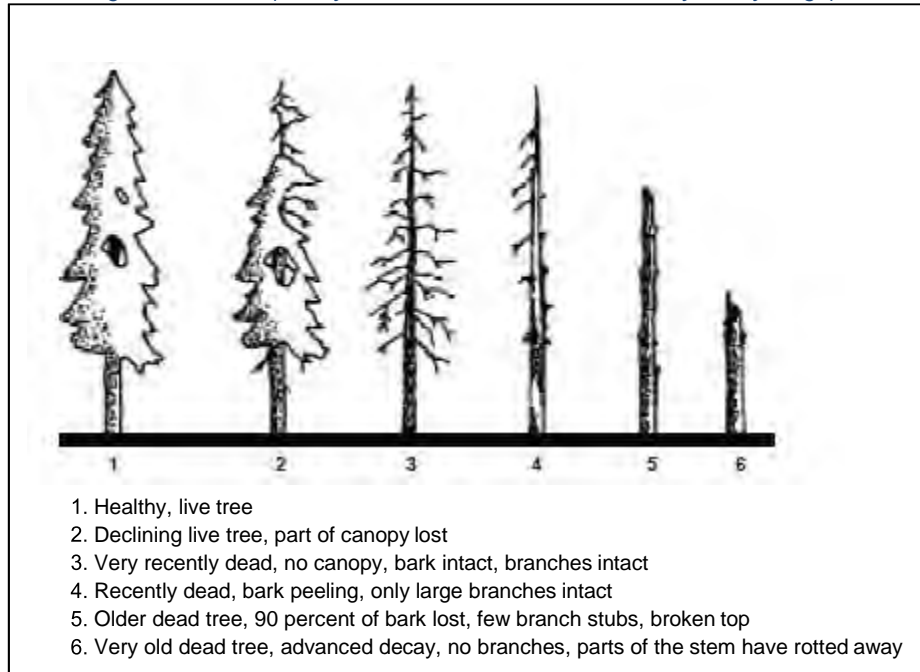
ii) Little Brown Myotis and Northern Myotis

A “snag” is any standing live or dead tree $>10\text{cm}$ dbh with cracks, crevices, hollows, cavities, and/or

loose or naturally exfoliating bark. Within each ecosite identified as suitable maternity roost habitat in Phase I, all “snags” should be identified and relevant information recorded on the field data sheet provided

During the field visit, the Decay Class should be noted for each snag (see Figure 1). Snags in an early stage of decay (which also includes healthy, live trees) may be preferred by Little Brown Myotis and Northern Myotis if suitable attributes for roost space are present. However, since SAR bats will also roost in snags outside of Class 1-3, any snag >10cm dbh with suitable roost features should be documented.

Figure 1: Snag classification (Decay Class 1-3 is considered an early decay stage)



Phase III: Acoustic Surveys

Within each ELC ecosite determined to be suitable maternity roost habitat in Phase I, acoustic surveys are recommended to confirm presence/absence of Little Brown Myotis, Northern Myotis and Tri-colored Bat. As described below, acoustic detectors should be placed in the best possible locations in order to maximize the probability of detecting all three SAR bats species. The data collected in Phase II should be used to select optimal locations for monitoring.

To ensure full coverage of each ecosite, four acoustic monitors per hectare are required. Monitors should be set up 10m from the best potential maternity roosts. The best suitable maternity roosts for Tri-colored bat are live oaks with dead/dying leaf clusters, or dead oaks with retained dead leaf clusters. If oaks are absent, then maples with dead/dying leaf clusters are the best suitable maternity roosts. For Little Brown Myotis and Northern Myotis, the best roosts are the tallest snags, snags with cavities or crevices, and the snags with the largest DBH.

Prior to undertaking acoustic surveys, it is recommended that the proponent discuss the proposed location of acoustic monitoring stations with the MNRF. The best potential

Acoustic surveys should take place on evenings between June 1st and June 30th, commencing after dusk and continuing for 5 hours. Surveys should occur on warm/mild nights (i.e., ambient temperature >10°C) with low wind and no precipitation. At least 10 visits on nights that align with the above conditions where no SAR bat activity is detected are required to confirm absence.

Full spectrum acoustic monitors should be used, and the microphone should be situated away from nearby obstacles to allow for maximum range of detection and angled slightly away from prevailing wind to minimize wind noise. Information on the equipment used should be recorded, including information on all adjustable settings (e.g., gain level), the position of the microphones, and dates and times for each station where recording was conducted.

Analytical software should be used to interpret bat calls and process results. Data should be analyzed to the species level (as opposed to the genus level) in order to confirm presence/absence of SAR bats.

Phase IV: Snag Density Survey

The snag density survey involves a qualitative assessment of the ecosite to determine the density of standing snags present. There is no minimum number of snags for the site to be considered potential roosting habitat, however, a site with 10 or more snags can be considered high quality roosting habitat.

Phase V: Complete an Information Gathering Form

If any species at risk are identified within the ecosite, an Information Gathering Form should be completed and submitted to the OMNRF.

Appendix D

Data Summaries

ELC Community Description & Classification

Site: 0 Cement Road Polygon: 1
 Surveyors: A. Mcdonald & S. Cowherd Date: 22-Jul-21
 UTME: 640643 UTMN: 4749137

POLYGON DESCRIPTION

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

STAND DESCRIPTION

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1 CANOPY	2	2	FRAX_SP>QUEMARC>JUGNIGR>
2 SUB-CANOPY	3	2	RHACATH>FRAX_SP>ULMU_SP>CRAT_SP
3 UNDERSTORY	4,5	4	CORAMOM>>ROSA_SP>VIBOPUL>LONI_SP
4 GRD. LAYER	6,7	3	GRASS_SP>SOLI_SP>IMPCAPE>JUNEFFU

HT CODES: 1 = >25m; 2 = 10 <HT<25m; 3 = 2<HT<10m; 4 = 1<HT<2m; 5 = 0.5<HT<1m; 6 = 0.2<HT<0.5m; 7 = <0.2m
 CVR CODES: 1 = 0%<CVR<10%; 2 = 10%<CVR<25%; 3 = 25%<CVR<60% 4 = CVR>60%

STAND COMPOSITION:	CRAT_SP ₁₀₀	BA:	2
COMMUNITY AGE:	<input type="checkbox"/> PIONEER	<input type="checkbox"/> YOUNG	<input checked="" type="checkbox"/> MID-AGE
	<input type="checkbox"/> MATURE	<input type="checkbox"/> OLD GROWTH	

SOIL ANALYSIS

	SiC	DEPTH TO MOTTLES / GLEY	MOTTLES	GLEY
TEXTURE:			30 cm	>75 cm
MOISTURE:	6	DEPTH OF ORGANICS	1	(cm)
WATER TABLE:		DEPTH TO BEDROCK	> 75	(cm)

COMMUNITY / CLASSIFICATION

COMMUNITY CLASS	Swamp	CODE:	SW
COMMUNITY SERIES	Thicket Swamp	CODE:	SWT
ECOSITE	Dogwood Mineral Thicket Swamp	CODE:	SWTM2
VEGETATION TYPE	Silky Dogwood Thicket Swamp	CODE:	SWTM2-2
<input type="checkbox"/> INCLUSION		CODE:	
<input type="checkbox"/> COMPLEX		CODE:	

ELC Community Description & Classification

Site: 0 Cement Road Polygon: 2
 Surveyors: A. Mcdonald & S. Cowherd Date: 22-Jul-21
 UTME: 640702 UTMN: 4748655

POLYGON DESCRIPTION

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

STAND DESCRIPTION

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1 CANOPY	2	1	FRAX_SP
2 SUB-CANOPY	3	4	RHACATH>>FRAX_SP>SALDISC
3 UNDERSTORY	4,5	3	RHACATH>ROSA_SP>RIBE_SP>VITRIPA
4 GRD. LAYER	6,7	3	GRASS_SP>IMPCAPE>PARQUIN=GALI_SP

HT CODES: 1 = >25m; 2 = 10 <HT<25m; 3 = 2<HT<10m; 4 = 1<HT<2m; 5 = 0.5<HT<1m; 6 = 0.2<HT<0.5m; 7 = <0.2m
 CVR CODES: 1 = 0%<CVR<10%; 2 = 10%<CVR<25%; 3 = 25%<CVR<60% 4 = CVR>60%

STAND COMPOSITION:	N/a	BA:	0
COMMUNITY AGE:	<input type="checkbox"/> PIONEER	<input type="checkbox"/> YOUNG	<input checked="" type="checkbox"/> MID-AGE
	<input type="checkbox"/> MATURE	<input type="checkbox"/> OLD GROWTH	

SOIL ANALYSIS

	SiC	DEPTH TO MOTTLES / GLEY	MOTTLES	GLEY
TEXTURE:			35 cm	>50 cm
MOISTURE:	5	DEPTH OF ORGANICS	0	(cm)
		DEPTH TO BEDROCK	>50	(cm)

COMMUNITY / CLASSIFICATION

COMMUNITY CLASS	Thicket	CODE:	TH
COMMUNITY SERIES	Deciduous Thicket	CODE:	THD
ECOSITE	Mineral Deciduous Shrub Thicket	CODE:	THDM2
VEGETATION TYPE	Buckthorn Deciduous Shrub Thicket	CODE:	THDM2-6
<input type="checkbox"/> INCLUSION		CODE:	
<input type="checkbox"/> COMPLEX		CODE:	

ELC Community Description & Classification

Site: 0 Cement Road Polygon: 3
 Surveyors: A. Mcdonald & S. Cowherd Date: 22-Jul-21
 UTME: 640687 UTMN: 4748495

POLYGON DESCRIPTION

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

STAND DESCRIPTION

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1 CANOPY	2	2	FRAX_SP
2 SUB-CANOPY	3	1	SALIX_SP
3 UNDERSTORY	4,5	4	SPIALBA>>TYPLATI=CORAMOM>VIBDENT
4 GRD. LAYER	6,7	2	CAREX_SP>MENT_SP>ONOSENS=LYCO_SP

HT CODES: 1 = >25m; 2 = 10 <HT<25m; 3 = 2<HT<10m; 4 = 1<HT<2m; 5 = 0.5<HT<1m; 6 = 0.2<HT<0.5m; 7 = <0.2m
 CVR CODES: 1 = 0%<CVR<10%; 2 = 10%<CVR<25%; 3 = 25%<CVR<60% 4 = CVR>60%

STAND COMPOSITION:	N/a	BA:	0
COMMUNITY AGE:	<input type="checkbox"/> PIONEER	<input type="checkbox"/> YOUNG	<input checked="" type="checkbox"/> MID-AGE
	<input type="checkbox"/> MATURE	<input type="checkbox"/> OLD GROWTH	

SOIL ANALYSIS

	CL	DEPTH TO MOTTLES / GLEY	MOTTLES	GLEYS
TEXTURE:	CL	DEPTH TO MOTTLES / GLEY	35 cm	35 cm
MOISTURE:	5	DEPTH OF ORGANICS	2	(cm)
WATER TABLE:		DEPTH TO BEDROCK	> 35	(cm)

COMMUNITY / CLASSIFICATION

COMMUNITY CLASS	Swamp	CODE:	SW
COMMUNITY SERIES	Thicket Swamp	CODE:	SWT
ECOSITE	Mineral Deciduous Thicket Swamp	CODE:	SWTM5
VEGETATION TYPE	Meadowsweet Thicket Swamp	CODE:	SWTM5-7
<input type="checkbox"/> INCLUSION		CODE:	
<input type="checkbox"/> COMPLEX		CODE:	

ELC Community Description & Classification

Site: 0 Cement Road Polygon: 4
 Surveyors: A. Mcdonald & S. Cowherd Date: 22-Jul-21
 UTME: 640687 UTMN: 4748495

POLYGON DESCRIPTION

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

STAND DESCRIPTION

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1 CANOPY	3,4	4	TYPLATI>TYPANGU>PHRAUST>>SALDISC
2 SUB-CANOPY	5	2	TYPLATI>TYPANGU>>VITRIPA
3 UNDERSTORY	6	2	SCHTABE>PERPUNC>SAGLATI>CICBULB
4 GRD. LAYER	7	3	LEMN_SP>>MYOLAXA>NYMP_SP>ALIS_SP

HT CODES: 1 = >25m; 2 = 10 <HT<25m; 3 = 2<HT<10m; 4 = 1<HT<2m; 5 = 0.5<HT<1m; 6 = 0.2<HT<0.5m; 7 = <0.2m
 CVR CODES: 1 = 0%<CVR<10%; 2 = 10%<CVR<25%; 3 = 25%<CVR<60% 4 = CVR>60%

STAND COMPOSITION:	N/a	BA:	0
COMMUNITY AGE:	<input type="checkbox"/> PIONEER	<input type="checkbox"/> YOUNG	<input checked="" type="checkbox"/> MID-AGE
	<input type="checkbox"/> MATURE	<input type="checkbox"/> OLD GROWTH	

SOIL ANALYSIS

	SiC	DEPTH TO MOTTLES / GLEY	MOTTLES	GLEY
TEXTURE:			>40 cm	> 40 cm
MOISTURE:	6	DEPTH OF ORGANICS	5	(cm)
WATER TABLE:	0 cm	DEPTH TO BEDROCK	> 40	(cm)

COMMUNITY / CLASSIFICATION

COMMUNITY CLASS	Marsh	CODE:	MA
COMMUNITY SERIES	Shallow Marsh	CODE:	MAS
ECOSITE	Graminoid Mineral Shallow Marsh	CODE:	MASM2
VEGETATION TYPE	Cattail Mineral Shallow Marsh	CODE:	MASM2-1
<input type="checkbox"/> INCLUSION		CODE:	
<input type="checkbox"/> COMPLEX		CODE:	

SCIENTIFIC NAME	COMMON NAME	S-RANK	COSEWIC STATUS	SARA STATUS	SARO STATUS	NIAGARA	COEFF CONSER	COEFF WETNESS	Polygon 1	Polygon 2	Polygon 3	Polygon 4
TREES												
Crataegus sp	Hawthorn species								•			
Fraxinus sp.	Ash species								•	•	•	
Juglans nigra	Black Walnut	S4				C	5	3	•			
Malus sp.	Apple species								•			
Prunus avium	Sweet Cherry	SNA				IC	*	5	•			
Quercus macrocarpa	Bur Oak	S5				U	5	3	•			
Ulmus sp.	Elm species								•			
SHRUBS												
Cornus amomum	Silky Dogwood	S5				C	2	-3	•	•	•	•
Cornus racemosa	Gray Dogwood	S5				C	2	0	•			
Cornus sericea	Red Osier Dogwood	S5				U	2	-3	•			
Ligustrum vulgare	European Privet	SNA				IC	*	3	•			
Lindera benzoin	Spicebush	S4				C	6	-3	•			
Lonicera sp	Honeysuckle species								•	•		
Rhamnus cathartica	Common Buckthorn	SNA				IC	*	0	•	•		
Ribes americanum	Wild Black Currant	S5				C	6	-3	•			
Ribes sp.	Currant Species									•		
Rosa sp.	Rose species								•	•		
Salix discolor	Pussy Willow	S5				C	1	-3		•	•	•
Salix sp	Willow species									•	•	
Spiraea alba	Meadowsweet	S5				C	3	-3	•	•	•	•
Viburnum lentago	Nannyberry	S5				C	4	0	•	•		
Viburnum opulus	European Highbush Cranberry	S5				C	5	-3	•			
Viburnum recognitum	Smooth Arrowwood	S4				C	7	0	•	•	•	
HERBS												
Acorus americanus	Sweetflag	S4				R	8	-5				•
Agrimonia gryposepala	Agrimony	S5				C	2	3	•			
Ajuga sp.	Bugleweed species								•	•	•	•
Alisma sp.	Water Plantain species											•
Asclepias syriaca	Common Milkweed	S5				C	0	5	•			
Butomus umbellatus	Flowering-rush	SNA				IU	*	-5				•
Carex bebbii	Bebb's Sedge	S5				C	4	-5	•			
Carex lupulina	Hop Sedge	S5				C	6	-5	•			
Carex sp	Carex species									•	•	•
Carex vulpinoidea	Fox Sedge	S5				C	3	-5	•			
Cicuta bulbifera	Bulb-bearing Water Hemlock	S5				C	5	-5				•
Equisetum sp	Horsetail species									•		
Eutrochium maculatum	Spotted Joe-Pye-weed	S5				C	4	-5		•		
Fragaria sp.	Strawberry species								•			
Galium palustre	Marsh Bedstraw	S5				C	5	-5	•			
Galium sp.	Bedstraw species									•		
Geum laciniatum	Rough Avens	S4				C	2	-3	•			
Glyceria striata	Fowl Mannagrass	S5				C	3	-5	•			
Hypericum sp.	St. John's-wort species								•	•		
Impatiens capensis	Spotted Jewelweed	S5				C	4	-3	•	•		
Ipomoea sp.	Morning Glory species											•
Iris versicolor	Harlequin Blue Flag	S5				C	5	5	•			
Juncus effusus	Soft Rush	S5				C	4	-5	•			
Lemnoidea sp.	Duckweed species											•
Lythrum salicaria	Purple Loosestrife	SNA				IC	*	-5	•		•	•
Mentha sp.	Mint species								•	•	•	
Myosotis laxa	Small Forget-me-not	S5				C	6	-5				•
Myriophyllum sp.	Watermilfoil species											•
Nymphaeaceae sp.	Water Lily species											•
Onoclea sensibilis	Sensitive Fern	S5				C	4	-3		•	•	
Parthenocissus quinquefolia	Virginia Creeper	S5				C	6	3	•	•		
Persicaria punctata	Smartweed	S5				C	5	-5				•
Persicaria virginiana	Jumpseed	S4				C	6	0	•			
Phragmites australis ssp. australis	European Reed	SNA				IC	*	-3	•			•
Poaceae sp.	Grass species								•	•		
Prunella vulgaris	Self-heal	S5				C	0	0	•			
Ranunculus sp.	Buttercup species								•			
Sagittaria latifolia	Broad-leaved Arrowhead	S5				C	4	-5				•
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	S5				C	5	-5				•
Scirpus cyperinus	Woolgrass	S5				C	4	-5	•			
Solidago rugosa	Rough-stemmed Goldenrod	S5				C	4	0	•			
Solidago sp.	Goldenrod species								•			
Sparganium eurycarpum	Broad-fruited Bur-reed	S5				C	3	-5				•
Symphotrichum lanceolatum	Panicled Aster	S5				C	3	-3	•			
Toxicodendron radicans	Poison Ivy	S5				C	2	0	•			
Typha angustifolia	Narrow-leaved Cattail	SNA				IC		-5				•
Typha latifolia	Broad-leaved Cattail	S5				C	1	-5		•	•	•
Veronica anagallis-aquatica	Water Speedwell	SNA				IR	*	-5				•
Viola sp.	Violet species								•			
Vitis riparia	Riverbank Grape	S5				C	0	0	•	•		•
TOTAL									49	24	12	24

EESN BIRD INVENTORY 2021

Westwoods Ph2 EIS

Survey Dates Jun 6, 18, July 4

Observers N Litwin, A Brunning

Species 30 + 4 overhead

SARs 2

OBBA: Ontario Breeding Bird Atlas (2001-2005, 2021-2025) 10km X 10km Squares

OBBA X = 3rd Atlas 2021

COSEWIC July 2021: LOW, MID, HIGH = Candidate Priority Status

SARA status current to July 2021

SARO status current to July 2021

OPIF (Ontario Partners in Flight) July 2014

OPIF BCR 13 = Bird Conservation Region 13

OPIF Population Objective M = Maintain, I = Increase, R = Recovery, D = Decrease

Area Sensitivity: (V) = uses edge if forest interior also nearby

List in accordance with the American Ornithologists Union (AOU) 7th edition, 61st supplement

Reference Ontario Field Ornithologists Checklist of the Birds of Ontario

<http://www.ofo.ca/site/page/view/checklist.checklist#top>

COMMON NAME	SCIENTIFIC NAME	OBSERVED	OBBA	COSEWIC	SARA	SARO	ANK (NH)	N RANK	G RANK	OPIF BCR13	HABITAT NOTES	AREA SENSITIVITY
17PH44												
Anatidae												
Mallard	Anas platyrhynchos	in canal, overhead	CONF				S5	N5B,N5N	G5	M	water	
Columbidae												
Mourning Dove	Zenaida macroura	X	CONF				S5	N5	G5		urban tolerant	
Charadriidae												
Killdeer	Charadrius vociferus	2, 1 young	CONF				S5B,S5N	N5B	G5	I	open fields	
Ardeidae												
Great Blue Heron	Ardea herodias	in a tree, overhead	POSS				S4	N5B	G5	M	water	
Cathartidae												
Turkey Vulture	Cathartes aura	overhead	PROB				S5B	N5B	G5		woodlots	
Pandionidae												

Osprey	Pandion haliaetus	overhead	X				S5B	N5B	G5		water	
Picidae												
Downy Woodpecker	Picoides pubescens	X	CONF				S5	N5	G5		urban-tolerant; cavity nester	
Tyrannidae												
Great Crested Flycatcher	Myiarchus crinitus	X	CONF				S4B	N5B	G5		woodland; cavity nester	(v)
Eastern Wood-Pewee	Contopus virens	X	CONF	SC	SC		S4B	N5B	G5	I	aerial insectivore; intermediate, closed-canopy woodlands; does not nest near development	(v)
Willow Flycatcher	Empidonax traillii	X	PROB				S5B	N5B	G5		riparian and wetland shrub/successional	v
Vireonidae												
Warbling Vireo	Vireo gilvus	X	CONF				S5B	N5B	G5		urban tolerant	
Corvidae												
Blue Jay	Cyanocitta cristata	X	CONF				S5	N5	G5		urban tolerant	
American Crow	Corvus brachyrhynchos	X	CONF				S5B	N5B,N5N	G5		urban tolerant	
Hirundinidae												
Tree Swallow	Tachycineta bicolor	X	CONF				S4B	N5B	G5		aerial insectivore; colonial cavity nester near water; urban tolerant	
Purple Martin	Progne subis	X	CONF	LOW			S4B	N5B	G5	I	aerial insectivore; colonial nester	
Barn Swallow	Hirundo rustica	X	CONF	THR	THR	THR	S4B	N5B	G5	R	aerial insectivore; colonial nester; urban tolerant	
Paridae												
Black-capped Chickadee	Poecile atricapillus	X	CONF				S5	N5	G5		cavity nester	
Troglodytidae												
House Wren	Troglodytes aedon	X	CONF				S5B	N5B	G5		urban tolerant	
Marsh Wren	Cistothorus palustris	X	CONF				S4B	N5B	G5		marshes	v
Turdidae												
American Robin	Turdus migratorius	X	CONF				S5B	N5B,N5N	G5		urban tolerant	
Mimidae												
Gray Catbird	Dumetella carolinensis	X	CONF				S4B	N5B	G5		urban-tolerant; fields, shrubby thickets	
Sturnidae												
European Starling	Sturnus vulgaris	X	CONF				SNA	NNA	G5		urban tolerant	
Bombycillidae												
Cedar Waxwing	Bombycilla cedrorum	X	CONF				S5B	N5	G5		shrubby thickets	

Fringillidae							
American Goldfinch	<i>Carduelis tristis</i>	X	CONF	S5B	N5B,N5N	G5	urban tolerant
Emberizidae							
Song Sparrow	<i>Melospiza melodia</i>	X	CONF	S5B	N5B,N5N	G5	shrubby thickets
Swamp Sparrow	<i>Melospiza georgiana</i>	X	CONF	S5B	N5B	G5	marshes
Icteridae							
Baltimore Oriole	<i>Icterus galbula</i>	X	CONF	S4B	N5B	G5	M urban-tolerant; deciduous trees and park-like areas; susceptible to pesticides, vehicular collisions
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	X	CONF	S4	N5B,N5N	G5	marshes
Brown-headed Cowbird	<i>Molothrus ater</i>	X	CONF	S4B	N5B	G5	urban tolerant
Common Grackle	<i>Quiscalus quiscula</i>	X	CONF	S5B	N5B	G5	urban tolerant
Parulidae							
Common Yellowthroat	<i>Geothlypis trichas</i>	X	CONF	S5B	N5B	G5	damp areas
Yellow Warbler	<i>Setophaga petechia</i>	X	CONF	S5B	N5B	G5	shrubby thickets
Cardinalidae							
Northern Cardinal	<i>Cardinalis cardinalis</i>	X	CONF	S5	N5	G5	urban tolerant

AMPHIBIAN CALL SURVEY 1Weather: 100% cloud & drizzle Surveyor(s): A.M / S.C Date: Mar 25, 2021

Station #	UTM Coordinates		Temperature (° C)	Beaufort #	Start Time	End Time
	Easting	Northing				
1	640851	4748980	13	1	9:06	9:10
2	640455	4748555	12	1	9:17	8:21

Species	Station 1		Station 2	
	Call Code	#	Call Code	#
Western Chorus Frog	3	FC	3	FC

AMPHIBIAN CALL SURVEY 2Weather: 100% cloud & dry Surveyor(s): A.M / S.C Date: May 4, 2021

Station #	UTM Coordinates		Temperature (° C)	Beaufort #	Start Time	End Time
	Easting	Northing				
1	640851	4748980	12	1	9:31	9:35
2	640455	4748555	11	1	9:22	9:25

Species	Station 1		Station 2	
	Call Code	#	Call Code	#
American Toad	1	3	3	FC
Chorus Frog	3	FC	2	6-7
Spring Peeper	2	5-10	1	1

AMPHIBIAN CALL SURVEY 3Weather: 0% cloud & dry Surveyor(s): A.M / S.C Date: June 4, 2021

Station #	UTM Coordinates		Temperature (° C)	Beaufort #	Start Time	End Time
	Easting	Northing				
1	640851	4748980	17	1	10:12	10:15
2	640455	4748555	16	1	10:01	10:07

Species	Station 1		Station 2	
	Call Code	#	Call Code	#
American Toad	1	3	1	2
Gray Treefrog	1	2	-	-
Spring Peeper	1	1	-	-
Western Chorus Frog	1	2	-	-

Summary of incidental faunal observations

Latin Name	Common Name	Status	Observed in survey work	Notes
AMPHIBIANS				
<i>Anaxyrus americanus</i>	American toad	S5	X	Southern wetland
<i>Pseudacris crucifer</i>	Spring peeper	S5	X	
<i>Pseudacris triseriata</i>	Chorus frog	S4	X	Northern wetland
<i>Lithobates clamitans</i>	Green Frog	S5		Southern wetland
<i>Lithobates pipiens</i>	Northern Leopard Frog	S5		Southern wetland; Calling in full chorus in wetland across Cement Road
<i>Lithobates sylvaticus</i>	Wood Frog	S5		Calling from wetland across Cement Road
REPTILES				
<i>Storeria dekayi</i>	Dekay's Brown Snake	S5	X	East bank of drainage channel adjacent to north wetland.
<i>Thamnophis sirtalis</i>	Garter Snake	S5	X	East bank of drainage channel adjacent to north wetland
BIRDS				
<i>Agelaius phoeniceus</i>	Red-winged blackbird	S5	X	
<i>Aix sponsa</i>	Wood Duck	S5B		
<i>Anas platyrhynchos</i>	Mallard	S5	X	
<i>Ardea herodias</i>	Great Blue Heron	S4	X	SE Wetland; Overhead
<i>Branta canadensis</i>	Canada Goose	S5		
<i>Buteo jamaicensis</i>	Red-tailed hawk	S5		
<i>Butorides virescens</i>	Green Heron	S4B		
<i>Cardinalis cardinalis</i>	Northern cardinal	S5	X	
<i>Cathartes aura</i>	Turkey Vulture	S5B	X	
<i>Charadrius vociferus</i>	Killdeer	S4B	X	
<i>Cistothorus palustris</i>	Marsh Wren	S4B	X	Southern marsh habitat and wetland across Cement Road
<i>Colaptes auratus</i>	Northern Flicker	S5		
<i>Cyanocitta cristata</i>	Blue Jay	S5	X	
<i>Dumetella carolinensis</i>	Gray Catbird	S5B	X	
<i>Hirundo rustica</i>	Barn Swallow	S4B	X	
<i>Larus sp.</i>	Gull species			
<i>Melanerpes carolinus</i>	Red-bellied woodpecker	S5		
<i>Melospiza melodia</i>	Song sparrow	S5	X	Calling from south east portion of agricultural field
<i>Molothrus ater</i>	Brown-headed Cowbird	S5	X	
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	S5B		Overhead
<i>Poecile atricapillus</i>	Black-capped Chickadee	S5	X	
<i>Quiscalus quiscula</i>	Common Grackle	S5	X	Northern wetland
<i>Turdus migratorius</i>	American Robin	S5	X	
<i>Tyrannus tyrannus</i>	Eastern Kingbird	S4B		
<i>Zenaida macroura</i>	Mourning Dove	S5	X	
MAMMALS				
<i>Odocoileus virginianus</i>	White-Tailed deer	S5		Scat and tracks
<i>Canis latrans</i>	Coyote	S5		Tracks
<i>Procyon lotor</i>	Raccoon	S5		Scat
<i>Mephitis mephitis</i>	Skunk	S5		Odor
<i>Ondatra zibethicus</i>	Muskrat	S5		old push up in southern cattail marsh
<i>Castor canadensis</i>	Beaver	S5		Eagle Marsh Drain
<i>Rattus sp.</i>	Rat sp.			observed
INSECTS				
<i>Agrylus planipennis</i>	Emerald Ash Borer	SNA		Observed; Ash tree damage
<i>Danaus plexippus</i>	Monarch	SC		3 breeding pairs south east side of channel in riparian

Summary of SWH survey results for Westwood Park Secondary Plan Area.

Significant Wildlife Habitat (SWH) Type	Rationale for Candidate	Field Studies Completed	SWH Confirmed
1.1 Seasonal Concentration Areas for Wildlife Species			
Waterfowl Stopover and Staging Areas (Aquatic)	Presence of wetland and marsh habitat within property boundaries	Area Searches in accordance with Bird and "Bird Habitats: Guidelines for windpower projects" (MNRF 2011)	No
Shorebird Migratory Stopover Area	Wetland habitat located off Lake Ontario Shoreline	Breeding Bird Surveys	No
Bat Maternity Colonies	Dead of dying trees in woodland habitat with potential standing snags	MNRF Survey Protocol for SAR Bats within Treed Habitats	No
Reptile Hibernaculum	Potential for slopes and burrows	Milk Snake Protocol – hand searches	Yes
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	Potential nesting trees within wetland habitat	Breeding Bird Surveys	No
Colonially-Nesting Bird Breeding Habitat (Ground)	Watercourse located in open field	Breeding Bird Surveys	No
Migratory Butterfly Stopover Areas	Suitable habitat within 5km from Lake Erie	Area searches - spring	No
Landbird Migratory Stopover Areas	Woodland exceeding 5ha within 5km of Lake Erie	Breeding Bird Surveys	No
Deer Winter Congregation Areas	Deer Winter Congregation area identified by MNRF	Winter mammal tracking survey – not scoped, lack of habitat	No
1.2 Rare Vegetation Communities or Specialized Habitat for Wildlife			
Other Rare Vegetation Communities	Variable ELC Ecosites present	ELC surveys	No
Waterfowl Nesting Area	NHIC record	Nest surveys	No
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Wetland community adjacent to riparian area and near Lake Erie	Area Searches	No
Turtle Nesting Areas	Marsh habitat present	Area searches	No
Amphibian Breeding Habitat (Woodland)	Wetland habitat adjacent to woodland	Marsh Monitoring Program – Anuran Call surveys	No
Amphibian Breeding Habitat (Wetlands)	Presence of wetland habitat	Marsh Monitoring Program – Anuran call surveys	Yes
1.3 Habitats of Species of Conservation Concern			
Marsh Breeding Bird Habitat	Marsh habitat available	Marsh Monitoring Program for Marsh Birds	No
Terrestrial Crayfish	Presence of marsh habitat	Search for chimneys or burrows from April – August	No
Special Concern and Rare Wildlife Species	MNRF known EOs provided (NHIC). See SAR screening below	Area inventories	No
1.4 Animal Movement Corridors			
Amphibian Movement Corridor	Candidate amphibian woodland and wetland breeding habitat identified	Area searches/ road mortality surveys	No

Appendix E

Site Photos



Figure 1: Looking north in the Polygon 1 (SWTM2-2)



Figure 2: In the Polygon 1 (SWTM2-2)



Figure 3: Soil sample in Polygon 1 (SWTM2-2)



Figure 4: looking southeast at the berm separating the north wetland from the drain



Figure 5: In Polygon 2 (THDM2-6)



Figure 6: Looking west in Polygon 3 (SWTM5-7)



Figure 7: West side of Polygon 4 (MASM2-1)



Figure 8: in Polygon 4



Figure 9: Maintained agricultural land looking south with the drain on the left side of the photo