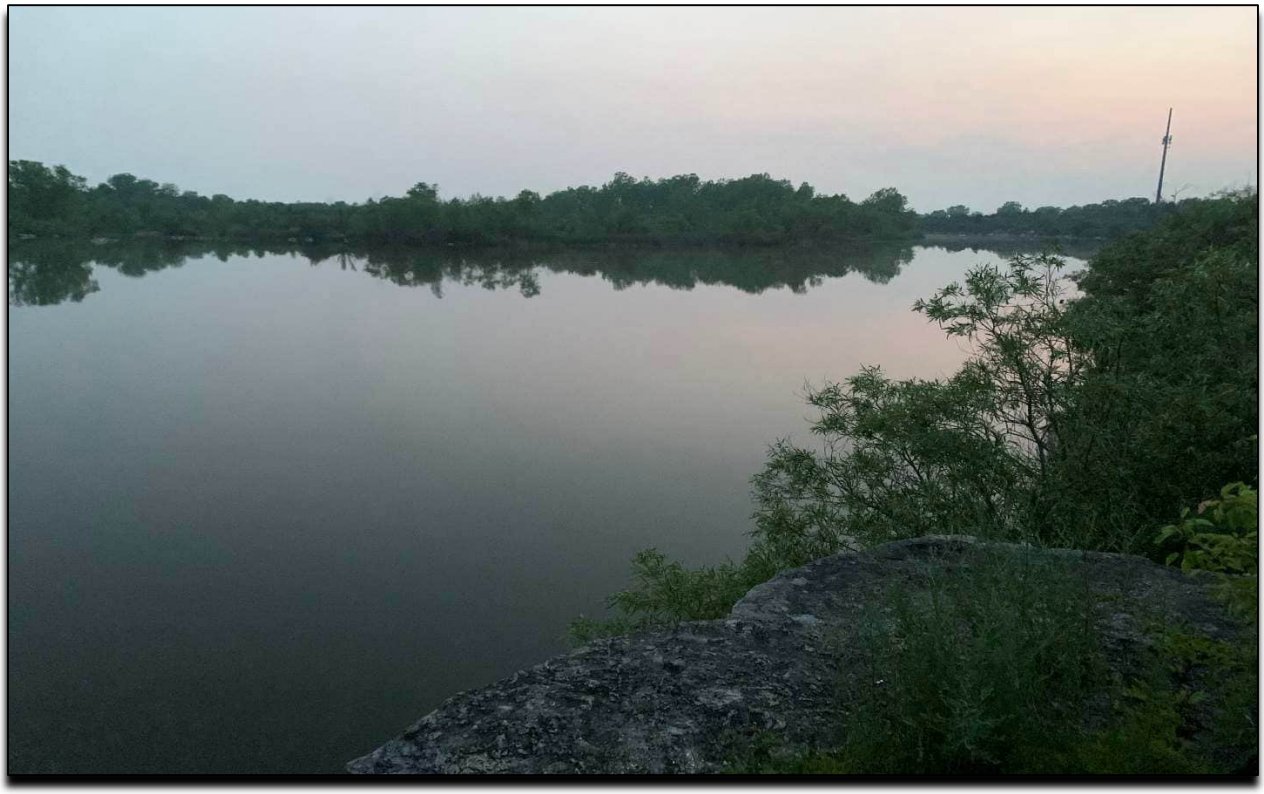

ENVIRONMENTAL IMPACT STATEMENT

Plan of Subdivision Application

Killaly Street West, City of Port Colborne

1 April 2024

TERRASTORY
environmental consulting inc.

ENVIRONMENTAL IMPACT STATEMENT

Plan of Subdivision Application

Killaly Street West, City of Port Colborne

Prepared for:

1000046816 Ontario Ltd.
303-1 Valleybrook Drive
Toronto, ON M3B 2S7

Prepared by:

Terrastory Environmental Consulting Inc.
171 Glen Road
Hamilton, ON L8S 3N2
905.745.5398

Tristan Knight, M.E.S., M.Sc., I.S.A., C.E.R.P.
Senior Ecologist | President

Project No.: 22013
1 April 2024

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1 INTRODUCTION

1.1 Study Background

Terrastory Environmental Consulting Inc. (hereinafter "Terrastory") was retained by 1000046816 Ontario Ltd. (hereinafter "the Applicant") to prepare this Environmental Impact Study (EIS) in relation to a subdivision application on Killaly Street West (hereinafter "Subject Property") in the City of Port Colborne (hereinafter "City"). The Subject Property represents an existing, vacant lot of record legally described as Part of Lots 31 and 32, Concession 1, in the former Geographic Township of Humberstone. The Subject Property is an approximately 57.4-hectare (ha) or 141.8-acre (ac) parcel bounded by Killaly Street West (north), low-density residential areas (east and west), and a railway corridor (south). The Subject Property was historically maintained as a limestone quarry which supported on-site industrial cement production ceasing around 1970 (Duncan 2020); back-flooded quarry ponds remain as relicts of these former extractive uses. The location of the Subject Property within its broader landscape setting is shown in **Figure 1**.

The eastern portion of the Subject Property falls within the Urban Area Boundary (i.e., "settlement area") of the City of Port Colborne per Schedule A (City-wide Land-Use) of the City's Official Plan (OP) and Schedule A (Regional Structure) of the 2014 Regional Official Plan (ROP). This portion of the Subject Property is more specifically designated "Urban Residential" per Schedule A of the City's OP and "Designated Greenfield Area" per Schedule A of the 2014 ROP. The western portion of the Subject Property (overlapping with the back-flooded quarry ponds) is situated outside of the urban boundary and is designated "Rural" under both the City's OP and 2014 ROP.

There are several natural heritage designations overlapping with the Subject Property. Schedule B (Natural Heritage) of the City's OP illustrates the northernmost quarry pond as a designated "Environmental Protection Area" (EPA) given overlap with a Provincially Significant Wetland (PSW) previously evaluated and mapped by the Province. South of the designated EPA is an "Environmental Conservation Area" (ECA) per Schedule B overlapping with a separate quarry pond. Two identified "Streams" are also indicated on Schedule B outletting to identified "fish habitat" in the quarry ponds. Schedule C (Core Natural Heritage) of the 2014 ROP also illustrates the quarry pond as a designated EPA, whereas Schedule A7 of the City's Zoning By-law (#6575/30/18) illustrates the quarry pond as Environmental Protection (EP). All aforementioned natural heritage designations and zones occur beyond (i.e., west of) the designated Urban Area Boundary (except where the quarry pond slightly overlaps with the settlement area).

On account of the aforementioned PSW and watercourses, development within portions of the Subject Property falls within the regulatory purview of the Niagara Peninsula Conservation Authority (NPCA) which administers O. Reg. 41/24 made pursuant to the *Conservation Authorities Act*. NPCA possesses regulatory authority where development (as defined per subsection 28[25] of the *Conservation Authorities Act*) is proposed within a regulated feature (e.g., wetland, watercourse, hazard) or area (e.g., floodplain, areas of interference, allowances).

The Applicant is seeking to submit a Plan of Subdivision application for the lands to establish a new residential community ("Mapleview"). A previous subdivision application was submitted around 2012 by a separate Applicant ("Rosemount Estates") which received draft plan approval at that time which has since lapsed. The current subdivision application must be supported by a City Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA). A pre-consultation meeting was

originally held on 9 September 2021 with a second pre-consultation meeting occurring on 27 April 2023. A Terms of Reference (ToR) which scopes the conduct and content of this EIS was prepared by Terrastory and confirmed via email by Regional Environmental Planning staff (A. Boudens) on 25 May 2022 and NPCA staff (N. Wensing) on 6 June 2022. The approved ToR is provided in **Appendix 1**.

1.2 Study Purpose

The purpose of this study is to present a biophysical characterization of the Study Area as a means to assess the potential for adverse effects on the natural environment and natural heritage features stemming from the proposed subdivision and related uses. The scope and approach of this study address the reporting requirements of the ToR (**Appendix 1**), Policy 4.1.2.2 of the City's OP, Regional EIS Guidelines (January 2018), and NPCA's Interim EIS Guideline (July 2022). It is understood that this report will form part of the OPA/ZBA/subdivision application package to be submitted for consideration by the City, Region, and NPCA.

1.3 Study Terminology

The following terminology is employed throughout this EIS to describe certain noteworthy areas and features shown spatially on **Figure 1**. All usage of the terms defined below are capitalized herein.

- **Subject Property:** The parcel of land owned by the Applicant to which OPA, ZBA, and Plan of Subdivision applications are being submitted;
- **Limit of Development:** Approximate area encompassed by all proposed new lots/blocks and associated site alteration activities (e.g., grading, servicing, stormwater management);
- **Adjacent Lands:** Areas within 120 m of the "limit of development" (as defined above), except where such areas extend across linear infrastructure (e.g., Killaly Street West, railway corridor) and existing built-up areas (e.g., residential subdivisions);
- **Study Area:** Areas collectively encompassed by the Limit of Development and Adjacent Lands;
- **Northern Quarry Pond:** Northernmost area historically extracted for aggregate material (limestone bedrock) which has since become back-flooded;
- **Central Quarry Pond:** Area situated to the south of the Northern Quarry Pond which was also historically extracted for aggregate material (limestone bedrock) and has since become back-flooded;
- **Southern Quarry Pond:** Southernmost area historically extracted for aggregate material (limestone bedrock) which has since become back-flooded and is located south of the railway on Adjacent Lands;
- **Limestone Stockpile:** Prominent hill comprised of crushed limestone to the east of the Central Quarry Pond; known locally as the "limestone hill".
- **Deciduous Forest:** Wooded area abutting the eastern side of the Northern Quarry Pond containing a pre-settlement oak- and hickory-dominated forest type;
- **Deciduous Woodland:** Wooded area in the eastern portion of the Subject Property which emerged following cessation of industrial activities within the Subject Property (i.e., post-1970s) and is represented by a walnut-dominated, second-growth woodland type;

- **Intermittent Drainage Feature:** Historically-constructed watercourse ("ditch") for the purposes of managing stormwater runoff, flowing through a straightened channel over limestone bedrock and ultimately outletting to the Northern Quarry Pond; and
- **Drainage Ditch:** Straightened drainage feature flowing westward along the southern boundary of the Subject Property through a City drainage easement, ultimately outletting to the Central Quarry Pond.

2 APPROACH AND METHODS

This study is composed of five (5) discrete components which are bulleted below and further described in the following sections.

1. **Acquire background biophysical information and mapping** available for the local landscape surrounding the Subject Property (see **Section 2.1**).
2. **Conduct site assessments and ecological surveys** as part of a fieldwork program to verify the accuracy of the acquired background biophysical information and collect additional biophysical information as necessary (see **Section 2.2**).
3. **Assess the significance** of the biophysical information collected and natural features identified within the context of applicable natural heritage and environmental policies (see **Section 2.3**).
4. **Predict the effects** of the application on the identified significant natural features and natural environment, particularly the net effects once mitigation measures and technical recommendations are implemented (see **Section 2.4**).
5. **Determine whether the proposed application addresses applicable natural heritage and environmental policies** at municipal, provincial, and federal levels (see **Section 2.5**).

2.1 Background Biophysical Information Assessment

This study is supported by background biophysical information and mapping acquired and reviewed from a variety of sources which are listed below in **Table 1**.

Table 1. Background Biophysical Information Acquired and Reviewed.

Type of Information Acquired	Description
Ortho-rectified Aerial Photographs	• 1954, 1965, 1972, 2006, 2009, 2015 to 2018, 2020, 2023.
Natural Feature Mapping	• City of Port Colborne Official Plan Schedules A (City-wide Land Use), B (Natural Heritage), B1 (Environmental Protection Areas), B2 (Environmental Conservation Areas), and B3 (Vulnerable Aquifer Areas). • Regional Municipality of Niagara Official Plan Schedule C (Core Natural Heritage). • Land Information Ontario (LIO) accessed via the "Make a Map: Natural Heritage Areas" web-based platform (last accessed 16 February 2024). • Niagara Peninsula Conservation Authority (NPCA) regulation mapping (last accessed 16 February 2024).

Type of Information Acquired	Description
Physiographic Resource Mapping and Datasets	• Topographic Survey of the Subject Property. • Provincial Digital Terrain Model (LiDAR-derived). • Ontario Well Records (publicly-available). • Soil Survey of Welland County (Ontario Agricultural College 1935). • The Soils of the Regional Municipality of Niagara (Kingston and Presant 1989). • Agricultural Information Atlas (last accessed 28 February 2023). • Bedrock Topography and Overburden Thickness Mapping (Gao et al. 2006). • Paleozoic Geology of Southern Ontario (Armstrong and Dodge 2007). • Surficial Geology of Southern Ontario (Ontario Geological Survey 2010). • Physiography of Southern Ontario (Chapman and Putnam 1984).
Ecological Resource Mapping and Datasets	• Natural Heritage Information Centre (NHIC) database accessed via the "Make a Map: Natural Heritage Areas" web-based platform (squares: 17PH4148, 17PH4149, 17PH4150, 17PH4248, 17PH4249, 17PH4250, 17PH4048, 17PH4049, 17PH4050; last accessed 16 February 2024). • Critical Habitat for SAR National Dataset (last accessed 16 February 2024). • iNaturalist "(NHIC) Rare species of Ontario" project (last accessed 16 February 2024). • Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001–2005 (Cadman et al. 2007) (square: 17PH45). • eBird (last accessed 28 February 2023). • iNaturalist "Herps of Ontario" project and Ontario Reptile & Amphibian Atlas (last accessed 16 February 2024). • Ontario Butterfly Atlas database (square: 17PH45; last accessed 16 February 2024). • iNaturalist "Ontario Odonata" project (last accessed 16 February 2024). • Bumble Bee species distribution maps from iNaturalist and Bumble Bee Watch. • Aquatic Species at Risk Maps produced by Fisheries and Oceans Canada (last accessed 16 February 2024). • Atlas of the Mammals of Ontario (Dobbyn 2005). • Flowing Waters Information System (FWIS) Database (last accessed 16 February 2024). • MNRF Fish ON-line database maintained by MNRF (last accessed 16 February 2024).
Natural Heritage Objectives and Strategies	• Niagara Natural Areas Inventory (NAI) Volumes 1 and 2 (NPCA 2010a, 2010b). • Environmental Impact Study for the Rosemount Estates Residential Development by Ecotec Environmental Consultants Inc. in 2012. • Wainfleet Eagle Marsh Drain Wetland Complex, Wetland Evaluation Record (22 June 2009). • Onondaga Formation Earth Science ANSI Environmental Data Card (May 1979). • Great Lakes Conservation Blueprint for Terrestrial Biodiversity, Volume 2 (Henson and Brodribb 2005). • Great Lakes Conservation Blueprint for Aquatic Biodiversity, Volume 2 (Phair et al. 2005).

2.2 Fieldwork Program and Surveys

The acquired background information per **Table 1** helped direct a fieldwork program carried out by Terrastory staff in 2022/2023. **Table 2** below indicates the primary assessments/surveys performed during each site visit, weather conditions, and time on-site.

Table 2. Site Assessments and Ecological Surveys performed on the Subject Property.

Date of Site Assessment	Assessments/Surveys Performed	Terrastory Staff	Weather Conditions	Time On-site
17 February 2022	Site reconnaissance.	T. Knight	Mild, overcast, rainy.	10:00 to 13:00
06 April 2022	Anuran calling survey #1.	T. Knight, J. Consiglio	Air Temperature 14°C; Beaufort Wind Scale 1-2; Cloud Cover 75-100% (light mist).	19:30 to 21:15
07 April 2022	Electrofishing survey (intermittent drainage feature).	T. Knight, D. Johnson	Sunny, cool.	10:30 to 12:00
12 April 2022	Snake visual encounter survey (spring emergence) #1.	T. Knight, J. Consiglio	Air Temperature 16°C; Beaufort Wind Scale 2; Cloud Cover 0%; No Precipitation (overall sunny and warm).	13:25 to 16:30
24 April 2022	Snake visual encounter survey (spring emergence) #2.	T. Knight	Air Temperature 20 to 23°C; Beaufort Wind Scale 1 to 2; Cloud Cover 0 to 25%; No Precipitation.	11:40 to 16:15
09 May 2022	Anuran calling survey #2.	T. Knight	Air Temperature 14°C; Beaufort Wind Scale 0; Cloud Cover 75-100%.	20:45 to 21:45
24 May 2022	Breeding bird survey #1, snake visual encounter survey #3, spring vascular plant survey.	T. Knight	Air Temperature 10 to 14°C; Beaufort Wind Scale 1; Cloud Cover 0 to 25%; No Precipitation.	6:15 to 13:00
11 June 2022	Anuran calling survey #3.	T. Knight	Air Temperature 18°C; Beaufort Wind Scale 1; Cloud Cover 75-100%.	21:15 to 22:15
19 June 2022	Breeding bird survey #2, snake visual encounter survey #4, early "summer" vascular plant survey, Ecological Land Classification.	T. Knight	Air Temperature 11 to 14°C; Beaufort Wind Scale 1 to 3; Cloud Cover 0 to 25%; No Precipitation.	6:30 to 15:00
11 July 2022	Summer vascular plant survey, Ecological Land Classification.	T. Knight	Air Temperature 22 to 30°C; Beaufort Wind Scale 0 to 2; Cloud Cover 25 to 50%; No Precipitation.	8:30 to 16:30
17 August 2022	Late summer vascular plant survey, Ecological Land Classification.	T. Knight	Hot, light cloud clover.	9:45 to 15:00

Date of Site Assessment	Assessments/Surveys Performed	Terrastory Staff	Weather Conditions	Time On-site
22 August 2022	Late summer vascular plant survey, Ecological Land Classification.	T. Knight	Hot, overcast.	9:30 to 12:15
18 September 2022	Fall vascular plant survey, Ecological Land Classification, wetland pre-staking.	T. Knight	Hot, light cloud clover.	10:30 to 14:45
22 September 2022	Wetland and woodland staking with NPCA and Region.	T. Knight	n/a	9:00 to 15:00
24 October 2022	Snake visual encounter survey (fall entry) #5.	C.-A. Wegenschimmel	Air Temperature 13°C; Beaufort Wind Scale 0; Cloud Cover 0%; No Precipitation.	10:30 to 14:30
05 May 2023	Bat roost habitat assessment.	C.-A. Wegenschimmel	Air Temperature 10-12°C; Beaufort Wind Scale 0; Cloud Cover 0-25%; No Precipitation.	10:00 to 13:00
16 May 2023	Hawthorn inventory.	T. Knight, J. Consiglio	Warm, overcast	10:00 to 13:00
28 June 2023	Targeted Eastern Small-footed Myotis survey and bat ultrasonic acoustic monitoring.	T. Knight	Air Temperature 16 to 17°C; Beaufort Wind Scale 2; Cloud Cover 25 to 50%; No Precipitation.	20:30 to 22:30

The site assessments and surveys centred on characterizing the land use (e.g., historical development patterns, existing built features, land maintenance, etc.), physiographic (e.g., topography, drainage, surface water features, etc.), and ecological (e.g., vegetation, wildlife, habitats, etc.) conditions and features of the Study Area. All land-use, physiographic, and ecological information described for Adjacent Lands was collected from either current aerial photographs or observations from inside the Subject Property and/or publicly-accessible areas (e.g., rights-of-way, etc.). The locations and boundaries of significant natural features and/or habitats were recorded on-site with a high-accuracy GPS supported by representative photographs.

In addition to collecting general biophysical information, the following targeted assessments (i.e., feature- or species-specific surveys) were undertaken:

- **Vegetation Mapping according to Ecological Land Classification (ELC):** Vegetation communities on the Subject Property were characterized and mapped according to Ecological Land Classification (Lee et al. 1998) and the 2008 update to the Vegetation Type List (Lee 2008). Vegetation communities were initially identified based on current aerial photographs and then verified and refined (as necessary) on-site. ELC mapping was scaled to the finest level of resolution deemed appropriate (i.e., either Ecosite or Vegetation Type). Vegetation communities mapped on Adjacent Lands were delineated predominantly via aerial photograph interpretation.
- **Wetland Boundaries:** Where wetlands were identified via ELC, their boundaries were delineated consistent with the "50% wetland vegetation rule" and presence of hydric soils per the procedures of the Ontario Wetland Evaluation System (OWES) (OMNRF 2014). A wetland staking exercise was

performed with NPCA staff (T. Bukovics) on 22 September 2022 to generate approved wetland boundaries for areas within or adjacent to the Limit of Disturbance. All wetlands mapped on Adjacent Lands and/or west of the eastern edge of the Northern Quarry Pond were delineated via aerial photograph interpretation.

- **Significant Woodland Boundaries:** A dripline staking of the Significant Woodlands was performed on 22 September 2022 with Regional Environmental Planning staff (A. Boudens) to generate approved Significant Woodland boundaries for areas within or adjacent to the Limit of Disturbance.
- **Vascular Plant Survey:** Vascular plants were recorded based on a comprehensive area search ("wandering transects") within naturally-occurring (i.e., non-planted) or naturalizing areas of vegetation. Particular effort was paid to areas with the greatest potential to support significant vascular plants (i.e., designated Species at Risk, provincially rare, etc.) and areas with the greatest potential for impact based on the proposed development plan. Nomenclature and common names for the recorded vascular plant species are generally consistent with the Southern Ontario Vascular Plant Species List (Bradley 2013) except where a name change has more recently been adopted by NHIC.
- **Hawthorn Inventory:** Several hawthorns (*Crataegus* spp.) were documented during the 2022 fieldwork program. Hawthorn identification is best undertaken during May to June (species dependent) to allow for review of fresh flowering material. Although a small number of Hawthorn species can be regularly identified by leaves alone (e.g., *C. punctata*), most species are only identifiable to section/series (e.g., series *Molles*) outside of the flowering period. After several hawthorn individuals and species were documented during the 2022 fieldwork program, a targeted flowering survey was undertaken in May 2023 to confirm species identity.
- **Anuran Calling Surveys according to the Marsh Monitoring Protocol:** Three rounds of Anuran calling surveys were conducted in accordance with the Marsh Monitoring Protocol (Bird Studies Canada et al. 2008). Surveys occurred within the appropriate season (April to June), time of day (between 30 minutes after sunset and 12:00am), and weather conditions (minimal to no rain, wind speed ≤3 on the Beaufort Wind Scale).
- **Breeding Bird Surveys according to the Ontario Breeding Bird Atlas Protocol:** Two rounds of breeding bird surveys were conducted in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001). Surveys occurred within the appropriate season (May 24 to July 10), time of day (between dawn and approximately 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). While the OBBA protocol recommends that stations be situated at least 300 m apart (to avoid double counting), the stations established herein were often closer together to ensure more comprehensive survey coverage. Surveys occurred for a minimum duration of 10 minutes at each station.
- **Bat Maternal Roosting Habitat Assessment according to MECP Protocols:** Targeted surveys of bat habitat on the Subject Property focused on identifying the presence of candidate maternity roost sites. The bat habitat assessment followed methods outlined in the "Treed Habitats – Maternity Roost Surveys" protocol (MECP 2022a). The habitat assessment was restricted to portions of the Subject Property in which development or site alteration activities (which might result in tree impacts or removal) are proposed.
- **Bat Exit Survey:** A bat exit survey was undertaken to ascertain the potential for bat roosting (particularly Eastern Small-footed Myotis) along rock faces and bouldery areas along the eastern edge of the Northern Quarry Pond. The survey was undertaken following methods outlined in the "SAR Bat

Exit and Roost Survey" protocol (MECP 2022) in June from 30 minutes before dusk until 60 minutes after dusk under appropriate weather conditions (e.g., temperatures >15°C, low wind, no rain). The exit survey was supported by a hand-held bat detector (Echo Meter 2, Wildlife Acoustics) in conjunction with deployment of an unattended ultra-sonic acoustic monitor (SM4BAT, Wildlife Acoustics) nearby.

- **Snake Visual Encounter and Active Hand Surveys according to the MNRF Guelph District Milksnake Protocol:** Visual encounter and active hand searches for Milksnake (and other snake species) occurred in accordance with the *Milksnake Survey Protocol – MNR Guelph District* (MNR 2013). Surveys occurred within the appropriate season (April 1-October 15), time of day (approximately 10am – 3pm), and weather conditions (air temperature between 8ºC and 25ºC when sunny, >15 ºC when overcast, no rain, wind speed ≤3 on the Beaufort Wind Scale). All three (3) surveys were scheduled early (i.e., April) or late (i.e., October) in the season with the intent of detecting recent snake emergence from or entrance into hibernacula. Where present, cover objects (e.g., rocks, debris, etc.) were overturned to detect individuals beneath.
- **Fish Community Survey (i.e., Electrofishing):** A single-pass electrofishing survey was undertaken during the spring freshet (i.e., at high water levels) to verify the presence or absence of direct fish habitat within the drainage feature flowing through the Subject Property.

2.3 Significance Assessment

2.3.1 Definitions and Criteria

"Significant natural features" as described herein represent natural features and habitats that have recognized status (and therefore policy significance) within the planning jurisdiction in which a development application is proposed. As the Limit of Disturbance overlaps with a designated Settlement Area, the development application considered herein is not subject to the Natural Heritage System (NHS) protection requirements of the Growth Plan; therefore, significant natural features are defined herein to include those referenced in section 2.1 of the 2020 Provincial Policy Statement (PPS). This includes:

- Significant Wetlands;
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat (SWH);
- Significant Areas of Natural and Scientific Interest (ANSIs);
- Habitat of Endangered and Threatened Species; and
- Fish Habitat.

Defining "significant natural features" pursuant to the PPS is warranted as such features form part of the City and Regional natural heritage designations, particularly EPA and ECA. It is noted that Policies 7.B.1.3 and 7.B.1.4 of the 2014 ROP provide provisions that consider and/or protect additional natural features beyond the requirements of the PPS. The potential presence of these regionally/locally significant features are also considered herein and include:

- Other Evaluated Wetlands (considered ECA by the 2014 ROP) and "Non-Provincially Significant Wetlands" (considered ECA under Section 4.3.3 of the City's OP);

- Regionally Significant Life Science ANSIs (considered ECA by the 2014 ROP); and
- Publicly-owned Conservation Lands (considered ECA by the 2014 ROP).

Criteria used to determine the presence or absence of the above significant natural features within the Subject Property and Adjacent Lands were considered from a variety of sources including the City's OP, 2014 ROP, Natural Heritage Reference Manual (MNR 2010), and (for Significant Wildlife Habitat) the Ecoregion 7E Criteria Schedule (MNRF 2015).

Apart from PPS-derived significant natural features, this study also seeks to determine whether any natural features or hazards regulated by NPCA pursuant to O. Reg. 41/24 occur within the Study Area. NPCA regulated features and hazard lands include:

- Provincially Significant Wetlands and other wetlands greater than 0.5 ha in size;
- Watercourses and their associated meanderbelts and floodplains (if relevant);
- Valleylands;
- Steep slopes and other hazard lands; and
- Shorelines.

Like significant natural features, "significant species" represent individuals of wild species which have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed. Significant species are defined herein to include:

- Species designated Endangered, Threatened, or Special Concern under O. Reg. 230/08 pursuant to the provincial *Endangered Species Act, 2007*.
- Species designated Provincially Rare (i.e., S1, S2, or S3) by NHIC.
- Species considered Regionally Rare in Niagara pursuant to the *List of the Vascular Plants of Ontario's Carolinian Zone* (Oldham 2017)..

2.3.2 Determination

After collecting the background biophysical information and conducting the fieldwork program, the data was interpreted to determine whether any significant natural features (i.e., per City OP and ROP), natural features/hazards regulated by NPCA, and/or significant species occur within the Study Area. If a natural feature or species met the significance criteria, it is considered "confirmed". If a natural feature or species may be present within the Study Area given the prevailing biophysical or habitat conditions but was not confirmed based on either background or site-specific biophysical data, it is considered potential or "candidate". Candidate significant natural features and species are treated as confirmed where no additional information is available.

2.4 Effects Assessment and Mitigation

The potential ecological effects of an application can be understood spatially as zones that radiate outward from the direct project footprint (e.g., building envelope, etc.) and associated areas of site alteration (e.g., grading, etc.). While the greatest potential for effects typically occurs within areas directly subject to development or disturbance, surrounding areas may also be affected indirectly. Such indirect effects can include light or noise pollution that affects wildlife communities on

Adjacent Lands, or degradation of water quality within a downstream receptor resulting from sediment runoff during construction.

The following five-pronged approach is employed herein to assess the effects of a development application on significant natural features and species and (where warranted) the natural environment in general:

1. **Scope** the effects assessment to environmental components that warrant consideration. The effects assessment herein centres principally on significant natural features and species (i.e., those that have policy significance within the planning jurisdiction, as defined in **Section 2.3**) but may also consider general environmental effects where warranted.
2. **Identify the predicted direct and indirect effects** of the application on each significant natural feature or species during all project stages (i.e., pre- to -post-development) in the absence of mitigation. Direct effects are those where there is a cause-effect relationship between a proposed activity and an effect on a natural feature or species (e.g., tree clearance within a building footprint, etc.). Indirect effects result when an activity is linked to a direct effect through a chain of foreseeable interactions or steps.
3. **Evaluate the significance** of the predicted effects for each environmental component based on their attributes (i.e., spatial extent, magnitude, timing, frequency, and duration) and likelihood (i.e., high, medium, low).
4. Where the potential for negative effects are anticipated, **recommend ecologically-meaningful mitigation measures** to avoid such impacts first (where possible), and where impacts cannot be avoided to minimize, compensate, and/or enhance as appropriate.
5. **Identify the predicted residual or net effect**s of the application assuming implementation of all recommended mitigation measures.

Per step 4, mitigation measures are offered where the potential for negative effects are anticipated to a degree that cannot be supported given the prevailing policy context. Whenever possible, Terrastory works iteratively with the project team as a means to identify development plan options that avoid negative effects first; options that would minimize or mitigate such negative effects are less preferred and considered secondarily. In general, avoidance measures that have already been incorporated into the application or project design are not duplicated as technical recommendations herein. The effects assessment and any recommended mitigation measures are provided in **Section 5**.

2.5 Natural Heritage Policy Context

There is an overlapping municipal, provincial, and federal policy framework respecting the protection of natural heritage features and areas across southern Ontario. These requirements include objectives, policies, and directives which are principally contained in federal and provincial statutes, regulations, policy statements, Official Plans, and guidance documents. The overarching natural heritage policy framework directing development activities within the Subject Property is outlined below in **Table 3**. A determination of whether the application considered herein addresses such policies is provided in **Section 6**.

Policy 3.1.30.3.1 of the current ROP (approved by the Province with modifications on 04 November 2022) establishes that the operative natural heritage policy framework for applications which proceeded through pre-consultation one-year prior to the OP approval (i.e., no earlier than 04

November 2021) is the 2014 ROP (provided that a complete application is submitted by 4 November 2024). Similarly, it is understood that NPCA has also applied a one-year transitional period for their new Policy Document (in force and effect on 16 November 2022), such that applications which proceeded through pre-consultation prior to November 2022 are subject to the previous Policy Document (May 2022 office consolidation). While the first pre-consultation meeting was held in September 2021 (i.e., prior to 04 November 2021), the ToR was approved by Regional and NPCA staff before adoption of the Niagara Official Plan (NOP) by Regional council on 23 June 2023. As a result, the natural heritage policy framework governing the development application considered herein is contained within the 2014 ROP and 2020 NPCA Policy Document.

Table 3. Applicable Natural Heritage Policies.

Level of Government	Natural Heritage or Environmental Policy Requirements
Municipal	City of Port Colborne Official Plan (updated 5 September 2017). Regional Municipality of Niagara Official Plan (2014 consolidation).
Provincial	Provincial Policy Statement 2020, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including: • Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (MNR 2010). • Significant Wildlife Habitat Technical Guide (MNR 2000). • Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E Criteria Schedule (MNRF 2015). • Significant Wildlife Habitat Mitigation Support Tool (MNRF 2014). Growth Plan for the Greater Golden Horseshoe 2019, pursuant to the *Places to Grow Act*, S.O. 2005, c. 13. *Conservation Authorities Act*, R.S.O. 1990, c. C.27, including: • Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits. • NPCA Policy Document: Policies for the Administration of Ontario Regulation 155/06 and the Planning Act (May 2020 office consolidation). • NPCA Interim Wetlands Procedure Document (August 2022). *Endangered Species Act* (ESA), S.O. 2007, c. 6, including: • Ontario Regulation 230/08 – Species at Risk in Ontario List • Ontario Regulation 242/08 – General • Ontario Regulation 832/21 – Habitat *Fish and Wildlife Conservation Act*, S.O. 1997, c. 41.
Federal	*Fisheries Act*, R.S.C. 1985, c. F-14, including: • Fish and Fish Habitat Protection Policy Statement (DFO 2019). *Migratory Birds Convention Act*, S.C. 1994, c. 22, including: • Migratory Birds Regulations, C.R.C., c. 1035.

2.6 Other Technical Plans and Reports Reviewed

The following technical reports and plans which form part of the development application submission were reviewed during completion of this study, with their findings incorporated herein as appropriate:

- Draft Plan of Subdivision (Barich Grenkie Surveying Ltd., November 2023);
- Geotechnical Report (King EPCM, February 2024);
- Functional Servicing Report and associated plans (King EPCM, February 2024); and
- Stormwater Management Report and associated plans (King EPCM, February 2024).

3 EXISTING BIOPHYSICAL CONDITIONS

The following is a description of the biophysical features and conditions of the Study Area which are shown spatially on **Figure 3**. Representative photographs are provided in **Appendix 2**.

3.1 Land-use and Landscape Setting

The Study Area is situated along the western settlement boundary of the City of Port Colborne. The lands were formerly owned and operated by the Canada Cement Company; on-site limestone bedrock was extracted and quarried for cement production. Based on a review of historical aerial imagery and topographic mapping, initial quarrying appears to have preceded the year 1934 while the extraction footprint did not meaningfully expand thereafter. An historical topographic map dating from 1907 to 1916 indicates that the property contained a "lime kiln" at that time, as does a 1925 plan map for the Welland Ship Canal. Cherty limestones of the Devonian-aged Bois Blanc Formation were extracted from the quarry which supplied the on-site cement plant to the east (Hewitt 1960). When in operation, the cement plant was connected to the Welland Canal by active railways. The northern portion of the lands was beyond the active industrial operation and appears to have been historically maintained for agricultural purposes (which have continued in some areas to this day).

The cement plant closed down prior to 1972 (Hewitt and Vos 1972) with the industrial buildings demolished and removed around 1970 (Duncan 2020); this is verified by historical aerial photographs indicating presence of the cement plant in 1965 but not in 1972. Excluding an actively maintained hayfield approximately four (4) ha in size abutting Killaly Street West and some mowed areas, the Subject Property appears to have been naturalizing since that time.

Neighbouring residents (e.g., dog walkers) were observed recreating frequently within the Subject Property during the 2022 fieldwork program. An extensive trail system is present (see **Figure 2**) which is maintained (e.g., mowed) by users. A large hill of stockpiled and crushed limestone occurs to the east of the Central Quarry Pond (i.e., "Limestone Stockpile"; see **Figure 1**) which frequently hosts mountain bikers and dirt bikers. Remnants of the cement plant are present throughout the southern portion of the lands including concrete slabs, collapsed foundations, steel support beams, and other abandoned features. Surficial soils are heavily disturbed (e.g., rocky and mounded) where they overlap with the former industrial buildings.

3.2 Physical Setting

3.2.1 Bedrock Geology and Groundwater Resources

The bedrock underlying the Study Area is characterized as Devonian-aged limestones, dolostones, and shales of the Detroit River Group of the Onondaga Formation (Armstrong and Dodge 2007). The Onondaga Formation subcrops (i.e., exists as the highest bedrock surface beneath the ground) along the northern shoreline of Lake Erie from Wainfleet to Fort Erie. Provincial bedrock topography mapping (Gao et al. 2006) indicates that the bedrock surface ranges between

approximately 178 to 180 metres above sea level within the Subject Property, suggesting that depth to bedrock is generally less than 2 m below the ground surface. Bedrock is exposed along the margins of the Northern Quarry Pond and within the Intermittent Drainage Feature flowing southward/westward through the Subject Property. Bedrock exposures along the southern wall of the Northern Quarry Pond (west of the Study Area) form part of the Regionally Significant Onondaga Formation Earth Science ANSI.

Three (3) deep (i.e., bedrock) boreholes (BH101 to BH103) were advanced to depths of 10 to 15 m while an additional nine (9) shallow (i.e., above bedrock) boreholes (BH201 to BH209) were advanced to depths of 0.4 to 1.4 m to inform completion of the Geotechnical Report and Stormwater Management Report (King EPCM). The boreholes were drilled to investigate on-site soil depths and each were developed into monitoring wells to confirm groundwater levels (deep and/or shallow). Limestone bedrock was encountered between approximately 177 to 180 masl. Throughout the March to September 2022 monitoring period, no groundwater was observed in any of the 12 boreholes with the exception of BH205 where shallow groundwater was recorded at depths of 0.35 and 0.51 m following rainfall events in July and August 2022, respectively. The conclusions reached by the project geotechnical and civil engineering consultant (King EPCM) is that the on-site bedrock and soils do not accumulate groundwater, and that any seasonal fluctuations in the groundwater table represent temporary perched groundwater sitting atop local depressions in the bedrock.

The contact zone between the more erosion-resistant limestones of the Onondaga and Bois Blanc Formations (Devonian-aged) with the older and softer shales of the Bertie and Salina Formations (Silurian-aged) to the north of the Study Area gives rise to the Onondaga Escarpment, a cuesta trending predominantly northeast/southwest through the local landscape. Like the Niagara Escarpment, the Onondaga Escarpment was formed by differential erosion. The brow (caprock) of the Onondaga Escarpment emerges at the 180 metre above sea level (masl) topographic contour and can be observed in the local landscape traveling on Highway 58 just east of Wainfleet Bog or on West Side Road north of Barrick Road.

3.2.2 Surficial Geology and Soils

Surficial geological mapping shows the entire Study Area as "Onondaga and Bois Blanc Formations", indicating bedrock at or near the surface with a veneer of overburden (Ontario Geological Survey 2010). This aligns with the provincial bedrock topography mapping and results of on-site borehole drilling described above in **Section 3.2.1**.

The most recent soils mapping for Niagara Region (Kingston and Presant 1989) shows the Study Areas as "Not Mapped" (NM) given the prevailing "industrial" land uses. While soils in much of the Subject Property (particularly the southern and western half) have been filled or otherwise altered due to quarrying and industrial activities, the northeastern portion of the lands (nearer to Killaly Street West) likely represent native soil (at least in part). Historical soils mapping for the former Welland County (Ontario Agricultural College 1935) shows the Subject Property containing Farmington Loam, which is described as a shallow, light brown, stoney loam over limestone bedrock, with fair to good drainage and a smooth topography.

Soils assessments undertaken during the 2022 fieldwork program revealed a preponderance of silty clay in the upper soil horizons (in areas where significant soil disturbance appeared absent), with occasional clay and silt loam. These silty clay deposits (representing a veneer over limestone

bedrock) are of glaciolacustrine origin and were laid down in a deepwater environment associated with Lake Warren (ancestral Lake Erie). Such deposits form part of a broad region known as the Haldimand Clay Plain (Chapman and Putnam 1984).

3.2.3 Topography and Drainage

The northern portion of the Study Area is overall flat, ranging between approximately 179 to 180 masl. Lands in this area appear to have been historically maintained for agricultural uses and appear to be beyond the footprint of any industrial buildings or operations. The southern portion of the Study Area is more topographically variable. Soils within the footprint of the industrial operations are highly disturbed and pockmarked by mounded and rocky substrates occasionally punctuated by abandoned relicts of industrial uses. Depressional areas (where runoff becomes concentrated) and discrete hills of fill occur elsewhere in the southern portion of the lands. Topographic relief in this area is generally about 3 m (extending between approximately 178 and 181 masl). The apex of the Limestone Stockpile in the southwestern corner of the Study Area rises to 187.25 masl and stands prominently above the lands.

The general direction of overland runoff is conveyed in a southward/southwestward direction, generally towards the Intermittent Drainage Feature or Drainage Ditch which outlet to the Northern Quarry Pond and Central Quarry Pond, respectively.

3.2.4 Surface Water Drainage Features and Quarry Ponds

The Intermittent Drainage Feature is the primary watercourse draining the lands, which flows through a straightened, bedrock channel with a few dogs-leg bends. Based on a review of historical aerial photographs, the Intermittent Drainage Feature appears to have been originally constructed between 1934 and 1954 with additional modifications/improvements made between 1954 and 1965 resulting in its current alignment.

The Intermittent Drainage Feature commences within a roadside ditch on the north side of the Killaly Street West road allowance. The channel is conveyed beneath Killaly Street West via a 70 cm wide (and partially collapsed) corrugated steel pipe (CSP) culvert. Channel characteristics can be differentiated into four (4) separate segments (reaches) which are described as follows and shown spatially on **Figure 2**:

- **Reach #1 (Downstream of Killaly Street West):** Channel bed consists of exposed limestone bedrock with an average bankfull width ranging from 2 to 3 m. Flows are conveyed southward through a straightened channel. Flow events are generally restricted to periods coinciding with the spring freshet and/or storms; otherwise, the channel was observed to be dry in 2022 for most of the year. No aquatic vegetation is present (due to lack of soil cover above the bedrock and flashy flow conditions).
- **Reach #2 (Central):** Channel bed consists of approximately 30 cm depths of silt (though variable) overlying bedrock. The channel through this segment retains water semi-permanently as evidenced by overwintered tadpoles (Green Frog) in April 2022 and other observations made during the 2022 fieldwork program. Channel dimensions are variable (ranging between 1 to 3 m) while flows are conveyed predominantly in a westward direction. Areas of significant channel rutting due to All-terrain Vehicle (ATV) use was documented in places.

- **Reach #3 (Deciduous Forest):** Channel characteristics here are similar to Reach #2 though this segment is densely shaded by the overlying tree canopy and conveys flows in a southwest direction. Frequent downed trees and woody debris tangles are present, impeding access in places. A separate, constructed drainage feature with an ephemeral flow regime and a straightened alignment conveys drainage in a southeast direction and discharges to this segment.
- **Reach #4 (Outlet to the Northern Quarry Pond):** Channel becomes ill-defined after emerging from the Deciduous Forest. Surface water flows are conveyed diffusely over the bedrock surface then cascade over the quarry wall into the Northern Quarry Pond. The 3 to 4 m elevation difference between the quarry wall and water surface restricts movement of fish and other aquatic organisms from the pond upstream into the Intermittent Drainage Feature.

A separate, short (~50 m long) "watercourse" is shown on NPCA regulation mapping outletting to the Northern Quarry Pond to the south of the Intermittent Drainage Feature. While it is possible that some concentrated flow occurs through this area during the spring freshet or following storm events, it is believed that no discrete, regulated watercourse is present in this area. This drainage feature as mapped by NPCA mostly overlaps with the eastern quarry wall of the Northern Quarry Pond.

A drainage easement runs parallel to the southern boundary of the Subject Property. The easement contains a Drainage Ditch flowing westward through a straightened channel which was excavated into the limestone bedrock and outlets to the Central Quarry Pond. Based on a review of historical aerial photographs, the Drainage Ditch appears to have been constructed between 1972 and 2000.

A bathymetric survey of the eastern portion of the Northern and Central Quarry Ponds was performed by the project civil engineer (King EPCM) during summer 2022. Maximum water depths of 2.5 to 2.9 m were recorded in both ponds, although in most areas depths were less than 2 m. The surface elevation of the Northern Quarry Pond was found to range between 174.4 and 174.9 masl (total variability of 0.5 m) between May and September 2022 as reported in the Stormwater Management Report (King EPCM). Water depths would be expected to fluctuate seasonally perhaps by 1 to 2 m on a yearly basis. The surface elevation of the Northern Quarry Pond closely matches that of Lake Erie (generally within 0.3 to 0.5 m), suggesting hydrologic influence.

3.3 Ecological Setting

3.3.1 Vegetation Communities

The Subject Property is primarily comprised of early-successional, second-growth vegetation communities which have emerged since cessation of industrial operations around 1970. The dominant vegetation is largely ruderal in nature with a heavy complement of exotics. The thicket and savanna communities – which comprise roughly 50% of the Study Area overall (excluding the ponds) – generally contain a similar assemblage of vascular plants differing primarily in the extent of canopy cover. A mature, late-successional forest (Deciduous Forest) has persisted northeast of the Northern Quarry Pond which (despite evidence of historical and contemporary disturbances) may reflect the pre-settlement vegetation composition of the local landscape, as this feature was largely spared from clearance for agricultural or extractive uses.

Vegetation community mapping per ELC is provided in **Figure 3** and further described below.

3.3.1.1 Meadows

Larger meadows are generally concentrated in the eastern portion of the Study Area. The largest meadow by spatial extent is an Open Graminoid Meadow (MEGM4-1) dominated by Orchard Grass (*Dactylis glomerata*), Meadow Ryegrass (*Lolium pratense*), Smooth Brome (*Bromus inermis*), Cow Vetch (*Vicia cracca*), Red Clover (*Trifolium pratense*), Troublesome Sedge (*Carex molesta*), and Timothy (*Phleum pratense*). This vegetation community represents a hayfield; regular mowing restricts forb and woody vegetation colonization. On its southwestern side, the graminoid meadow grades into a mixed meadow (MEMM4) dominated by Smooth Brome, Common Milkweed (*Asclepias syriaca*), Wild Carrot (*Daucus carota*), Birds-foot Trefoil (*Lotus corniculatus*), Tall Goldenrod (*Solidago altissima*), Kentucky Bluegrass (*Poa pratensis*), and Quackgrass (*Elymus repens*). In the late summer and fall, asters such as Heath Aster (*Symphyotrichum ericoides*), Frost Aster (*Symphyotrichum pilosum*), and New England Aster (*Symphyotrichum novae-angliae*) attain prominence. Shrubs and regenerating trees such as Eastern Redcedar (*Juniperus virginiana*), Cockspur Hawthorn (*Crataegus crus-galli*), European Buckthorn (*Rhamnus cathartica*), Green Ash (*Fraxinus pennsylvanica*), and Black Walnut (*Juglans nigra*) are scattered throughout the mixed meadow (which, unlike the graminoid meadow, is not maintained for hay) and reflect the early stages of succession and eventual transition to thicket.

Additional mixed (MEM) and graminoid (MEGM4-1) meadows occur along the eastern portion of the lands. Dominant grasses overlapping with both communities include Kentucky Bluegrass, Redtop (*Agrostis gigantea*), Timothy, Red Clover, Cow Vetch, Birds-foot Trefoil, and Wild Carrot. In some areas White Sweet Clover (*Melilotus albus*), English Plantain (*Plantago lanceolata*), Field Bindweed (*Convolvulus arvensis*), and Sulphur Cinquefoil (*Potentilla recta*) attain greater coverage. An open grassy area in the northeast corner of the Subject Property was routinely mowed during field activities in 2022 and is indicated as "manicured" per **Figure 3**, as are open areas in the northwest corner of the Study Area.

A Dry – Fresh Mixed Meadow (MEMM3) occurs along a west-facing slope in the southwest corner of the Study Area. The surficial soils here are disturbed and gravelly (a reflection of previous quarrying activities). Dominant vegetation includes Grey-stemmed Goldenrod (*Solidago nemoralis*), Poverty Oat Grass (*Danthonia spicata*), Sheathed Dropseed (*Sporobolus vaginiflorus*), Wiry Panicgrass (*Panicum flexile*), Spotted Knapweed (*Centaurea stoebe*), and Vipers Bugloss (*Echium vulgare*). The meadow is surrounded by scattered Eastern Redcedar, Staghorn Sumac (*Rhus typhina*), and Eastern Poison Ivy (*Toxicodendron radicans* var. *radicans*).

3.3.1.2 Thickets

Thicket vegetation types are comprised of open to semi-open canopy areas containing dense shrub cover with variable (and generally limited) trees. These vegetation communities likely exhibited greater canopy cover several years ago prior to the eastward spread of Emerald Ash Borer (*Agrilus planipennis*).

A Grey Dogwood Deciduous Thicket (THDM2-4) occupies the northern portion of the Study Area just west of the hayfield (MEGM4-1) and Intermittent Drainage Feature. Grey Dogwood attains prominence, alongside European Buckthorn, European Privet (*Ligustrum vulgare*), Staghorn Sumac (*Rhus typhina*), Eastern Redcedar, Nannyberry (*Viburnum lentago*), and regenerating Green Ash and Black Walnut. Meadow Ryegrass, Kentucky Bluegrass, Red Fescue (*Festuca rubra*), Tall Goldenrod, Oxeye Daisy (*Leucanthemum vulgare*), and Birds-foot Trefoil are the dominant herbaceous

groundcover species. The Grey Dogwood thicket is slightly topographically elevated in comparison with other thicket communities and overall is less moist. A second Grey Dogwood Deciduous Thicket (THDM2-4) also occurs on a plateau adjacent to the Limestone Stockpile, with a similar complement of vegetation alongside Choke Cherry (*Prunus virginiana*).

A Native Deciduous Regeneration Thicket (THDM4-1) occurs further east which is largely dominated by sapling Eastern Cottonwood (*Populus deltoides*) and Black Walnut with occasional Manitoba Maple (*Acer negundo*). Kentucky Bluegrass, Common Milkweed, White Sweet Clover, Birds-foot Trefoil, Smooth Brome, Quackgrass, and Common St. John's-wort (*Hypericum perforatum*) are the dominant herbaceous species. The regeneration thicket grades westward into the Deciduous Woodland (see **Section 3.3.1.3**) and is bordered on the east side by a paved road.

The remainder of the thicket communities are comprised of Fresh – Moist Deciduous Thicket (THDM5). These vegetation communities have arisen largely on disturbed, tight (silty clay) soils which retain moisture and can be fairly moist during the spring freshet and following storm events. Dominant thicket vegetation includes European Buckthorn, Grey Dogwood, Black Raspberry (*Rubus occidentalis*), European Privet, Morrow's Honeysuckle (*Lonicera morrowii*), Fleshy Hawthorn (*Crataegus succulenta*), Multiflora Rose (*Rosa multiflora*), Staghorn Sumac, and regenerating Green Ash and Black Walnut. Dominant understory species include White Avens (*Geum canadense*), Panicled Aster (*Symphyotrichum lanceolatum*), Kentucky Bluegrass, Tall Goldenrod, and Cow Vetch. The coverage and density of herbaceous flora in this vegetation community tends to coincide with the density of shrub cover; dense thicket generally occludes herbaceous vegetation coverage.

3.3.1.3 Savannas

The two savanna vegetation communities – a Dry – Fresh Deciduous Savanna (SVDM3) and Fresh-Moist Deciduous Savanna (SVDM4) – each contain similar shrub and herbaceous vegetation as the thicket communities described above (see **Section 3.3.1.2**) with greater coverage by trees (i.e., 25 to 35%). The dry-fresh savanna (SVDM3) generally overlies very disturbed and mounded soil overlapping with the former industrial buildings, whereas the fresh-moist savanna (SVDM4) occurs in more low-lying areas with a greater assortment of moisture tolerant and hydrophytic vegetation.

The canopy and sub-canopy of the dry-fresh savanna (SVDM3) is generally dominated by Eastern Cottonwood and Black Walnut with occasional Manitoba Maple and regenerating Green Ash. Various tall shrubs are present including Staghorn Sumac, Common Pear (*Pyrus communis*), Eastern Redcedar, and Choke Cherry. Kentucky Bluegrass, Redtop, White Sweet Clover, Everlasting Pea (*Lathyrus latifolius*), Birds-foot Trefoil, Eastern Poison Ivy, Canada Bluegrass (*Poa compressa*), and Common Milkweed are the dominant herbaceous species. The fresh-moist savanna (SVDM4) is dominated by the same canopy and woody vegetation, with seemingly greater proportions of European Buckthorn, Grey Dogwood, and Morrow's Honeysuckle.

3.3.1.4 Woodlands

Three (3) separate woodland communities dominated by Black Walnut occur throughout the Study Area.

A Dry – Fresh Black Walnut Deciduous Woodland (WODM4-4) occurs in the eastern portion of the lands which (as noted in **Section 1.3**) is referred to herein as the Deciduous Woodland. This woodland exhibits canopy coverage of less than 60% and (similar to the thicket and savannah types) represents a second-growth feature which emerged following cessation of on-site industrial

operations. Black Walnut is the dominant tree species, with occasional hawthorns (*Crataegus* spp.) in the subcanopy. The understory is quite lacking in woody vegetation in places, though dense patches of Black Raspberry are frequent. Kentucky Bluegrass, Redtop, Orchard Grass, White Avens, and Timothy are dominant in the ground layer. Portions of the Deciduous Woodland exhibit significant soil disturbance associated with previous industrial operations, being mounded and rocky. Several trails are actively maintained (i.e., mowed) through this feature.

The second black walnut deciduous woodland (WODM4-4) occurs centrally in the Study Area near the southern boundary of the Subject Property. At this location, Black Walnut occurs alongside Trembling Aspen (*Populus tremuloides*). Regenerating Black Walnut, Black Raspberry, and Staghorn Sumac comprise the understory. Enchanters Nightshade (*Circaea canadensis*), Tall Goldenrod, White Avens, Thicket Creeper (*Parthenocissus inserta*), and Wild Grape (*Vitis riparia*) comprise the herbaceous ground layer.

The final black walnut deciduous woodland (WODM4-4) occurs in the northwest corner of the Study Area and abuts Killaly Street West. Here, Black Walnut occurs alongside Shagbark Hickory (*Carya ovata*) with a trace of American Basswood (*Tilia americana*). Grey Dogwood, Black Raspberry, and European Privet are the dominant shrub species while White Avens, Virginia Creeper (*Parthenocissus quinquefolia*), and Kentucky Bluegrass comprise the ground layer.

3.3.1.5 Forests

Two forest types comprising a single forest unit occur just east of the Northern Quarry Pond. The northern portion of the forest is represented by a Dry-Fresh Oak – Hickory Deciduous Forest (FODM2-2) which is dominated by Shagbark Hickory, Red Oak, and to a lesser extent Ironwood (*Ostrya virginiana*), Bur Oak (*Quercus macrocarpa*), and American Basswood. Moister spots contain greater proportions of Bur Oak and Swamp White Oak (*Quercus bicolor*). The subcanopy was found to contain White Ash (*Fraxinus americana*), Fleshy Hawthorn, Choke Cherry, and European Privet. The ground layer was dominated by Enchanters Nightshade, Yellow Avens (*Geum aleppicum*), Garlic Mustard (*Alliaria petiolata*), Wild Geranium (*Geranium maculatum*), Eastern Poison Ivy, Eastern Star Sedge (*Carex radiata*), and Virginia Creeper. Historical aerial photographs and the presence of more conservative flora which is restricted to less disturbed habitats suggest that this portion of the Deciduous Forest was not entirely cleared for agricultural or industrial purposes and has some compositional connection to pre-settlement vegetation conditions in the local landscape.

The southern portion of the forest is comprised of a Fresh-Moist Shagbark Hickory Deciduous Forest (FODM9-4). Shagbark Hickory is the dominant canopy tree, with lesser amounts of American Basswood and some White Ash in the subcanopy. European Buckthorn, Fleshy Hawthorn, European Privet, and regenerating White Ash are the dominant shrub species. Eastern Poison Ivy, Virginia Creeper, Enchanters Nightshade, Calico Aster (*Symphyotrichum lateriflorum*), and Rough-leaved Goldenrod (*Solidago rugosa*) dominate the herbaceous layer. This southern portion of the forest is more disturbed and open, which explains the greater proportion of exotic species present and denser shrub layer.

3.3.1.6 Marshes

A small (0.01 ha) meadow marsh (MAMM3-1) extends westward from the Deciduous Forest. The meadow marsh is dominated by Fowl Manna Grass (*Glyceria striata*), Bittersweet Nightshade (*Solanum dulcamara*), Woolgrass (*Scirpus cyperinus*), and Northern Water-plantain (*Alisma triviale*). This wetland

has a short hydroperiod (based on observations in 2022) and generally does not permit sufficient depth and duration of standing water to support significant breeding by anurans.

Small Common Reed Mineral Shallow Marshes (MASM1-12) occur along the northern margin of the Central Quarry Pond. A marsh complex (MA) of Common Reed (*Phragmites australis* ssp. *australis*) and cattails (*Typha* spp.) occupies the Northern Quarry Pond and forms part of the PSW.

3.3.1.7 Swamps

A Silky Dogwood Mineral Deciduous Thicket Swamp (SWTM2-2) occupies the eastern margin of the Deciduous Forest. This thicket swamp also supports Narrow-leaved Meadowsweet (*Spiraea alba*) standing above thick carpets of Fowl Manna Grass. Silky Dogwood Mineral Deciduous Thicket Swamps represent a provincially rare vegetation community (S3S4) in Ontario.

Four (4) separate Mineral Deciduous Thicket Swamps (SWTM5) occur centrally within the Study Area. Each exhibits a similar complement of vegetation and will be described in tandem. These thicket swamps are primarily dominated by varying proportions of Silky Dogwood (*Cornus amomum*), Narrow-leaved Meadowsweet, Red-osier Dogwood (*Cornus sericea*), Smooth Arrowood (*Viburnum dentatum*), and Grey Willow (*Salix atrocinerea*). Patches of Sandbar Willow (*Salix interior*) and occasional regenerating Green Ash are also present. Redtop, Dudley's Rush (*Juncus dudleyi*), and Fowl Manna Grass tend to dominant the ground layer, with occasional Black Bulrush (*Scirpus atrovirens*). These thicket swamps are hydrologically supported by poor drainage associated with the tight silty clay soils and generally occupy small depressions, often lacking standing water by May 2022 (though hydroperiods vary somewhat each year).

A small (<0.01 ha) treed swamp – Mineral Deciduous Swamp (SWDM4) – is situated in an excavated depression centrally within the lands. Eastern Cottonwood is the dominant canopy tree with Red-osier Dogwood occasional in the understory. Redtop is the dominant groundcover species though coverage is limited. This swamp partially functions as a vernal pool (i.e., contains standing water in the spring which dries out to exposed mudflat in the summer/fall) and generally lacks coverage of herbaceous plants.

3.3.2 Vascular Plants

A total of 242 vascular plant species were recorded during the 2022/2023 fieldwork program. A list of all vascular plant species recorded is provided in **Appendix 3**. Of these, approximately 95 (39%) are considered native to Ontario.

No species at risk vascular plants were observed, though two (2) provincially rare vascular plant species were documented:

- **Kansas Hawthorn (*Crataegus coccinioides*)** – this species is listed S2 (Imperiled) in Ontario. The distribution and status of most hawthorn species is Ontario is poorly understood due to taxonomic uncertainty and challenges with morphological identification. This species is discussed in further detail in **Section 4.3**.
- **Honey Locust (*Gleditsia triacanthos*)** – this species is listed S2? (Imperiled?) in Ontario but is frequently planted. A review of historical aerial photographs suggest that this species was likely planted and/or has spread from plantings into the Subject Property from adjacent residential areas. Given this, Honey Locust is not considered a species of conservation interest within the Study Area.

A total of seven (7) vascular plants considered locally rare in Niagara Region (Oldham 2017) were documented in various locations. This includes:

1. Butterfly Milkweed (*Asclepias tuberosa*)
2. Kansas Hawthorn (*Crataegus coccinioides*)
3. Nodding Spurge (*Euphorbia nutans*)
4. Honey Locust (*Gleditsia triacanthos*)
5. Wiry Panicgrass (*Panicum flexile*)
6. Long-leaved Pondweed (*Potamogeton nodosus*)
7. Water Dock (*Rumex britannica*)

3.3.3 Breeding Anurans

Anuran calling surveys were undertaken at four (4) stations on 6 April, 9 May, and 11 June 2022. The locations of each survey station are shown on **Figure 2** while the full survey results are provided in **Appendix 4**. A total of five (5) anuran species were documented during the calling surveys. A general description of the anuran communities present within the Study Area is provided below.

Stations AN-1 and AN-2 were directed towards the Northern and Central Quarry Ponds, respectively. As relatively large waterbodies (ponds) fringed with robust emergent vegetation in certain areas, it is predictable that both ponds contain breeding anurans. Western Chorus Frog (*Pseudacris triseriata*, call code 3) was the most abundantly vocalizing anuran species within both ponds, with calling activity concentrated along the shoreline areas. Western Chorus Frog calling activity was not recorded during either the second or third survey periods. Alternatively, Green Frog (*Lithobates clamitans*) calling activity was not recorded during the first or second survey periods (due to insufficient air and water temperatures to support breeding by this species), while a small number of individuals were recorded during the third survey at both stations. It is emphasized that the two survey stations (particularly AN-1) were only able to record calling activity within portions of the pond environments which were audible to the surveyors, thus the relatively low calling activity recorded does not reflect the total numbers of individuals in these ponds. Other anuran species recorded within the Northern and Central Quarry Ponds include American Toad (*Anaxyrus americanus*), Spring Peeper (*Pseudacris crucifer*), and Grey Treefrog (*Dryophytes versicolor*).

Stations AN-3 and AN-4 were established to survey thicket swamps located centrally within the Study Area. Some Western Chorus Frog individuals were recorded (particularly at AN-3) during the first survey, but otherwise calling activity declined significantly thereafter. The thicket swamps were observed to lack sufficient standing water in 2022 to support successful anuran reproduction (i.e., from egg laying to dispersal of metamorphosed froglets/toadlets). The Green Frogs documented during survey #3 at AN-3 reflected individuals which vocalized from the Intermittent Drainage Feature near the eastern margin of the Deciduous Forest (i.e., downstream section of Reach #2). Green Frog tadpoles were observed in April 2022 within the Intermittent Drainage Feature near AN-3, coinciding with the deepest area of standing water. The presence of tadpoles indicates successful reproduction (non-significant levels) of Green Frog at AN-3 and the fact that standing water persists here year-round at sufficient depths to avoid freezing to the bottom.

3.3.4 Breeding Birds

Breeding bird surveys were undertaken at 10 stations on 24 May and 19 June 2022. A total of 57 bird species were recorded during the breeding bird surveys. The assemblage and abundance of birds recorded generally reflects the prevailing structure and composition of on-site vegetation communities and variable habitats of the Study Area, which is primarily dominated by thicket and savannas along with forest, woodland, meadows, and open water ponds. The locations of each survey station are shown on **Figure 2** while the full survey results indicating each species' breeding status by survey station can be found in **Appendix 5**. The locations of significant bird species recorded are shown on **Figure 4**.

The following six (6) species of conservation significance were documented:

1. Barn Swallow (*Hirundo rustica*)
2. Chimney Swift (*Chaetura pelagica*)
3. Eastern Meadowlark (*Sturnella magna*)
4. Eastern Wood-pewee (*Contopus virens*)
5. Grassland Sparrow (*Ammodramus savannarum*)
6. Wood Thrush (*Hylocichla mustelina*)

All documented locations of these species within the Study Area along with their habitat requirements are described in **Section 4.3**.

3.3.5 Bats

Assessment of bat habitat within the Subject Property was undertaken consistent with current (2022) MECP protocols and involved 1) a leaf-off, visual assessment of potential roosting habitat within those portions of the woodland and forest communities which are proposed for removal (see **Section 3.3.5.1**), and 2) a targeted ultrasonic acoustic monitoring event in 2023 to clarify potential presence of Eastern Small-footed Myotis (see **Section 3.3.5.2**). The summarized results of the bat assessment are presented in **Appendix 6**.

The primary purpose of bat habitat assessments in treed environments as guided by existing MECP protocols is to ascertain the presence or absence of more important habitat elements for bats, particularly maternity roosts (or leaf-cluster roosts associated with Tri-colored Bat). Confirmation of individual bat maternity roost trees based on visual and/or acoustic monitoring methods (i.e., in the absence of radio telemetry) can be challenging for the following reasons (among others):

- Ground-based visual surveys of potential roost trees will usually fail to positively locate all suitable roosting sites within a particular tree or treed area (i.e., some potential roosting sites will be obscured).
- Visual surveys completed at known tree roots (i.e., where a bat is known to be roosting based on radio tracking the previous evening) are often inconclusive and/or fail to positively confirm the animal exiting from the tree at dusk (or entering at dawn), even when supported by bat detector equipment (e.g., heterodyne, ultrasonic acoustic monitoring devices).
- Visibility restrictions (e.g., branches, leaves) impede positive visual observations of a bat exiting from (or entering into) a tree roost.
- In the event that an animal is positively observed exiting from (or entering into) a particular tree roosting site, it is difficult to verify whether the roost is being occupied by a single bat

(e.g., male or non-reproductive female) or if a maternity colony is present (given the other challenges described above).

- While there are published descriptions of higher-quality roost tree attributes (e.g., larger trees, trees with sun exposure, trees with only moderate decay), such attributes do not necessarily conform to the attributes of trees in which bats have been confirmed to be roosting in Ontario based on radio telemetry.
- Many bat species are known to switch between different roost trees throughout their activity season, with species exhibiting various degrees of roost fidelity from year to year. Bats use multiple roost sites to account for optimal temperature and proximity to feeding areas in response to changing conditions and, in some cases, population dispersal.
- While detections of bats are typically time-stamped by acoustic monitoring devices, it is generally difficult if not impossible to ascribe most detections (based on their spectrogram) to a particular bat activity (with minor exceptions such as "feeding buzzes", etc.). Even those detections which occur within the approximate time of emergence from (or entrance into) a tree roost (which varies based on species) often cannot be confidently ascribed to roosting activity immediately nearby (i.e., within the area of assessment), though roosting in the local landscape may be inferred.

The above challenges should be considered when interpreting the results that follow.

3.3.5.1 Roosting Habitat Assessment

A bat roosting habitat survey was undertaken during leaf-off conditions on 05 May 2023. The roosting habitat survey was restricted to portions of the forest (FODM9-4) and woodland (WODM4-4) communities which are proposed for removal. A summary of the bat roosting habitat survey results is presented below, with the detailed results presented in **Appendix 4**.

Trees with some potential to support maternity roosting (overlapping with proposed woodland/forest removal areas) were identified within the Subject Property and are shown on **Figure 3**.

3.3.5.2 Targeted Survey for Eastern Small-footed Myotis

A targeted survey for exiting or feeding activity by Eastern Small-footed Myotis (*Myotis leibii*) was undertaken on 28 June 2023 for the period encompassing 30 minutes before dusk until 60 minutes after dusk. The purpose of the survey was to document Eastern Small-footed Myotis activity (if any) in the vicinity of the Northern Quarry Pond, as this species often roosts in association with exposed cliffs and bedrock. The survey was supported by an Echo Meter Touch 2 Bat Detector (Wildlife Acoustics Inc.).

No Eastern Small-footed Myotis were documented during the evening survey.

3.3.5.3 Acoustic Monitoring Results

Acoustic detections of bats via recorded ultrasonic calls can be used to ascertain species presence and relative activity at a specific locality. Notwithstanding this, the number of detections (or "passes") does not necessarily equate with the total number of individuals present at a particular station since the same individual may be recorded by the unit several times while flying/foraging in the local area. Further, it is often not possible to infer whether a recorded bat was interacting with the immediate habitat (i.e., foraging, roosting nearby, etc.) or simply making a short- or long-distance foray through the local landscape.

An unattended acoustic monitoring unit was deployed during the targeted survey for Eastern Small-footed Myotis on 28 June 2023 in the adjacent Deciduous Forest to the northeast for the same monitoring period (30 minutes before dusk until 60 minutes after dusk). A total of 27 bat detections were recorded (see **Appendix 4**), which included:

- Big Brown Bat (*Eptesicus fuscus*) / Silver-haired Bat (*Lasionycteris noctivagans*) – 16 detections
- Hoary Bat (*Lasiurus cinereus*) – 9 detections
- Little Brown Myotis (*Myotis lucifugus*) – 1 detection
- Red Bat (*Lasiurus borealis*) – 1 detection

There is overlap in the amplitude and peak frequencies of Big Brown Bat and Silver-haired Bat calls such that many recordings cannot be reliably attributed to one species or the other. Only recordings with an amplitude ≥65 kHz can be attributed to Big Brown Bat, while mostly flat recordings with a peak frequency around 26-30 kHz are diagnostic for Silver-haired Bat (Humboldt State University Bat Lab 2011; Thorne 2017; Western University Bat Lab 2012). Higher quality Big Brown Bat recordings (i.e., clear high-frequency element, ≥65 kHz high amplitude, presence of harmonics) often allow for reliable identification to species, but no such recordings were made during the sampling event.

Little Brown Myotis (*Myotis lucifugus*) was recorded once during the 28 June 2023 acoustic monitoring event and is a designated Endangered species in Ontario. This species is further described in **Section 4.5.2**.

3.3.6 Snakes

Snake visual encounter and active hand surveys were undertaken on 12 and 24 April, 24 May, 19 June and 24 October 2022. The surveys were concentrated in areas with the greatest potential to support snakes (i.e., semi-open areas with ample thermoregulating sites, cover objects, and/or small mammal prey). The April surveys were intended to identify individuals that may have recently emerged from potential hibernation sites, whereas the October survey was intended to locate individuals which may be preparing for hibernation (and therefore may occur in the vicinity of a hibernaculum). Incidental efforts to locate snakes (i.e., carefully flipping cover objects, etc.) were made during most site investigations throughout 2022.

Three (3) snake species were documented: Eastern Garter Snake (*Thamnophis sirtalis* spp. *sirtalis*), Dekay's Brownsnake (*Storeria dekayi*), and Red-bellied Snake (*Storeria occipitomaculata*). Snake observations were made throughout the Study Area, although higher snake activity appeared to be concentrated in the Deciduous Woodland during 2022. Dekay's Brownsnake was observed on 24 April 2022 (deceased individual) with a second observation on 24 October 2022 near a Red-bellied Snake; all such observations occurred within the Deciduous Woodland. All remaining snake observations (~18 in 2022) were of Eastern Gartersnake in various locations throughout the Study Area. It is recognized that Eastern Milksnake (*Lampropeltis triangulum triangulum*) was documented by others north of the Drainage Ditch in 2011 and northeast of the Limestone Stockpile in 2012; this species was not recorded by Terrastory but suitable habitat is present throughout the Study Area.

During the first snake survey on 12 April 2022, five (5) Eastern Garter Snake were observed basking atop a soil mound in the Deciduous Woodland in the eastern portion of the Subject Property. The observation of several basking snakes early in the activity season, within a habitat feature (e.g., soil

mound) exhibiting a higher potential to support snake hibernation, is strongly suggestive of recent emergence from a hibernaculum. A small mammal burrow was also observed in the immediate vicinity of the snakes (which may or may not have represented the hibernaculum entrance). Snakes were also observed elsewhere during the 12 April 2022 spring emergence surveys; however, other individuals were observed singly and/or actively moving, conditions which are not clearly suggestive of a nearby hibernaculum (nor of "significant" overwintering pursuant to the SWH Criteria Schedules for Ecoregion 7E). Fieldwork in 2011/2012 by others did not find evidence of snake hibernation.

3.3.7 Turtles

Turtle emergence surveys were undertaken on 12 and 24 April 2022. These surveys were timed to document individuals that would have recently emerged from a potential overwintering site (i.e., waterbodies that do not freeze to the bottom during winter). Surveys focused on the Northern and Central Quarry Ponds. Incidental efforts to locate basking turtles within these features were made during most site investigations in 2022 and 2023.

No turtles were documented during the 12 April 2022 survey. Two (2) Midland Painted Turtles were documented basking within the Northern Quarry Pond within the 24 April 2022 survey. Notwithstanding this, significant numbers of turtles were documented incidentally throughout the fieldwork program, including a count of 14 Midland Painted Turtle and one (1) Red-eared Slider (*Trachemys scripta elegans*) on 19 June 2022. It is noted that these counts simply represented areas where turtles were visible from the eastern margin of the Northern Quarry Pond. No turtles were observed within the Central Quarry Pond, though basking habitat is less extensive here (making visual observations more difficult) and turtles are assumed to be present.

Single counts of Snapping Turtle (*Chelydra serpentina*) were documented in the Northern Quarry Pond on 24 May 2022 and 17 August 2022.

3.3.8 Incidental Wildlife Recorded

Efforts to incidentally document wildlife were made during all site visits by Terrastory during the fieldwork program. This includes:

- Sixteen (16) additional **bird** species (recorded outside of the formal breeding bird survey period, including migrants): American Woodcock (*Scolopax minor*), Bank Swallow (*Riparia riparia*), Black-and-White Warbler (*Mniotilta varia*), Chestnut-sided Warbler (*Setophaga pensylvanica*), Common Raven (*Corvus corax*), Double-crested Cormorant (*Nannopterum auritum*), Downy Woodpecker (*Dryobates pubescens*), Great Horned Owl (*Bubo virginianus*), Golden-crowned Kinglet (*Regulus satrapa*), Peregrine Falcon (*Falco peregrinus*), Red-tailed Hawk (*Buteo jamaicensis*), Ruby-crowned Kinglet (*Corthylio calendula*), Tufted Titmouse (*Baeolophus bicolor*), White-breasted Nuthatch (*Sitta carolinensis*), White-throated Sparrow (*Zonotrichia albicollis*), and Yellow-rumped Warbler (*Setophaga coronata*).
- Three (3) **bumble bee** species: Common Eastern Bumble Bee (*Bombus impatiens*), Red-belted Bumble Bee (*Bombus rufocinctus*), and Two-spotted Bumble Bee (*Bombus bimaculatus*).
- Thirteen (13) **butterfly** species: Black Swallowtail (*Papilio polyxenes*), Cabbage White (*Pieris rapae*), Common Ringlet (*Coenonympha tullia*), Common Wood-nymph (*Cercyonis pegala*), Little Wood-satyr (*Megisto cymela*), Monarch (*Danaus plexippus*), Mourning Cloak (*Nymphalis antiopa*), Northern Crescent (*Phyciodes cocyta*), Orange Sulphur (*Colias eurytheme*), Peck's Skipper (*Polites*

peckius), Striped Hairstreak (*Satyrium liparops*), Summer Azure (*Celastrina neglecta*), and Viceroy (*Limenitis archippus*).

- Nine (9) **odonate** species: Autumn Meadowhawk (*Sympetrum vicinum*), Black Saddlebags (*Tramea lacerata*), Common Baskettail (*Epitheca cynosura*), Common Green Darner (*Anax junius*), Eastern Amberwing (*Perithemis tenera*), Familiar Bluet (*Enallagma civile*), Four-spotted Skimmer (*Libellula quadrimaculata*), Halloween Pennant (*Celithemis eponina*), and Widow Skimmer (*Libellula luctuosa*).
- Seven (7) **mammal** species (including signs of mammals): Eastern Chipmunk (*Tamias striatus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Meadow Vole (*Microtus pennsylvanicus*), Mink (*Neogale vison*), Raccoon (*Procyon lotor*), Short-tailed Shrew (*Blarina brevicauda*), and White-tailed Deer (*Odocoileus virginianus*).
- One (1) **salamander** species: Red-backed Salamander (*Plethodon cinereus*).

4 SIGNIFICANCE ASSESSMENT

Based on the biophysical information collected during background information gathering (per **Table 1**) and the results of Terrastory's fieldwork program (per **Section 3**), **Table 4** below provides a determination of the presence (or potential presence) of each significant natural feature considered herein. Shaded rows denote features which were confirmed or may be present within the Study Area and are considered further as part of the effects assessment in **Section 5**. Significant natural feature mapping is provided in **Figure 4**.

Table 4. Summary of the Assessment of Significant Natural Features for the Study Area.

Significant Natural Feature	Status within the Proposed Area of Disturbance	Status on Adjacent Lands (i.e., < 120 m from the Limit of Disturbance)
PPS Significant Natural Features		
Significant Wetlands	**Absent**. See **Section 4.1**.	**Confirmed (though existing MNRF mapping is incorrect)**. See **Section 4.1**.
Significant Woodlands	**Confirmed**. See **Section 4.2.**	**Confirmed**. See **Section 4.2**.
Significant Valleylands	**Absent**.	**Absent**.
Significant Wildlife Habitat	**Confirmed**. See **Section 4.3**.	**Confirmed/Candidate**. See **Section 4.3**.
Significant Areas of Natural and Scientific Interest	**Absent**. See **Section 4.4**.	**Absent**. See **Section 4.4**.
Habitat of Endangered and Threatened Species (per ESA)	**Confirmed**. See **Section 4.5**.	**Candidate**. See **Section 4.5**.
Fish Habitat (per *Fisheries Act*)	**Absent**. See **Section 4.6**.	**Absent**. See **Section 4.6**.
Regionally Significant Natural Features (i.e., apart from PPS requirements)		
Other Evaluated Wetlands	**Absent**. See **Section 4.1**.	**Absent**. See **Section 4.1**.
Regionally Significant Life Science ANSIs	**Absent**. See **Section 4.2**.	**Absent**. See **Section 4.2**.
Publicly-owned Conservation Areas	**Absent**.	**Absent**.

Significant Natural Feature	Status within the Proposed Area of Disturbance	Status on Adjacent Lands (i.e., < 120 m from the Limit of Disturbance)
Conservation Authority Regulated Features and Hazard Lands		
Wetlands, watercourses, valleylands, meanderbelts, floodplains, steep slopes, and shorelines.	**Confirmed.** See **Section 4.7**.	**Confirmed.** See **Section 4.7**.

4.1 Wetlands

A wetland staking exercise was undertaken with NPCA staff (T. Bukovics) on 22 September 2022. All wetlands within or immediately adjacent to the Limit of Disturbance including seven (7) separate wetland units were staked and approved by NPCA at that time. The approved wetland limits which are reflective of various marshes (see **Section 3.3.1.6**) and swamps (see **Section 3.3.1.7**) are indicated on **Figure 3** and **Figure 4**.

Wetlands within the Study Area exhibit the following spatial areas and levels of significance per **Table 5** below.

Table 5. Wetlands within the Study Area and their associated Spatial Areas and Policy Significance.

Wetland Community	General Location	Staked with NPCA?	Size (ha) within the Study Area	Policy Significance per City's OP, 2014 ROP, and/or NPCA
Marsh (MA)	Overlapping with the Northern Quarry Pond and PSW	No	0.3 minimum (extends northwestward beyond the Study Area)	Community forms part of the PSW and appears to be regulated by NPCA (i.e., is > 0.5 ha in size, including westward extension beyond the Study Area)
Mixed Mineral Meadow Marsh (MAMM3-1)	Abutting the western edge of the Deciduous Forest	Yes	0.009	None
Silky Dogwood Mineral Deciduous Thicket Swamp (SWTM2-2)	Abutting the eastern edge of the Deciduous Forest	Yes	0.3	Significant Wildlife Habitat (Provincially Rare Vegetation Community)
Mineral Deciduous Thicket Swamp (SWTM5)	Central portion of the Study Area	Yes	0.4	None
Mineral Deciduous Thicket Swamp (SWTM5)	Northernmost SWTM5 within the mixed meadow (MEMM4)	Yes	0.02	None
Mineral Deciduous Thicket Swamp (SWTM5)	Central SWTM5 within the mixed meadow (MEMM4)	Yes	0.1	None

Wetland Community	General Location	Staked with NPCA?	Size (ha) within the Study Area	Policy Significance per City's OP, 2014 ROP, and/or NPCA
Mineral Deciduous Thicket Swamp (SWTM5)	Southernmost SWTM5 within the mixed meadow (MEMM4)	Yes	0.1	None
Mineral Deciduous Swamp (SWDM4)	Surrounded by the deciduous savanna (SVDM3)	Yes	0.006	None
Common Reed Mineral Shallow Marsh (MASM1-12)	Westernmost shallow marsh on the northern margin of the Central Quarry Pond	No	0.03 minimum (extends westward beyond the Study Area)	None
Common Reed Mineral Shallow Marsh (MASM1-12)	Easternmost shallow marsh on the northern margin of the Central Quarry Pond	No	0.01	None

Based on the spatial areas reported in **Table 5**, nine (9) of the ten (10) separate wetland units within the Study Area are not considered regulated by NPCA per Policy 8.2.2.1 of NPCA's 2022 Policy Document (i.e., each is < 0.5 ha). The marsh (MA) on Adjacent Lands occupying the rim of a promontory extending northward into the Northern Quarry Pond is likely > 0.5 ha (based on a review of aerial photographs) and forms part of the PSW, thus substantiating its policy significance. The Silky Dogwood Mineral Deciduous Thicket Swamp (SWTM2-2) also has policy significance due to representation as confirmed SWH (Provincially Rare vegetation community) but is not regulated by NPCA due to insufficient size. While "non-PSWs" are afforded consideration as ECA's under Section 4.3.3 of the City's OP, this only extends to evaluated wetlands and does not extend to unevaluated or "other" wetlands (which comprise most wetlands within the Study Area).

The Provincially Significant Wainfleet Eagle Marsh Wetland Complex ("PSW") was previously mapped by MNRF overlapping with the Northern Quarry Pond (see **Figure 4**). Terrastory reviewed the areas mapped as PSW during the 2022 fieldwork program and found that the existing mapping did not accurately reflect the limit of wetland conditions. In particular, open water portions of the Northern Quarry Pond were generally found to contain insufficient coverage of fixed-floating, free-floating, and/or submerged aquatic vegetation to be appropriately considered "wetland" per OWES (i.e., > 10% coverage of wetland vegetation is required per the delineation procedures outlined in Section 1.2.2 of OWES). During the wetland staking exercise on 22 September 2022, it was broadly understood that NPCA supported exclusion of portions of the PSW overlapping with the eastern portion of the Northern Quarry Pond given the absence of sufficient coverage by aquatic vegetation. It was advised by NPCA and the Region at that time that any updates to the PSW mapping must be approved by MNRF. Robust emergent vegetation within the central portion of the Northern Quarry Pond is appropriately considered part of the PSW and has been mapped by Terrastory as a marsh (see **Figure 3** and **Figure 4**).

An assessment of potential effects to wetlands with policy significance within the Study Area (i.e., PSW and Silky Dogwood thicket swamp) associated with implementation of the proposed development plan is provided in **Section 5.3.1**.

4.2 Significant Woodlands

The proposed development overlaps with a designated settlement area and thus falls outside the purview of standards and criteria associated with mapping Significant Woodlands within the Growth Plan NHS. As a result, the determination of woodland significance presented herein relies on guidance from the 2014 ROP and related policies.

The 2014 ROP defines "woodland" as:

> *A treed area that provides environmental and economic benefits to both the private landowner and the general public such as erosion prevention, hydrologic and nutrient cycling, provision of clean air and long term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities and the sustainable harvest of woodland products. It does not include a cultivated fruit or nut orchard or a plantation used for the purpose of producing Christmas trees.*

Under the 2014 ROP, the Region considers all vegetation communities with at least 35% canopy coverage by trees to be "woodlands", thereby encapsulating all "forest" and "woodland" communities as defined by ELC (Lee et al. 1998; Lee 2008). To be considered "significant", Policy 7.B.1.5 of the ROP requires that a woodland must meet "one or more" of the following criteria:

a) Contain threatened or endangered species or species of concern;
b) In size, be equal to or greater than:
    a. 2 hectares;
    b. 4 hectares, if located outside Urban Areas and north of the Niagara Escarpment;
    c. 10 hectares, if located outside Urban Areas and south of the Niagara Escarpment;
c) Contain interior woodland habitat at least 100 metres in from the woodland boundaries;
d) Contain older growth forest and be 2 hectares or greater in area;
e) Overlap or contain one or more of the other significant natural heritage features listed in Policies 7.B.1.3 or 7.B.1.4; or
f) Abut or be crossed by a watercourse or water body and be 2 or more hectares in area.

Clause 4.3.5.1(b) of the City's OP directs that Significant Woodlands in Port Colborne are to be identified in accordance with criteria provided in Section 7.B of the ROP (as outlined above). Policy 7.B.1.4 of the ROP and Section 4.3 of the City's OP classifies Significant Woodlands as Environmental Conservation Areas.

The Deciduous Forest in the western portion of the Study Area is 2.1 ha in size; on this basis it represents a Significant Woodland by satisfying criteria b above. The Deciduous Forest is also crossed by a watercourse and also satisfies criteria f.

The Deciduous Woodland in the eastern portion of the Study Area is three (3) ha in size (satisfying criteria b) and also contains confirmed SWH for overwintering snakes (satisfying criteria e; see **Section 4.3.2**). The remaining two (2) other deciduous woodlands (see **Figure 2**) are each one (1) ha in size or less and do not satisfy any other woodland significance criteria under ROP Policy 7.B.1.5. These two (2) "other woodlands" do not have policy status or significance under the 2014 ROP or City's OP.

Mapping of both Significant Woodlands (Deciduous Forest and Deciduous Woodland) is shown on **Figure 4**. The boundaries (i.e., dripline) of both Significant Woodlands were delineated during a staking exercise with Regional Environmental Planning staff (A. Boudens) on 22 September 2022.

An assessment of potential effects to the Significant Woodlands associated with implementation of the proposed development plan is provided in **Section 5.3.2**.

4.3 Significant Wildlife Habitat

An assessment of the likelihood that any candidate or confirmed SWH types occur within the Study Area is provided in **Appendix 7**. Based on the results of this assessment, four (4) SWH types are considered further through this study:

- Seasonal Concentration Areas of Animals
    1. Bat Maternity Colonies
    2. Reptile Hibernaculum
    3. Deer Winter Congregation Areas
- Habitat of Species of Conservation Concern
    4. Special Concern and Rare Wildlife Species

Also based on this assessment, a total of eight (8) Special Concern or provincially rare species are considered to have at least a possible likelihood of occurrence within the Study Area given their habitat associations and current distribution in southern Ontario (or were confirmed based on the fieldwork program):

1) Eastern Wood-pewee (*Contopus virens*)
2) Grasshopper Sparrow (*Ammodramus savannarum*)
3) Tufted Titmouse (*Baeolophus bicolor*)
4) Wood Thrush (*Hylocichla mustelina*)
5) Monarch (*Danaus plexippus*)
6) Powdered Ruffle Lichen (*Parmotrema hypotropum*)
7) Kansas Hawthorn (*Crataegus coccinioides*)
8) Snapping Turtle (*Chelydra serpentina*)

An assessment of potential effects to the identified candidate and/or confirm SWH types and Special Concern/provincially rare species associated with the proposed development plan is provided in **Section 5.3.3**. Locations in which Special Concern and/or provincially rare species were documented are shown on **Figure 4**.

4.3.1 Bat Maternity Colonies

Big Brown Bat and Silver-haired Bat form maternity colonies that roost with pups in various features, particularly cracks, cavities, or loose bark associated with large-diameter trees (≥25 cm diameter at breast height), snags, and buildings. Snags/cavity trees in earlier stages of decay (i.e., decay classes 1-3) may be preferred.

Targeted roosting habitat surveys for bats were restricted to portions of the Significant Woodlands and "other woodlands" which are proposed for removal. While these areas do not satisfy relevant criteria as candidate SWH for roosting by maternity colonies of Big Brown Bat and Silver-haired Bat

(i.e., >10/ha large diameter wildlife trees), the full extent of the wooded areas was not assessed (as these areas will be protected). On this basis, significant habitat for bat maternity colonies as defined under the SWH Criteria Schedules for Ecoregion 7E may be present in areas beyond the Limit of Disturbance.

4.3.2 Reptile Hibernaculum

Snakes in Ontario hibernate in areas which provide access below the frost line or that do not freeze during winter. A wide array of features may function as snake hibernacula, including natural (e.g., small mammal burrows, crevices in bedrock, etc.) and human-built (e.g., rock piles, old stone foundations, etc.) features. Survey methodologies for confirming snake use of a potential hibernacula typically involve spring or (less preferred) fall surveys to identify congregations of snakes near their point of exit or emergence from a hibernaculum; however, such surveys may still produce a false negative (i.e., fail to successfully identify hibernacula) given the camouflaged, cryptic nature of snakes and variability in emergence/exit dates.

As described in **Section 3.3.6**, a confirmed significant hibernaculum for Eastern Garter Snakes was documented within the Deciduous Woodland (see **Figure 4**).

4.3.3 Deer Winter Congregation Areas

Unlike other parts of southern and central Ontario, deer movement in winter is not typically constrained by snow depths in Ecoregion 7E; however, deer will annually congregate in certain woodlots where suitable browse (e.g., twigs, buds) is readily available.

MNRF has identified a small portion of the southwestern limit of the Study Area (extending westward to Elm Street) as a Stratum 2 Deer Winter Congregation Area (see **Figure 4**). It is not known when such areas were mapped by MNRF or what methodology was used to support their assessment. Regardless, the identified Stratum 2 Deer Winter Congregation area overlaps with an existing residential area and is therefore no longer present.

4.3.4 Special Concern and Provincially Rare Species

4.3.4.1 Eastern Wood-pewee

Eastern Wood-pewee is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the *Endangered Species Act* (ESA) and is federally designated Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). This species is most commonly associated with relatively open, deciduous and mixed forests of various sizes, as well as forest edges and other areas with relatively continuous canopy cover (e.g., parks, cemeteries, etc.). This species' preference for open forests and forest edges may be attributed to its aerial foraging behaviour (COSEWIC 2012). Territory sizes were shown to average approximately 1.75 ha (representing a circle with a radius of 75 m) in a study in southern Ontario (as cited in COSEWIC 2012).

Eastern Wood-pewee is considered a "Possible" breeder within the Study Area based on the presence of a singing male documented once during the breeding season at four (4) separate stations, including within the Deciduous Woodland (BI-2), Deciduous Forest (BI-4), and other treed areas (BI-9 and BI-10). It may be that some of the individuals recorded were migrants, particularly those at stations BI-9 and BI-10 where surrounding suitable breeding habitat was marginal or negligible. Both the Deciduous Woodland and Deciduous Forest are considered suitable breeding habitat for this species.

4.3.4.2 Grasshopper Sparrow

Grasshopper Sparrow is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the ESA and is federally designated Special Concern by COSEWIC. This species occupies meadows of various sizes and is not considered area-sensitive. Unlike most other grassland birds that breed in southern Ontario, Grasshopper Sparrow may also occupy meadows with sparse or uneven herbaceous vegetation coverage (COSEWIC 2013).

Grasshopper Sparrow is considered a "Possible" breeder within the Study Area based on the presence of a singing male documented once during the breeding season at BI-1 in the vicinity of the paved road providing vehicular entry into the Subject Property. This species is considered a "common and local resident" during the breeding season per the Niagara NAI (NPCA 2010) and occurs relatively frequently in the local landscape, with a robust population known between Canal Road and Highway 140 (extending northward into Welland).

4.3.4.3 Tufted Titmouse

Tufted Titmouse is listed as Provincially Rare (S3, or "Vulnerable") in Ontario by NHIC; the distribution of this species only slightly extends into the Carolinian Zone of southern Ontario (Ecoregion 7E) though its abundance and distribution has expanded in recent years. Tufted Titmouse breeds in deciduous woods or mixed woodlands, typically in areas with a dense canopy and a diversity of tree species. This species also occurs in orchards, parks, and suburban areas.

Tufted Titmouse was not recorded within the Study Area during the formal breeding bird survey period. Notwithstanding this, two (2) observations of this species were made outside the breeding season in April (Deciduous Woodland) and October (approximately 40 m southeast of the Northern Quarry Pond) of 2022. It is unknown if this species breeds within or adjacent to the two (2) aforementioned areas or if the individuals documented were non-breeding and imply moving through the local landscape (i.e., Tufted Titmouse is non-migratory but may establish larger home ranges outside of its breeding season).

4.3.4.4 Wood Thrush

Wood Thrush is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the ESA and is federally designated Special Concern by COSEWIC. Wood Thrush is predominantly found in deciduous and mixed forests with a well-developed understorey of regenerating trees and shrubs. This species is more often found in larger forest blocks but is also documented (and will successfully breed within) smaller forest fragments (Cadman et al. 2007). In a study in Pennsylvania, Wood Thrush territory sizes were shown to be 2.5 ha on average with a range of 1.5 to 4 ha (Evans et al. 2008).

Wood Thrush was recorded as a "Probable" breeder at BI-4 within the Deciduous Forest on the basis of a singing male heard on more than occasion at least seven (7) days apart in 2022.

4.3.4.5 Monarch

Monarch is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the ESA and is federally designated Endangered by COSEWIC. Monarch is well-known to be host-specific and oviposits exclusively on species of milkweed (*Asclepias* spp.). This species is a generalist forager and may nectar in any area with wildflowers.

Monarch adults were predictably observed feeding within the Study Area during the 2022/2023 fieldwork program. Reproduction was confirmed on the basis of a caterpillar observed in a stand of Common Milkweed just east of the Deciduous Woodland (see **Figure 4**).

4.3.4.6 Kansas Hawthorn

Kansas Hawthorn is listed as Provincially Rare (S2, or "Imperiled") in Ontario by NHIC. Like most hawthorns in the lower Great Lakes region, Kansas Hawthorn occupies a variety of forest edge, thicket, hedgerow, and related habitats. This species' distribution in southern Ontario is believed to extend from Toronto through Hamilton to the Niagara River. The flowers of Kansas Hawthorn are some of the largest of any hawthorn species in Ontario, making the species distinctive at anthesis.

Kansas Hawthorn (alongside Cockspur Hawthorn and Fleshy Hawthorn) is the most common and widely distributed hawthorn species encountered in the Study Area. The mapped locations provided on **Figure 4** represent individuals which were either confirmed to be this species (based on photographs reviewed by Dr. J. Phipps, Emeritus Professor at Western University) or were strongly suspected based on flower and leaf collections. Additional specimens that may represent this species were observed elsewhere within the Study Area (not shown on **Figure 4**) but could not be confidently ascribed to Kansas Hawthorn due to lack of fresh flowering material. Many of these specimens appeared to be in relatively poor health (suggested by crown dieback), the cause of which is unknown.

4.3.4.7 Powdered Ruffle Lichen

Powdered Ruffle Lichen is listed as Provincially Rare (S3, or "Vulnerable") in Ontario by NHIC. This species is corticolous (i.e., occupies tree bark) and has a distribution in Ontario which is primarily restricted to the Carolinian Zone, though a small number of records are available northward (e.g., Wellington County) and from eastern Ontario (e.g., Frontenac County, United Counties of Leeds and Grenville). Extant records of this species tend to are mostly associated with mature deciduous forests, and the species (like other large, foliose lichen species) is likely sensitive to air pollution.

One (1) thallus was documented on the bark of a small tree along the western edge of the Deciduous Forest (see **Figure 4**). Suitable habitat for this species within the Study Area is restricted to Deciduous Forest.

4.3.4.8 Snapping Turtle

Snapping Turtle occupies a variety of aquatic habitats throughout southern Ontario. Individuals are known to make long-distance movements over land to access different habitats (e.g., nesting, feeding, basking, overwintering) during their activity season, which generally lasts between April and October. Like other turtle species, individuals overwinter in deeper waterbodies which do not freeze to the bottom.

Single counts of Snapping Turtle were documented in the Northern Quarry Pond on 24 May 2022 and 17 August 2022.

4.4 Significant Areas of Natural and Scientific Interest

There are no Provincially or Regionally Significant ANSIs overlapping with the Study Area.

The Regionally Significant Onondaga Formation Earth Science ANSI has been mapped along the southern wall of the Northern Quarry Pond just west of the Study Area (see **Figure 5**). This ANSI was originally identified in 1979 and represents an exposure of the Edgecliff Member of the Onondaga Formation which is of regional significance.

4.5 Habitat of Endangered and Threatened Species

An assessment of the likelihood that any Endangered and Threatened species or their habitats occur within the Study Area is provided in **Appendix 8**. A total of four (4) Endangered or Threatened species are considered to have a possible likelihood of occurrence on the Subject Property (or were confirmed) given their habitat associations and current distribution in southern Ontario:

1) Eastern Meadowlark (*Sturnella vulgaris*)
2) Little Brown Myotis (*Myotis lucifugus*)
3) Northern Myotis (*Myotis septentrionalis*)
4) Tri-colored Bat (*Perimyotis subflavus*)

A general description of the above Endangered/Threatened species and their habitat is offered below. An assessment of potential effects to these Endangered/Threatened species associated with the proposed development plan is provided in **Section 5.3.4**.

Bobolink (*Dolichonyx oryzivorus*) was recorded by others during fieldwork in 2011 and 2012 within the same hayfield which currently supports Eastern Meadowlark (which was also recorded at that time). No Bobolink were documented within the Study Area during either the targeted breeding bird surveys or incidentally during the course of other fieldwork in 2022/2023.

4.5.1 Eastern Meadowlark

Eastern Meadowlark is designated Threatened in Ontario and federally designated Threatened under Schedule 1 of the *Species at Risk Act* (SARA). This species may have been rare in southern Ontario prior to European settlement and was likely associated with tallgrass prairie habitats in the southwest. Eastern Meadowlark is considered area-sensitive and often does not breed in habitats which are less than 4 ha in size and may also be found in fields with a greater density of shrub cover (COSEWIC 2011).

Eastern Meadowlark is considered a "Probable" breeder within the Study Area based on two separate observations of a singing male during the breeding season seven (7) days or more apart. This species appears to be breeding in the hayfield (MEGM4-1) situated in the northeastern portion of the Study Area and was also recorded in this area by others in 2011/2012 and during the course of other fieldwork by Terrastory in 2023.

4.5.2 Endangered Bats

Per the assessment in **Appendix 8**, Little Brown Myotis, Northern Myotis, and Tri-colored Bat have the potential to roost and forage within the Study Area. Each of these bat species are designated Endangered in Ontario per O. Reg. 230/08 pursuant to the *Endangered Species Act* (ESA) and are federally designated Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Little Brown Myotis and Northern Myotis form maternity colonies that roost in large-diameter trees with cracks, crevices, and/or exfoliating bark; Little Brown Myotis will also frequently roost in buildings (e.g., attics, barns, etc.). Roosting sites for Tri-colored Bat maternity colonies are

less understood but have been documented in dead or dying leaf clusters of oaks (*Quercus* spp.) and maples (*Acer* spp.), along with live foliage and buildings (Humphrey and Fotherby 2019). Individuals (i.e., non-reproductive females and males) of all three bat species may roost in smaller diameter trees and other spaces (e.g., beneath house siding, etc.) which are not occupied by maternity colonies. Overwintering habitat includes caves and mines that maintain temperatures above 0°C. White Nose Syndrome (a fungal disease caused by an introduced pathogen) has devastated populations of each species across their ranges. The fungus causes hibernating individuals to become dehydrated, leading to excessive arousal, depleted fat reserves, and ultimately emaciation and/or death.

The Deciduous Forest contains larger-diameter snags and trees with cracks, cavities, and/or loose bark; such conditions suggest that suitable roosting habitat for maternity colonies of Little Brown Myotis and/or Northern Myotis is present. Other treed portions of the Study Area including the Deciduous Woodland, other woodlands, and savannas could support generalized roosting activities within "day roost" trees, particularly for individual bats (e.g., males and non-reproductive females). Little Brown Myotis was recorded on-site in 2023 (see **Section 3.3.5**) though it is not known if this individual was interacting with on-site habitats (e.g., emerged from a nearby roost) or was simply on transit through the landscape.

Portions of the Deciduous Forest contain an abundance of oaks (e.g., Red Oak, Bur Oak, Swamp White Oak) and may therefore also support roosting by Tri-colored Bat.

4.6 Fish Habitat

An electrofishing survey of the entire length of the Intermittent Drainage Feature (from Killaly Street West to the Northern Quarry Pond) was performed on 07 April 2022. No fish were captured during the electrofishing survey nor were fish observed within the Intermittent Drainage Feature during the course of other fieldwork in 2022/2023. The outlet of the Intermittent Drainage Feature cascades over the 3 to 4 m tall eastern quarry wall into the Northern Quarry Pond, such that any possibility of fish movement upstream from the pond into the Intermittent Drainage Feature is permanently impeded.

The Northern Quarry Pond is known to contain large-bodied fish such as Largemouth Bass (*Micropterus salmoides*) and Common Carp (*Cyprinus carpio*), and a similar assemblage of fishes is assumed to occur in the Central and Southern Quarry Ponds as well. Notwithstanding this, "artificial waterbodies" which are not hydrologically connected (via surface water) to another waterbody which contains fish are not considered "fish habitat" per guidance from Fisheries and Oceans Canada ("DFO"). As such, although fish occur in the quarry ponds, the ponds are not considered "fish habitat" from a regulatory perspective.

4.7 Conservation Authority Regulated Areas

Development activities within portions of the Study Area require regulatory approval from NPCA to proceed. NPCA regulates development and site alteration (including fill placement and grade changes) within or adjacent to the following features and hazards (including their associated allowances and/or areas of interference) occurring with the Study Area.

- Areas within 30 m of any wetlands greater than 0.5 ha but less than 2 ha (per Policy 8.2.2.1 of NPCA's 2022 Policy Document) which also directly contribute to the hydrological

function of a watershed through connection with a surface watercourse (per Subsection 28[25] of the *Conservation Authorities Act*);
- Areas within floodplain and/or erosion hazards associated with watercourses (no additional 15 m allowance is afforded to floodplains and erosion hazards in unconfined valleylands in NPCA's jurisdiction); and
- Any other areas which may be deemed "hazardous lands".

There are no "confined valleylands" as defined per Section 2(1)(1) of O. Reg. 41/24 within the Study Area.

5 EFFECTS ASSESSMENT AND MITIGATION

The purpose of this EIS is to present a biophysical characterization of the Study Area as a means to identify the potential for adverse effects on the natural environment and natural heritage features stemming from the proposed development. Several significant natural features and species were documented (or may occur) within the Study Area pursuant to the assessments presented in **Section 4**. The following effects assessment provides an evaluation of the potential for the proposed development to result in negative effects to such environmental components and offers technical recommendations to mitigate such effects where warranted. Certain technical recommendations offered herein apply to several natural features and/or species simultaneously; as such, all technical recommendations should be read and considered in their entirety. The baseline or existing conditions against which the application is assessed are treated as the state of the Study Area at the time of the fieldwork program. The effects assessment herein is based on the site plan provided in **Appendix 9**.

5.1 Proposed Development Plan

The proposed development and site alteration activities primarily consist of the following elements:

- Site preparation, including removal of legacy structures and/or infrastructure associated with previous industrial operations, vegetation removal, and topsoil stripping;
- Cut and fill operations and associated earthworks and grading, including fill placement to increase separation between the ground surface and bedrock;
- Construction of 96 new single-use residential lots and 34 townhouse blocks, including stacked townhouses (228 units), regular townhouses (383 units), back-to-back townhouses (130 units), and rear-lane townhouses (42 units).
- Construction of mid-rise, mixed-use buildings (Blocks 41 & 42) with frontage on Killaly Street West, with provision for 1,231 residential units and 3,197 m^2 of commercial space;
- Construction of a new road network providing vehicular access to the residential areas and parklands, with connections to Elgin Road (east) and Killaly Street West (north);
- Installation of storm sewer infrastructure, which will outlet to 1) a realigned portion of the Intermittent Drainage Feature, 2) the Drainage Ditch within the drainage easement along the southern portion of the lands (ultimately discharging to the Central Quarry Pond), or 3) the Northern Quarry Pond; and
- Installation of sanitary and watermain connections to existing municipal infrastructure.

Stormwater quality controls have been incorporated into the project design as outlined in the Stormwater Management Report (King EPCM) and were designed in accordance with provincial

and NPCA standards. The stormwater strategy per the Stormwater Management Report (King EPCM) is outlined as follows:

- Stormwater quality controls are provided to achieved Enhanced Protection (80% total suspended soil removal) prior to discharge.
- Quantity controls are not provided as the ultimate receivers are the quarry ponds which lack an outlet and are not anticipated to be affected by erosion as a result of uncontrolled discharge.
- Lot grading has maintained flat elevations to minimize gradient and encourage infiltration.
- Grassed swales are used to collect interior and exterior lot drainage to be directed towards the quarry ponds.
- Oil and grit separators have been incorporated into the discharge outlets for each of the six (6) proposed internal site catchments.

The Intermittent Drainage Feature is also proposed to be realigned and partially enclosed (via box culvert) through the stormwater management design.

5.2 Avoidance Measures incorporated into the Proposed Development Plan

Since project commencement in February 2022 Terrastory has provided extensive feedback to and worked iteratively with the project team during formulation of the proposed lotting plan and associated technical reports. These discussions have centred on the need to avoid/minimize impacts to and maintain ecologically/policy appropriate setbacks from the significant natural features identified herein.

Terrastory prepared an overall natural heritage constraints map to support the initial development concepts and lot fabric. The following natural heritage features and setbacks have been incorporated directly into the project design and form part of the protected natural feature blocks:

- **Block 35**
    - Much of the Deciduous Woodland in the eastern portion of the lands (which represents a Significant Woodland and contains candidate and confirmed SWH) has been retained.
    - Portions of the outer edge of the Deciduous Woodland are proposed for removal, with the remaining woodland to be reconfigured and regularized into a 100 m by ~220 m rectangular area.
    - A 30 m linkage area will connect the Deciduous Woodland to the City drainage easement (also contained in Block 38) to facilitate ecological connectivity.
- **Block 38**
    - Much of the Deciduous Forest (which represents a Significant Woodland and contains candidate and confirmed SWH) has been afforded a 10 m setback from the staked and approved dripline.
    - A narrow, southern extension of the Deciduous Forest has not been captured by Block 38 and is proposed for removal; this portion is wedge-shaped (ranging from 15 to 50 m in width), relatively young ("second-growth"), and contains a greater concentration of exotic vegetation than the remainder of the Deciduous Forest to be protected.

- Wetland communities which abut the Deciduous Forest (e.g., MAMM3-1 and SWTM2-2) support the ecological functions of the Deciduous Forest and have been afforded a 30 m setback.
- The Central and Northern Quarry Ponds are afforded a 30 m setback, with the inner 15 m contained in Block 38 and the outer 15 m to act as parkland (Block 37).
- A 30 to 45 m corridor along the southern portion of the lands (overlapping with the City's drainage easement) will retain additional existing habitats and act as a corridor which links the Deciduous Woodland (Block 35) with the drainage easement and ultimately the Central and Northern Quarry Ponds.

It is noted for context that the extent of protected natural heritage lands contained in Blocks 35 and 38 greatly exceeds what was proposed through the previous development application which received draft plan approval around 2012 or 2013. Implementation of the previously-approved draft plan would have resulted in elimination of the entire Deciduous Forest (and abutting wetlands) and Deciduous Woodland.

Some natural feature encroachments are proposed through this development application. This includes the proposed removal of a hayfield which supports breeding by Eastern Meadowlark and reconfiguration of portions of both Significant Woodlands. Additional site alterations such as installation of a storm sewer outlet within the buffer of the Northern Quarry Pond are also proposed. Such encroachments and disturbances have been mitigated through technical recommendations offered herein (see **Section 5.3** below).

In recognizing the foregoing, an assessment of the potential for negative impacts on the identified significant natural features are further described below.

5.3 Feature-based Effects Assessment and Technical Recommendations

5.3.1 Wetlands

Where development and/or site alteration activities are proposed within or adjacent to wetlands, adverse effects may occur via the following pathways:

- Direct wetland removal in areas of conflict with any proposed development features or site alteration, resulting in loss of wetland area and functions (e.g., wildlife habitat, carbon sequestration, nutrient processing, etc.).
- Alterations to surface water and/or groundwater contributions to the wetland from construction (e.g., dewatering, etc.), grading that modifies the existing topography or drainage, and/or increased coverage of impervious surfaces (e.g., roads, roofs, etc.);
- Increased sediment loadings and/or nutrient enrichment within the wetland via runoff exiting from development areas during and post construction. This may alter wetland water quality and vegetation communities via increased turbidity, eutrophication, contamination by toxic substances, changes in pH, etc.
- Noise and/or light pollution that may adversely affect the ability of wetland wildlife to successfully carry out their life processes (e.g., breeding, feeding, etc.); and
- Increased human activity (i.e., encroachment) within the wetland which may result in soil compaction, dumping, etc.
- Potential for fuel spills during the construction phase of development.

- Increased potential for introducing invasive species including both animals and plants during and post construction.

As outlined in **Section 4.1** and **Table 5**, eight (8) of the 10 wetland units within the Study Area lack policy significance under either the City's OP, 2014 ROP, or NPCA policies. These eight (8) wetlands are not subject to the effects analysis herein as they lack due consideration from a regulatory perspective. Potential effects to the PSW and Silky Dogwood thicket swamp are reviewed below in **Section 5.3.1.1** and **Section 5.3.1.2**, respectively.

5.3.1.1 Provincially Significant Wainfleet Eagle Marsh Drain Wetland Complex

During the wetland staking exercise on 22 September 2022, it was understood that NPCA supported excluding portions of the previously mapped PSW overlapping with the eastern portion of the Northern Quarry Pond given the absence of sufficient coverage by aquatic vegetation. Notwithstanding this, updates to PSW boundaries must be approved by MNRF. The following measure is recommended as a means to update and correct the provincial wetland dataset:

- **The revised PSW boundary is to be provided to the Ministry of Natural Resources and Forestry (MNRF) for approval and incorporation into the provincial wetland dataset.**

Once the PSW mapping has been updated, the marsh (MA) community on Adjacent Lands occupying the rim of a promontory extending northward into the Northern Quarry Pond would represent the only portion of the PSW which overlaps with the Study Area. This marsh appears to be approximately 155 m from the nearest residential lot and is separated from the proposed development area by an expanse of open water (i.e., the Northern Quarry Pond itself).

Given this sizeable setback, adverse effects to the PSW that could conceivably stem from the proposed development would be restricted to stormwater. The Northern Quarry Pond will act as the ultimate receiver for stormwater which is conveyed to a proposed outlet along the eastern quarry wall, whereas stormwater will also be directed to the Intermittent Drainage Feature (which also outlets to the Northern Quarry Pond). The SWM report (King EPCM) incorporates quality controls (e.g., OGS separators) to demonstrate that applicable provincial and NPCA stormwater standards have been adhered to. While stormwater quantity controls have not been incorporated into the design (given lack of apparent erosion concerns), no changes in peak runoff flow rates or total volumes are expected per the conclusions of the SWM Report and discussions with the project Civil Engineer (King EPCM). Best management practices for winter salt are also provided through section 7.2 of the SWM Report. Given that any changes to water quality or quantity in the Northern Quarry Pond could adversely affect the PSW (which is fundamentally maintained by water levels within the pond), Terrastory recommends the following:

- **No ecologically meaningful, adverse changes to water quality or average water levels in the Northern Quarry Pond will occur as a result of stormwater discharge emanating from the proposed development.**

- **Salt management recommendations offered in Section 7.2 of the SWM Report (King EPCM) will be incorporated into detailed designs to the extent practicable.**

During construction it is anticipated that the proposed development areas will contain exposed soils, which are inherently unstable and have a greater potential for runoff into adjacent areas (including adjacent wetlands) during rainfall events. The most effective erosion and sediment control system emphasizes the prevention of erosion first, minimizes sediment transport off-site through a multi-barrier approach, and involves regular inspection and maintenance. To protect water quality within the Northern Quarry Pond and PSW therein from construction-related impacts, the following measures are recommended:

- **Comprehensive Sediment and Erosion Control (ESC) Plans are to be prepared by a qualified professional as a condition of draft plan approval, and are to include the following components (minimum):**
  - **Sediment and erosion control measures (e.g., silt fence) placed at the limit of disturbance.**
  - **Timing of works (e.g., avoidance of working during adverse weather, avoidance of vegetation removal during the bird breeding and bat activity periods, etc.).**
  - **Measures to reduce the potential for erosion of stockpiles and/or temporarily stored topsoil, fill, or aggregate material (e.g., piled as low as practicable, etc.), and measures to situate these construction features away from Blocks 35 and 38 to the extent possible.**
  - **Measures to control and treat internal runoff during construction including temporary interceptor swales and/or sediment control basins (as necessary), which are to be stabilized (i.e., seeded) and maintained regularly.**
  - **Designated machinery servicing areas.**
  - **Fill control measures.**
  - **Measures to minimize the spread of invasive species, particularly *Phragmites*.**
  - **Dust suppression measures.**
  - **Spills reporting protocol.**
  - **Catch-basin protection.**
  - **Inspection, maintenance, and contingency measures.**
  - **Decommissioning protocol (i.e., removal of non-biodegradable erosion and sediment control materials including accumulated sediment once construction is complete and disturbed areas are stabilized).**

5.3.1.2 Silky Dogwood Mineral Deciduous Thicket Swamp

As described in **Section 5.2**, the Silky Dogwood Mineral Deciduous Thicket Swamp (SWTM2-2) has been afforded a minimum 30 m setback from the staked and approved wetland boundary which

is incorporated into Block 38. Residential Blocks 32, 12, and 42 (mixed-use) are proposed to the east and north of the Silky Dogwood thicket swamp (see **Appendix 9**) beyond the 30 m setback.

The proposed development plan is supported by a site-specific water balance; however, a feature-based water balance (with associated consideration for post-development changes to hydrological inputs) is not available for the Silky Dogwood thicket swamp. Given on-site soil and groundwater conditions revealed through this study and the results of the Geotechnical Report (King EPCM), it is reasonable to assume that the Silky Dogwood thicket swamp is supported by surface water (rather than groundwater, which is not appreciably transmitted through tight clayey soils in southern Niagara), which would be conveyed to this feature through 1) direct precipitation and 2) sheet runoff. There are no discrete watercourses or drainage swales which convey water into or out of the Silky Dogwood thicket swamp.

Despite the recommended minimum 30 m setback, portions of the upstream catchment (currently in natural cover) of the Silky Dogwood thicket swamp will be converted to impervious surfaces associated with Block 42 (mixed-uses), with the resulting runoff to be conveyed away from the swamp and into the stormwater system (ultimately outletting to the enclosed upstream portion of the Intermittent Drainage Feature). Due to these expected changes to the upstream catchment, the following measures are recommended in relation to the water balance of the Silky Dogwood thicket swamp:

- **A Wetland Water Balance Risk Evaluation (TRCA 2017) will be prepared for the Silky Dogwood thicket swamp.**
- **Should the results suggest that there is risk of post-development hydrologic impacts due to reductions in surface water inputs, opportunities to convey clean surface water to the Silky Dogwood thicket swamp will be explored through detailed design to avoid negative impacts.**

As described in **Section 5.1**, upstream portions of the Intermittent Drainage Feature are proposed to be realigned and partially enclosed via a box culvert through Block 42. Immediately downstream of the culvert conveying the Intermittent Drainage Feature beneath Killaly Street West, the channel is proposed to be realigned as a roadside ditch, flowing westward within the Killaly Street West road allowance for 150 m. The Intermittent Drainage Feature is then proposed to veer southward through an approximately 115 m long concrete box culvert which (based on discussions with the project Civil Engineer) has been sized to convey the 5-year storm event. The box culvert will then outlet at grade along the boundary of Block 38, or approximately 30 m from the Silky Dogwood thicket swamp. A new channel approximately 55 m in length will be constructed to tie the downstream portion of the realigned Intermittent Drainage Feature (where it flows through Block 38) into the existing channel just east of the Deciduous Forest. The following measure is recommended to direct these works in the context of avoiding impacts to the Silky Dogwood thicket swamp:

- **The setback between the new channel of the Intermittent Drainage Feature and Silky Dogwood thicket swamp within Block 38 will be maximized to the extent practicable.**

- **The new channel will incorporate natural channel principles (e.g., meandering planform) to the extent practicable.**
- **Necessary vegetation removals and disturbance associated with constructing the new channel of the Intermittent Drainage Feature within Block 38 will be minimized and addressed through a Wetland Buffer Enhancement Plan to be prepared as a condition of draft plan approval.**

Implementation of other measures recommended to protect the PSW (e.g., installation of ESC measures at construction) will also serve to protect the Silky Dogwood thicket swamp.

5.3.2 Significant Woodlands

Where development and/or site alteration activities are proposed within or adjacent to forests or woodlands, adverse effects may occur via the following pathways:

- Direct vegetation removal (e.g., trees, shrubs, herbaceous vegetation), resulting in loss of woodland area and functions (e.g., wildlife habitat, carbon sequestration, runoff attenuation).
- Exposure of the woodland edge to new biophysical conditions following direct vegetation removal (i.e., edge effects), which may modify the prevailing light regime (e.g., increasing the potential for sunscald injuries to woody vegetation), wind regime (e.g., increasing the potential for windthrow and/or structural concerns due to greater wind velocities), and/or moisture regime.
- Mechanical injury to the trunk, roots, branches, and/or foliage of retained woody vegetation.
- Smothering or exposure of roots due to changes in grade.
- Soil compaction from the use of heavy machinery.
- Noise and/or light pollution that may adversely affect the ability of woodland wildlife to successfully carry out their life processes (e.g., breeding, feeding, etc.).
- Increased human activity (i.e., encroachment) within or adjacent to the woodland which may result in soil compaction, dumping, etc.
- Increased susceptibility to establishment by invasive species either directly or indirectly and including both animals and plants.

As described in **Section 4.2**, the Deciduous Forest and Deciduous Woodland are both considered Signfiicant Woodlands as each satisfy relevant size criteria pursuant to ROP Policy 7.B.1.5 (i.e., are larger than 2 ha). Much of the Deciduous Forest and Deciduous Woodland are proposed to be incorporated into protected natural heritage blocks (Blocks 38 and 35). Block 38 surrounding the Deciduous Forest incorporates a minimum 10 m setback from the staked and approved dripline, although the full setback extends to 30 m from the boundaries of two abutting wetlands (MAMM3-1 and SWTM2-2).

Notwithstanding the fact that both Significant Woodlands will form part of protected natural heritage blocks, encroachment is proposed within these features as summarized below in **Table 6**.

Table 6. Summary of the Assessment of Significant Natural Features for the Study Area.

Significant Woodland	Original Size (ha)	Proposed Spatial Area of Sig. Woodland Encroachment	Proposed Percentage of Sig. Woodland Encroachment	Post-development Size (ha)
Deciduous Forest	2.3 (including westward extension onto Adjacent Lands)	0.3	13.0%	2
Deciduous Woodland	3.0	0.8	26.7%	2.2

The aforementioned woodland encroachments will result in removal of existing vegetation and habitats within the development envelope. ROP Policy 7.B.1.19 requires the completion of a Tree Saving Plan (TSP) in support of development or site alteration within a Significant Woodland. The following measure is therefore recommended:

- **A Tree Saving Plan overlapping with proposed areas of encroachment within the Deciduous Forest and Deciduous Woodland will be completed to address proposed encroachment within the Significant Woodlands.**

In the opinion of Terrastory, based on detailed field data collected in support of this EIS, removal of the proposed 0.3 ha of the Deciduous Forest and 0.8 ha of the Deciduous Woodland (1.1 ha total) is supportable based on the prevailing policy context (see also **Section 6** below). The areas of woodland encroachment (permanent loss) within both Significant Woodlands overlap with second-growth areas along the outer margins of the forest/woodland features, and do not directly overlap with other significant natural heritage values (e.g., contain limited potential bat roosting habitat, avoid confirmed SWH such as the snake hibernaculum). As a result, addressing the 1.1 ha of Significant Woodland removal through compensation plantings is considered appropriate in the context of relevant policy standards related to the protection of Significant Woodlands in the City's OP, 2014 ROP, and PPS. Both Significant Woodlands will remain at least 2.0 ha in size following reconfiguration.

A conceptual Woodland Replacement Plan is outlined below to address the proposed 1.1 ha of Significant Woodland removal and assist with satisfying the regulatory test of "no negative impacts". Areas subject to proposed replacement are shown conceptually in **Figure 5**. Lands to the north of the Northern Quarry Pond (which form part of the Subject Property) have been maintained (mowed) by neighbouring landowners for many years and in some cases are used for vehicle storage and/or dumping. Eliminating these unauthorized uses via conversion to woodland will provide a meaningful improvement to the natural heritage functions of the Subject Property post-development. Note that the conceptual woodland replacement areas shown on **Figure 5** may be subject to refinement based on more detailed on-site assessments and plan formulation at detailed design.

The following measures are recommended in relation to the necessary woodland replacement:

- **A Woodland Replacement Plan will be prepared as a condition of draft plan approval, and is to include following components (minimum):**

- **Conceptual areas of woodland replacement are shown on Figure 5.**
- **The spatial area of replacement woodland will exceed the area of Significant Woodland removed (i.e., > 1.1 ha).**
- **Tree removals (min. 10 cm DBH) within the areas of Significant Woodland encroachment will be replaced at a minimum 3:1 ratio.**
- **A diversity of native trees and shrubs will be installed in the replacement woodland areas.**
- **Removal of impervious surfaces (e.g., gravel storage and parking areas) will occur prior to planting coupled with placement of sufficient topsoil to be seeded with an appropriate native seed mix.**
- **Wildlife habitat elements (e.g., log tangles, coarse woody debris placement) including locations and quantities will be specified, preferably using trees to be cleared for development.**
- **All woodland replacement areas will be treated as natural, self-sustaining vegetation (i.e., no mow).**
- **Ecological monitoring over a minimum 5-year period will be undertaken to demonstrate that the replaced woodland (and installed habitat features) are performing as designed.**

Opportunities for invasive species management have been considered but are not recommended herein due to impracticality, as invasive plant species cover a significant proportion of the lands given the intensity of historical industrial and extractive uses.

Following development, the Deciduous Forest will be structurally and functionally connected to the wider ecological landscape through the 30 connective corridor along the quarry ponds. The Deciduous Woodland will also be connected to adjacent natural areas post-development in order to establish "no negative impact". As a result, a 30 m connective corridor at the southwestern edge of Block 35 will link the Deciduous Woodland to a 30 to 45 m wide natural area (extending southward beyond the property boundaries) which partially overlaps with the City's drainage easement. While the connective corridor will be established through a proposed emergency vehicular access route that connects Street B with Street D which will also contain storm and sanitary servicing, this area will form part of Block 38 and will therefore support natural heritage values over the long-term. The following measures are recommended in regard to functionality of the connective corridor.

- **A Linkage Enhancement Plan will be prepared as a condition of draft plan approval to improve the ecological function of the 30 m corridor at the southwest corner of Block 35, which will include the following specifications (minimum):**
  - **An appropriately-sized wildlife crossing (e.g., culvert) will be installed to convey small wildlife (e.g., herpetofauna) passage through the 30 m corridor.**

- **Temporary soil disturbance and vegetation removals associated with installing proposed servicing (stormwater and sanitary) and/or facilitating emergency vehicle access through the 30 m corridor will be addressed through measures such as native plantings and/or seeding.**

Lighting from proposed residential and mixed land-uses adjacent to the Significant Woodlands have the potential to adversely affect wildlife activities. To minimize post-development impacts to wildlife associated with light pollution, the following measure is recommended:

- **Lighting will be directed away from Blocks 35 and 38 through detailed design to the extent achievable.**

It is understood that a trails plan may be proposed at detailed design. Based on the results of this study, a carefully designed and constructed nature trail system through the Significant Woodlands (and Blocks 35 and 38 more broadly) is justifiable from a natural heritage perspective. Should a future trail system be proposed, the following measures are recommended:

- **A Comprehensive Trails Plan is to be prepared through detailed design (should a trail system be proposed) which will include the following specifications (minimum):**
  - **Identification of a trail alignment that minimizes woodland impacts to the extent achievable and avoids sensitive/significant areas (e.g., wetlands in Block 38).**
  - **Incorporation of existing trails/disturbed areas into the trail alignment, where appropriate.**
  - **Incorporation of permeable materials into the trail base.**
  - **Incorporation of signage to introduce trail users to the natural heritage functions of the area.**

There is potential for the Significant Woodlands and setback areas to be impacted post-development through human encroachment, dumping, vandalism, etc. To minimize the potential for long-term post-development impacts, the following measures are recommended.

- **Permanent chain-link fencing (black vinyl) is to be established along the northern, eastern, and southern boundaries of the Deciduous Forest (Block 38) and the edges of Streets B, C, D, and M which abut the Deciduous Woodland (Block 35).**

- **The permanent chain-link fencing (black vinyl) will be fitted with a permanent wildlife exclusion barrier which extends below grade (i.e., keyed into the ground). The exact exclusion barrier will be specified through detailed design and could allow for gates/openings at future trail heads (if trails are proposed).**

The wildlife exclusion barrier will serve to restrict wildlife access onto the adjacent roadways and/or developed areas where risk of mortality is increased.

5.3.3 Significant Wildlife Habitat

Per the assessment in **Section 4.3**, a total of four (4) SWH types are considered further through this study:

- Seasonal Concentration Areas of Animals
    1. Bat Maternity Colonies
    2. Reptile Hibernaculum
    3. Deer Winter Congregation Areas
- Habitat of Species of Conservation Concern
    4. Special Concern and Rare Wildlife Species

Also based on this assessment, a total of eight (8) Special Concern or provincially rare species are considered to have at least a possible likelihood of occurrence within the Study Area given their habitat associations and current distribution in southern Ontario (or were confirmed based on the fieldwork program):

1) Eastern Wood-pewee (*Contopus virens*)
2) Grasshopper Sparrow (*Ammodramus savannarum*)
3) Tufted Titmouse (*Baeolophus bicolor*)
4) Wood Thrush (*Hylocichla mustelina*)
5) Monarch (*Danaus plexippus*)
6) Powdered Ruffle Lichen (*Parmotrema hypotropum*)
7) Kansas Hawthorn (*Crataegus coccinioides*)
8) Snapping Turtle (*Chelydra serpentina*)

As described in **Section 4.3.3**, the provincially mapped significant deer winter congregation area no longer occurs within the Study Area as a result of previous residential development south of the railway line. No further assessment of this SWH type is provided herein.

Blocks 35 and 38 have been configured through the proposed lot fabric to protect the functions of the Deciduous Forest, Deciduous Woodland, and 30 m buffer from the quarry ponds (which also acts as a wildlife corridor). The following candidate or confirmed SWH types and/or significant species will be sufficiently protected by establishment of Blocks 35 and/or 38 such that no further mitigation measures are considered warranted:

- Bat Maternity Colonies
- Reptile Hibernaculum
- Eastern Wood-pewee (*Contopus virens*)
- Tufted Titmouse (*Baeolophus bicolor*)
- Wood Thrush (*Hylocichla mustelina*)
- Powdered Ruffle Lichen (*Parmotrema hypotropum*)
- Snapping Turtle (*Chelydra serpentina*)

An effects assessment for each candidate/confirmed SWH type and/or species which may not be sufficiently protected by the establishment of Blocks 35 or 38 is provided below.

5.3.3.1 Grasshopper Sparrow

Grasshopper Sparrow was recorded as a "Possible" breeder at BI-1. This species is considered a "common and local resident" during the breeding season per the Niagara NAI (NPCA 2010) and occurs relatively frequently in the local landscape, with a robust population known between Canal Road and Highway 140 (extending northward into Welland). The individual recorded at BI-1 was only documented on a single occasion (hence its breeding status as "Possible" rather than "Probable"). It is further emphasized that the area in which this species was documented is a managed hayfield, which is not considered an appropriate habitat type for conservation of significant "open country" bird species pursuant to the SWH Criteria Schedules for Ecoregion 7E (MNRF 2015).

A prohibition on vegetation removal during the breeding season will sufficiently protect any Grasshopper Sparrow individuals that may breed in the hayfield prior to site preparation in accordance with relevant policy standards (see **Section 5.3.5**).

5.3.3.2 Monarch

As described in **Section 4.3.4.5**, Monarch adults were observed flying and/or nectaring in various parts of the Study Area and on-site reproduction was confirmed in 2022. While Monarch is known to be in decline for a variety of reasons (hence its provincial status as "Special Concern"), neither the species or its habitat are rare in Port Colborne or Niagara Region. It is expected that both nectaring and ovipositing habitat will be maintained to some extent through establishment of natural heritage Blocks 35 and 38. An additional recommendation related to Monarch and its habitat is offered as follows:

- **Milkweed is to be seeded and/or installed in any areas of necessary disturbance within Block 38 (e.g., during realignment of the Intermittent Drainage Feature) and within naturalized portions of Block 37 (e.g., within 30 m of the Central Quarry Pond), to be specified at detailed design.**

5.3.3.3 Kansas Hawthorn

As described in **Section 4.3.4.6**, confirmed and/or suspected Kansas Hawthorn individuals were documented in several locations throughout the Study Area as indicated on **Figure 4**. Additional locations of this species within the Study Area may occur but could not be confirmed due to absence of fresh flowering material. The following measures are recommended to avoid negative impacts to Kansas Hawthorn:

- **Prior to site preparation and/or vegetation removal, a spring (~May) survey for Kansas Hawthorn will occur to document all extant individuals within or adjacent to the area of disturbance.**

- **Following the survey, a Kansas Hawthorn Relocation Plan will be prepared specifying the location(s) of all individuals to be relocated along with appropriate relocation methods (e.g., tree spade) and areas (e.g., Blocks 35, 37, or 38).**

- **Only those Kansas Hawthorn which are considered to be in at least fair to good condition will be subject to relocation.**

5.3.4 Habitat of Endangered and Threatened Species

Per the assessment in **Appendix 8**, a total of four (4) Endangered or Threatened species are considered to have a possible likelihood of occurrence on the Subject Property (or were confirmed) given their habitat associations and current distribution in southern Ontario:

1) Eastern Meadowlark (*Sturnella vulgaris*)
2) Little Brown Myotis (*Myotis lucifugus*)
3) Northern Myotis (*Myotis septentrionalis*)
4) Tri-colored Bat (*Perimyotis subflavus*)

5.3.4.1 Eastern Meadowlark

As described in **Section 4.5.1**, Eastern Meadowlark was documented as a "Probable" breeder within the hayfield characterized as an Open Graminoid Meadow (MEGM4-1) during breeding bird surveys in 2022. Eastern Meadowlark was also documented within the same hayfield incidentally by Terrastory during the breeding season in 2023 and by others in 2011/2012.

This hayfield (4 ha in size) is proposed to be removed through the development application. Removal of Eastern Meadowlark habitat for the purposes of residential development, which does not otherwise satisfy any relevant exemptions under O. Reg. 242/08 (e.g., Sections 4.1 or 23.2), requires regulatory permission under Section 17 of the ESA. As a result, the following recommendation is offered:

- **Conversion of the hayfield to residential uses must be undertaken consistent with the requirements of the *Endangered Species Act* and associated regulations as they pertain to Eastern Meadowlark.**

The applicant may proceed via payment of a species conservation charge to the SAR Conservation Fund as a means to address relevant ESA requirements, to be confirmed at detailed design.

5.3.4.2 Endangered Bats

As noted in **Section 4.5.2**, the Deciduous Forest contains larger-diameter snags and trees with cracks, cavities, and/or loose bark; such conditions may support roosting by maternity colonies of Little Brown Myotis and/or Northern Myotis. Other treed portions of the Study Area including the Deciduous Woodland, other woodlands, and savannas could support generalized roosting activities within "day roost" trees, particularly for individual bats (e.g., males and non-reproductive females). Little Brown Myotis was recorded on-site (see **Section 3.3.5**), though it is not known if this individual was interacting with the on-site habitats (e.g., emerged from a nearby roost or was feeding) or was simply on transit through the landscape.

Portions of the Deciduous Forest are dominated by oaks (e.g., Red Oak, Bur Oak, Swamp White Oak), and may therefore also support roosting by Tri-colored Bat.

Establishment of Block 38 will adequately protect potential maternity roost (and "day roost") habitat within the Deciduous Forest as required by the ESA. Other treed areas which may support bat feeding or roosting (e.g., Deciduous Woodland in Block 35) will also be maintained, as will suitable

feeding habitat within these wooded areas and above the quarry ponds (which support sizeable insect hatches). The necessary woodland replacement areas to the north of the Northern Quarry Pond will also serve to maintain generalized bat roosting and feeding habitat in this area over the long-term (once the tree plantings mature).

Notwithstanding the above, there is some potential for impacts to Endangered bats during construction. The following measures are recommended:

- **Any necessary tree removal within the Limit of Disturbance will only take place between October 1 and March 31 to avoid the active season for bats. Should tree removal be required between April 1 and September 30, MECP will be contacted for further advice.**
- **If construction activities occur during the active bat season (i.e., April 1 and September 30), work will be restricted to daylight hours only and the use of artificial lighting will be avoided.**
- **Any lighting incorporated into the final building designs should be directed downward (i.e., towards the ground) and/or away from the adjacent woodlot (i.e., directed eastward) to the extent practicable.**

5.3.5 Other Natural Environment Considerations

Some vegetation removal (i.e., woody and herbaceous) is required to facilitate development. To avoid potential adverse effects on breeding birds during construction, the following measure is recommended:

- **All necessary vegetation removal (e.g., trees, meadow vegetation, etc.) will be completed outside the primary bird nesting period (i.e., to be completed between September 1 and March 31). Should minor vegetation removal be required in small areas with good visibility during the bird nesting period, a bird nesting survey will occur prior to any vegetation removal.**

The above timing restriction on vegetation removal covers the primary nesting period for most bird species but does not overlap with late winter nesting species such as certain owls and hawks. Given that Great-horned Owl was documented within the Deciduous Forest, the following additional measure is recommended in relation to vegetation removal timing:

- **Any necessary tree removal activities within the Deciduous Forest between February 1 and March 31 (if any) will only occur following completion of a survey for nesting raptors by a qualified professional. Should an active raptor nest be documented, a mitigation plan will be prepared for approval by MNRF.**

Through this study, Terrastory has recommended establishment of a 30 m setback from the edges of the Central and Northern Quarry Ponds to maintain ecological connectivity between Blocks 35 and 38 and protect key elements (e.g., habitat for Snapping Turtle). The project team has incorporated the inner 15 m of this waterbody setback into Block 38, while the outer 15 m is incorporated into

the adjacent parkland (Block 37). The following measures are recommended to achieve sufficient buffering between the parkland (Block 37) and natural heritage (Block 38) areas:

- **Portions of Block 37 overlapping with the 30 m setback from the quarry ponds will consist of natural, self-sustaining vegetation, and will not be maintained (mowed) or contain hardscaping associated with parkland uses.**
- **A Naturalization Plan will be prepared for the portion of Block 37 overlapping with the 30 m setback from the quarry ponds and will consist of installing a diversity of tree and shrub species native to the local landscape along with placement of a native seed mix (following any soil remediation measures, if required).**
- **The Naturalization Plan will also specify measures to remediate necessary disturbance associated with installation of the stormwater outlet to the Northern Quarry Pond, such as native woody plantings and/or application of a native seed mix.**
- **Other tree and shrub plantings in Block 37 specified through future Landscape Plans will consist of species native to the local landscape.**

To further minimize potential adverse effects to the natural environment and breeding birds during construction, the following measures are recommended:

- **Incorporation of Bird-Friendly Guidelines into the building and residence designs such as those published in City of Toronto's "Best Practices for Bird-Friendly Glass" and "Best Practices for Effective Lighting" will be considered at detailed design.**
- **Any Landscape Plans prepared as part of the development approval for the adjacent residential and commercial areas should rely primarily on woody species native to the local landscape and avoid species which are known to be invasive in southern Ontario.**

5.3.6 Summary of Technical Recommendations

All technical recommendations provided in **Section 5.3** are reiterated in **Appendix 10**.

6 APPLICABLE NATURAL HERITAGE AND ENVIRONMENTAL POLICIES

The following sections summarize the various municipal, provincial, and federal environmental policies that may apply to the proposed development plan and describe how the recommendations provided in this EIS will address these policies (where applicable).

6.1 City of Port Colborne Official Plan (September 2017)

The City's OP is a legal document prepared as required under section 14.7(3) of the *Planning Act*. An OP sets out goals, objectives, and policies that direct and manage land-use and future development activities and their effects on the social and natural environment of a municipality. Provincial plans that offer direction on matters of provincial interest are implemented principally through the City's

OP. Provided herein is a description of relevant environmental and natural heritage policies contained within the City's OP and an assessment of whether the development concept addresses such policies.

The eastern portion of the Subject Property falls within the Urban Area Boundary (i.e., "settlement area") of the City of Port Colborne per Schedule A (City-wide Land-Use) of the City's OP. This portion of the Subject Property is more specifically designated "Urban Residential" per Schedule A of the City's OP. The western portion of the Subject Property (overlapping with the back-flooded quarry ponds) is situated outside of the urban boundary and is designated "Rural" under the City's OP.

There are several natural heritage designations overlapping with the Subject Property. Schedule B (Natural Heritage) of the City's OP illustrates the Northern Quarry Pond as a designated EPA given overlap with the PSW. South of the designated EPA is an ECA per Schedule B overlapping with the Central Quarry Pond. Two identified "Streams" are also indicated on Schedule B outletting to identified "fish habitat" in the quarry ponds.

The City's primary natural heritage policy framework is outlined in Section 4 (Natural Heritage) of their OP. Pertinent natural heritage policies are summarized below.

- The preamble to **Section 4** clarifies that the "objective of these policies is to identify and protect significant natural areas while focusing on conservation and remediation, where appropriate."
- **Section 4.1** directs that "Natural Heritage Features" are shown on Schedule B as Environmental Protection Areas, Environmental Conservation Areas, Significant Valleylands, Stream Corridors and Fish Habitat, and are further delineated on Schedules B1 and B2.
    - **Policy 4.1.1** outlines "General Policies" for natural heritage protection, including that the City is to promote the protection and/or conservation (and where appropriate, restoration and enhancement) of Natural Heritage Features within it's boundaries (4.1.1a).
    - **Policy 4.1.1i** requests the completion of an EIS where development or redevelopment is proposed through a *Planning Act* application which may impact an Environmental Protection Area or Environmental Conservation Area per Schedule B.
    - **Policy 4.1.1j** provides buffer distances for a variety of natural heritage features, which can be reduced where determined through completion of an EIS.
    - **Policy 4.1.2.2** provides general guidelines for completion of an EIS.
    - **Policy 4.1.3** prohibits development or site alteration which may have negative impacts on surface and ground water resources.
- **Section 4.2** provides policies for Environmental Protection Areas as shown on Schedule B, which include Provincially Significant Wetlands, Provincially Significant Areas of Natural and Scientific Interest (ANSIs), Significant Habitat of Threatened and Endangered Species, and Natural Hazard Areas.
    - **Policy 4.2.1.1** prohibits development and site alteration within Provincially Significant Wetlands.
    - **Policy 4.2.2.1** prohibits development and site alteration within Provincially Significant ANSIs.

    - **Policy 4.2.3.1** prohibits development and site alteration within Significant Habitat of Threatened and Endangered Species except where undertaken in accordance with Provincial requirements.
- **Section 4.3** provides policies for Environmental Conservation Areas as shown on Schedule B, which include Regionally Significant Areas of Natural and Scientific Interest (ANSIs), Non-Provincially Significant Wetlands, Significant Wildlife Habitat, Significant Woodlands, Significant Valleylands, Habitats of Species of Concern, and Environmental Corridors and Linkages.
    - Overall, development within or adjacent to natural features comprising the Environmental Conservation Area designation are only permitted where it has been demonstrated that there will be no negative impacts on the feature or its ecological functions.
    - **Policy 4.3.6.1** directs that environmental corridors and linkages will be incorporated into development proposals, where feasible.

Terrastory reviewed potential impacts to the identified significant natural features – including the PSW, Significant Woodlands, candidate/confirmed SWH, and candidate/confirmed habitats of Endangered and Threatened Species – in **Section 5.3** of this EIS. The PSW is considered EPA pursuant to the City's OP, while the remaining significant natural features are considered ECA (some of which have been documented for the first time through this study and are not shown on Schedule B of the City's OP).

The establishment of Blocks 35 and 38 serve to maintain significant natural heritage features and functions within the Study Area which are functionally linked through the narrow section of Block 38 extending along the southern property boundary. Ecologically- and policy-appropriate setbacks have been incorporated into the project design, including 30 m setbacks from policy-significant wetlands and 10 m setbacks from the Significant Woodland within Block 38, along with 30 m setbacks from the Central and Northern Quarry Ponds.

Provided that Terrastory's recommended mitigation measures (see **Section 5.3**) are carried out in full, no negative impacts are anticipated to any Environmental Protection Area or Environmental Conservation Area identified herein. Based on the preceding discussion, the proposed development plan appropriately addresses the natural heritage protection provisions of the City's OP.

6.2 Regional Municipality of Niagara Official Plan (2014)

Policy 3.1.30.3.1 of the current ROP (approved by the Province with modifications on 4 November 2022) establishes that the operative natural heritage policy framework for applications which proceeded through pre-consultation one-year prior to the OP approval (no earlier than 4 November 2021) is the 2014 ROP (provided that a complete application is submitted by 4 November 2024). As such, the natural heritage policy framework contained within the 2014 ROP (rather than the 2022 ROP) is assessed for conformity herein.

Similar to the City's OP, the ROP directs land-use and land management within its jurisdiction. Relevant natural heritage policies contained in the ROP are largely consistent with the City's OP.

A simplified and condensed summary of relevant Regional natural heritage policies which the subdivision application must address is as follows:

- **Policy 7.A.2.1** – development and site alteration must not have negative impacts (including cross-jurisdictional and cross-watershed impacts) on the natural hydrologic characteristics of watercourses, the quantity/quality of surface and groundwater resources, and the functions that surface and groundwater resources provide to natural features and functions of the Core Natural Heritage System.
- **Policy 7.B.1.1** – the Core Natural Heritage System consists of: a) Core Natural Areas (EPA or ECA), b) Potential Natural Heritage Corridors, c) Greenbelt Natural Heritage and Water Resources Systems, and d) Fish Habitat.
- **Policy 7.B.1.2** – development and site alteration within the Core Natural Heritage System shall be subject to the Healthy Landscape Policies of Chapter 7.A and the Core Natural Heritage System Policies.
- **Policy 7.B.1.3** – Environmental Protection Areas (EPAs) include PSWs, Significant Life Science ANSIs, and significant habitat of Endangered and Threatened species.
- **Policy 7.B.1.4** – Environmental Conservation Areas (ECAs) include Significant Woodlands, Significant Wildlife Habitat, significant habitat of species of concern, Regionally significant Life Science ANSIs, other evaluated wetlands, significant valleylands, savannahs and tallgrass prairies, and alvars.
- **Policy 7.B.1.11** – development and site alteration may be permitted within and adjacent to Environmental Conservation Areas if it has been demonstrated that, over the long term, there will be no significant negative impact on the Core Natural Heritage System component or adjacent lands and the proposed development or site alteration is not prohibited by other Regional Policies.
- **Policy 7.B.1.13** – where development or site alteration is proposed in or near a Potential Natural Heritage Corridor, development should be located, designed, and constructed to maintain and, where possible, enhance the ecological functions of the Corridor in linking Core Natural Areas or an alternative corridor should be developed.
- **Policy 7.B.1.18** – where development or site alteration is approved in or adjacent to the Core Natural Heritage System, new created lots shall not extend into either the area to be retained in a natural state as part of the Core Natural Heritage System or the buffer zone identified through an Environmental Impact Study prepared in accordance with Policies 7.B.2.1 to 7.B.2.5. The lands to be retained in a natural state and the adjacent buffer zone shall be maintained as a single block and zoned to protect their natural features and ecological functions.
- **Policy 7.B.1.19** – where development or site alteration is approved within the Core Natural Heritage System or adjacent lands, a Tree Saving Plan must be prepared to maintain or enhance the remaining natural features and ecological functions.

Consistent with the conformity assessment provided under the City's OP in **Section 6.1** above, no negative impacts to any Environmental Protection Area or Environmental Conservation Area are anticipated. Based on the preceding discussion, Terrastory can conclude that the proposed development plan appropriately addresses the natural heritage protection provisions of the 2014 ROP.

6.3 Provincial Policy Statement 2020, pursuant to the *Planning Act*, R.S.O. 1990, c. P. 13

The Provincial Policy Study (PPS) is promulgated under the authority of the *Planning Act* and came into effect on 1 May 2020. The PPS provides direction to municipalities on land-use matters of

provincial interest and sets the policy framework for regulating the use and development of land. Municipal OP's must be consistent with the PPS. Per its preamble, the PPS *provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment*.

The principal PPS policies that apply to natural heritage protection are outlined in section 2.1. While recognizing that the natural heritage protection framework is not intended to limit the ability of agricultural uses to continue (Policy 2.1.9), the PPS instructs that *natural features and areas shall be protected for the long term* (Policy 2.1.1) and that their diversity and connectivity be *maintained, restored or, where possible, improved* (Policy 2.1.2). In Ecoregions 6E and 7E the PPS separates significant features into three categories:

1) Those in which development and site alteration are not permitted, including 1) Provincially Significant Wetlands and 2) Significant Coastal Wetlands (Policy 2.1.4);
2) Those in which development and site alteration are not permitted unless it can be demonstrated that no negative impacts on the significant natural feature and/or its functions will occur, including: 1) Significant Woodlands, 2) Significant Valleylands, 3) Significant Wildlife Habitat, 4) Significant Areas of Natural and Scientific Interest, 5) Non-significant Coastal wetlands, and 6) Adjacent Lands (Policy 2.1.5 and 2.1.8).
3) Those in which development and site alteration are not permitted except in accordance with federal/provincial requirements, including: 1) fish habitat (Policy 2.1.6) and 2) habitat of Endangered and Threatened Species (Policy 2.1.7).

In considering the aforementioned PPS policies, it has been determined that the proposed development plan addresses relevant natural heritage provisions of the PPS for the following reasons:

- Per **Table 4** of this report, no Significant Valleylands, Significant Areas of Natural or Scientific Interest, or Fish Habitat are present within the Study Area.
- Per **Section 5.3** of this report, no negative impacts to the Significant Woodlands or Significant Wildlife Habitat are anticipated given implementation of the proposed development plan provided that the recommended mitigation measures are implemented in full.
- Per **Section 5.3** of this report, Endangered and Threatened species habitat will be protected in accordance with provincial and federal requirements.

6.4 Growth Plan 2019, pursuant to the *Places to Grow Act*, S.O. 2005, c. 13

The Growth Plan provides a framework for growth management across the Greater Golden Horseshoe. Provisions related to the protection of Key Natural Heritage Features (KNHFs) and Key Hydrologic Features (KHFs), and the Natural Heritage System (NHS) overall are contained in sections 4.2.2 through 4.2.4.

Growth Plan NHS policies apply outside of settlement areas to the natural heritage systems identified in Official Plans that were approved and in effect as of 1 July 2017. As the portion of the Subject Property proposed for development is contained within a designated Settlement Area, Growth Plan NHS policies outlined sections 4.2.2 to 4.2.4 do not apply.

6.5 Ontario Regulation 41/24, pursuant to the *Conservation Authorities Act*, R.S.O. 1990, c. C.27

NPCA's regulatory jurisdiction includes areas within and adjacent to valley and stream corridors, the Lake Ontario/Lake Erie shorelines, hazard lands (e.g., floodplains, steep slopes, etc.), watercourses, and wetlands as provided under O. Reg. 41/24 of the *Conservation Authorities Act*. NPCA's Policy Document provides guidance for the administration of O. Reg. 41/24. Provided herein is a description of relevant NPCA policies and an assessment of whether the development application considered herein addresses such policies.

Permission to develop within an NPCA regulated area must establish how the "five tests" of development within or adjacent to "hazardous land" have been met. More specifically, development is only permitted if (in the opinion of the Authority) the control of 1) flooding, 2) erosion, 3) dynamic beaches, 4) unstable soil, or 5) bedrock will not be affected.

Based on previous direction from NPCA, it is understood that a transitional policy is in place in relation to application of the 2022 Policy Document, such that the 2020 NPCA Policy Document governs this application. Policies in both the 2020 and 2022 Policy Documents are referenced below.

Per **Section 4.7**, the following natural heritage features, hazards, and associated lands within the Study Area are regulated by NPCA:

- Areas within 30 m of any wetlands greater than 0.5 ha but less than 2 ha (per Policy 8.2.2.1 of NPCA's 2022 Policy Document) which also directly contribute to the hydrological function of a watershed through connection with a surface watercourse (per Subsection 28[25] of the *Conservation Authorities Act*);
- Areas within floodplain and/or erosion hazards associated with watercourses (no additional 15 m allowance is afforded to floodplains and erosion hazards in unconfined valleylands in NPCA's jurisdiction); and
- Any other areas which may be deemed "hazardous lands".

The spatial area encompassed by each of the 10 wetlands is provided in **Table 5**, indicating that the only NPCA regulated wetland within the Study Area is the marsh community on Adjacent Lands (within the centre of the Northern Quarry Pond) which also forms part of the PSW. All remaining wetlands are less than 0.5 ha in size and are therefore not regulated per Policy 8.2.2.1 of NPCA's 2022 Policy Document. The marsh community associated with the PSW is > 150 m from the Limit of Development.

The project team is proposing to realign the Intermittent Drainage Feature to redirect flows into the Killaly Street West road allowance and enclose approximately 115 m of the channel within a box culvert. Applicable standards related to watercourse "alterations" are outlined in Section 9.2.3 of NPCA's 2020 and 2022 Policy Documents. A portion of a separate ephemeral drainage feature flowing through Deciduous Forest (see **Figure 5**) will also be altered to support the proposed development plan, though it is unknown if this drainage feature is considered regulated.

Permission from NPCA under O. Reg. 41/24 is required to facilitate realignment and enclosure of the Intermittent Drainage Feature and may also be required where development is proposed within

other areas (e.g., Limestone Stockpile) if deemed "hazardous" land (e.g., due to presence of unstable soil or bedrock).

6.6 Provincial *Endangered Species Act*, S.O. 2007, c. 6

The *Endangered Species Act* (ESA) is administered by MECP and protects designated Endangered and Threatened species in Ontario from being killed, harmed, or harassed (s. 9) or having their habitat damaged or destroyed (s. 10). The protection afforded to Endangered and Threatened species "habitat" is either prescribed by O. Reg. 832/21, or (for those species that lack regulated habitat) is defined as *an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding.* Development activities that constitute habitat damage and/or destruction typically require permitting under section 17 of the ESA, or proceed through registration of the activity as a conditional exemption under O. Reg. 242/08 or O. Reg. 830/21 (where applicable).

A detailed assessment of potential and confirmed Endangered and Threatened habitat within the Subject Property is provided in **Appendix 8**. Per this assessment, and provided that relevant technical recommendations outlined in **Section 5.3** are implemented in full, it has been determined that the proposed development plan is consistent with the species and habitat protection provisions of the ESA. An approval under the ESA must be secured to convert breeding habitat for Eastern Meadowlark to residential uses.

6.7 Federal *Fisheries Act*, R.S.C. 1985, c. F-14

The amended federal *Fisheries Act* (Bill C-68) received Royal Assent in June 2019 while the updated fish and fish habitat protection provisions came into force in August 2019. Subsection 34.4(1) of the amended *Fisheries Act* prohibits all work, undertaking, or activity from causing the death of fish (other than fishing). Subsection 35(1) requires that project activities not result in the "*harmful alteration, disruption or destruction of fish habitat*" (HADD) unless undertaken in accordance with the requirements of a statutory exemption per subsection 35(2). Based on the Fish and Fish Habitat Protection Policy Statement (August 2019), HADD is interpreted by DFO to include "*any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes of fish*".

Notwithstanding the presence of quarry ponds containing fish, the Study Area lacks regulated fish habitat per DFO guidance given an absence of waterbodies which are hydrologically connected to downstream fish habitat. No in-water works or fill placement below the high-water mark of a surface water feature containing regulated fish habitat is proposed through this application. On this basis, it has been determined that the proposed development plan is consistent with the fish and fish habitat protection provisions outlined in the *Fisheries Act*.

6.8 Federal *Migratory Birds Convention Act*, S.C. 1994, c. 22

Section 5 of the Migratory Birds Regulations (2022) under the *Migratory Birds Convention Act, 1994* (MBCA) prohibits the disturbance or destruction of viable eggs, active nests, or nest shelters of a migratory bird. The provincial *Fish and Wildlife Conservation Act, 1997* (FWCA) extends the protection of bird nests and eggs to certain species not listed under the Migratory Birds Regulations (e.g., Corvids, Strigids, Accipitrids, etc.).

Provided that the recommendations outlined in **Section 5.3.5** are implemented in full (i.e., prohibition on vegetation removal during the bird breeding season), no impacts to breeding birds or bird nests protected by the MBCA or FWCA are anticipated.

7 CONCLUSIONS

In accordance with the Terms of Reference for this study (**Appendix 1**) and relevant natural heritage policies, the preceding Environmental Impact Study provides a detailed characterization of the natural environment occurring within and adjacent to the Subject Property on Killaly Street West in Port Colborne. This EIS has been prepared in support of City OPA, ZBA, and subdivision applications submitted to redesignate, rezone, and subdivide the lands for residential and mixed uses, and to support NPCA's regulatory review under O. Reg. 41/24 pursuant to the *Conservation Authorities Act*. Included herein is a comprehensive approach to identifying the presence or absence of several significant natural features afforded varying degrees of protection by applicable environmental policies. Potential negative impacts to the identified significant natural features are described with mitigation measures and technical recommendations offered to avoid or minimize such impacts and/or offer enhancements as appropriate.

Based on the findings presented in this report, the following natural features with ecological and/or policy significance have been identified:

- The **Provincially Significant Wainfleet Eagle Marsh Drain Wetland Complex** overlaps with the Northern Quarry Pond, though is less spatially extensive than previously mapped by MNRF.
- All other wetlands within the Study Area are considered "identified" or "unevaluated" and lack policy significance, with the exception of the **Silky Dogwood thicket swamp** which represents a Provincially Rare vegetation community (i.e., Significant Wildlife Habitat).
- Two separate **Significant Woodlands** have been documented and are referred to herein as the "Deciduous Forest" and "Deciduous Woodland".
- Confirmed **Significant Wildlife Habitat** types were documented including a significant snake hibernaculum and habitat for species of conservation concern (e.g., Kansas Hawthorn, Wood Thrush), along with other candidate SWH types.
- Confirmed habitat for the **Threatened Eastern Meadowlark** occurs in association with an on-site hayfield while potential habitat for three **Endangered bats** (Little Brown Myotis, Northern Myotis, and Tri-colored Bats) is also present.

Portions of the Study Area with the greatest concentration of significant natural features include the Deciduous Forest (and SWH therein), Deciduous Woodland (and SWH therein), and Northern Quarry Pond, along with their associated buffer zones. Much of these features/areas have been incorporated into Blocks 35 and 38 and will be protected for their natural heritage values over the long-term. Parkland Block 37 abuts the quarry ponds and will provide supportive buffering and corridor functions to the aforementioned natural heritage areas.

Based on the presence of the above-mentioned significant natural heritage features, a comprehensive set of recommendations and mitigation measures are offered in **Section 5.3** to achieve "no negative impact" and address applicable municipal, provincial, and federal policies outlined in **Section 6**. This includes (among other measures):

- Preparation of a **Woodland Replacement Plan** to ensure no net loss of woodland cover post-development.
- Preparation of a **Tree Saving Plan** to address proposed encroachment within the Significant Woodland and confirm tree replacement quantities.
- Preparation of a **Comprehensive Trails Plan** to guide and direct human movements through the designated and protected natural heritage areas.
- Preparation of a **Wetland Buffer Enhancement Plan** to support the design of the realigned Intermittent Drainage Feature as it flows southward through Block 38.
- Preparation of a **Naturalization Plan** for portions of parkland Block 37 that extend within 30 m of the quarry ponds and other portions of Blocks 37 and 38 subject to temporary construction disturbance (e.g., during construction of the stormwater outlet to the Northern Quarry Pond).
- Preparation of a **Linkage Enhancement Plan** to improve the ecological functions of the 30 m corridor connecting Block 35 (Significant Woodland) with Block 38.
- Establishment of **permanent, chain-link fencing** surrounding the perimeter of natural heritage Blocks 35 and 38.
- Other construction-related measures such as **vegetation removal timing windows** (to protect nesting birds and roosting bats) and **Erosion and Sediment Control Plans** to be specified at detailed design.
- Other design-related measures such as incorporation of **bird-friendly guidelines** into the building and residence layouts.
- **Securement of an ESA permit** to address conversion of Eastern Meadowlark habitat to residential and mixed uses.

It has been determined that no negative impacts to the above-noted features will occur and that the development application appropriately addresses applicable natural heritage policies provided that all technical mitigation measures recommended herein (summarized in **Appendix 10**) are implemented in full. It is advised that such technical recommendations be incorporated into any necessary development approvals (e.g., draft plan conditions) that permit the development applications.

8 REFERENCES

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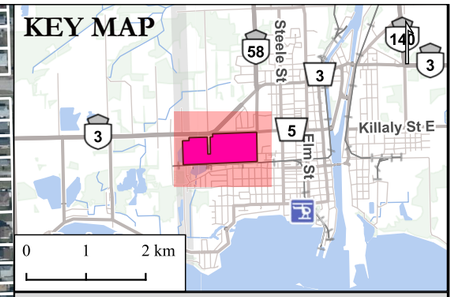


Legend

Area of Assessment
- Subject Property
- Study Area
- Parcel Fabric
- Intermittent Drainage Feature
- Ephemeral Drainage Feature
- Drainage Ditch

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

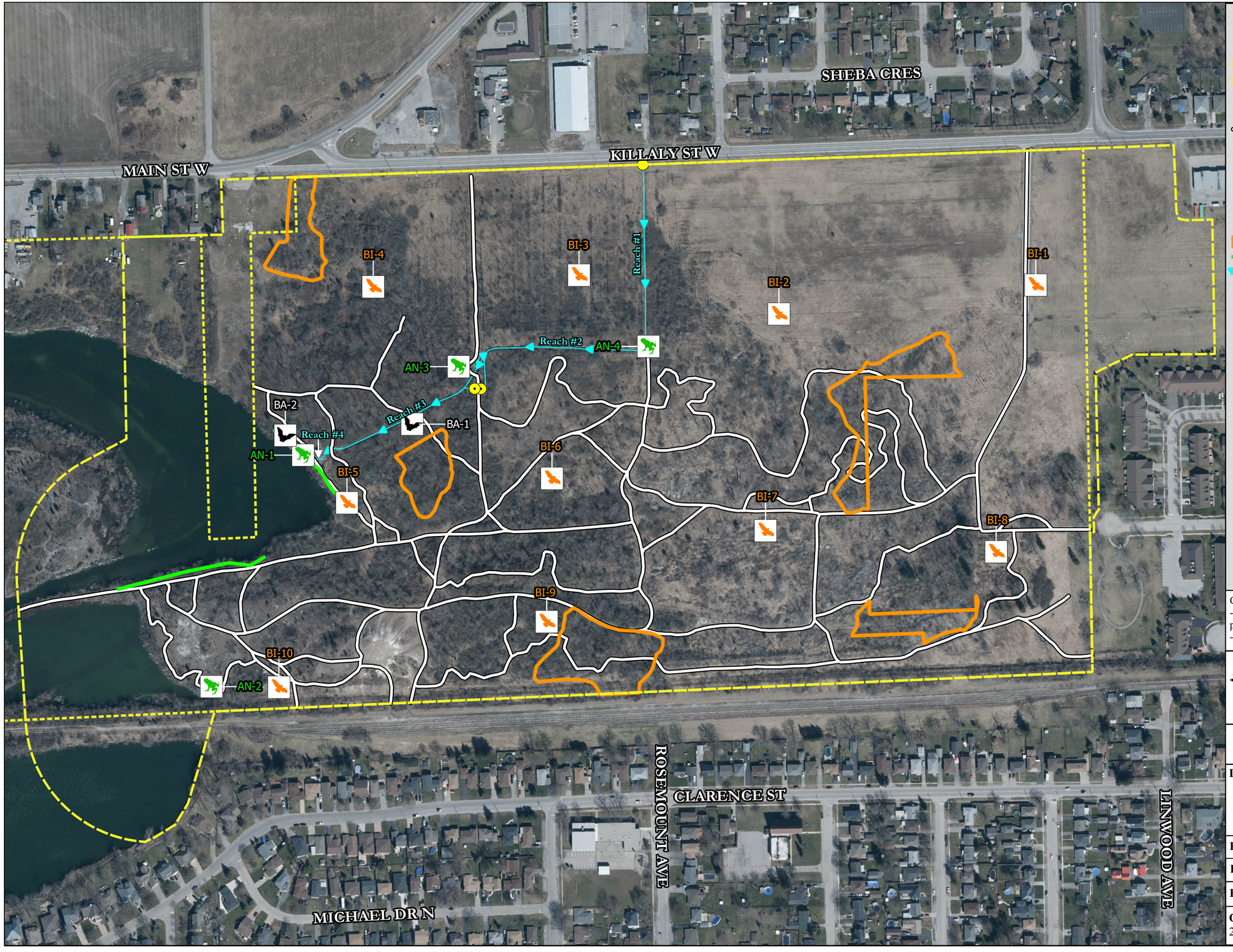
TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

N | 1:5,000 | 0 50 100 150 m

Location:
Mapleview Subdivision,
City of Port Colborne

Project No.: 22013
Date: 2024-02-16
By: TK **Checked:** --
Orthophotograph Date: 2020 (Niagara Region).

Figure 1:
Location of the Study Area



Legend

Area of Assessment
- Subject Property
- Study Area

Built Structures and Infrastructure
- Culvert Inlet/Outlet
- Trail Network

Survey Stations
- Anuran Calling Stations
- Bat Acoustic Monitoring Stations
- Breeding Bird Survey Stations
- Bat Roosting Habitat Assessment Areas
- Turtle Basking Survey Transects
- Intermittent Drainage Feature

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

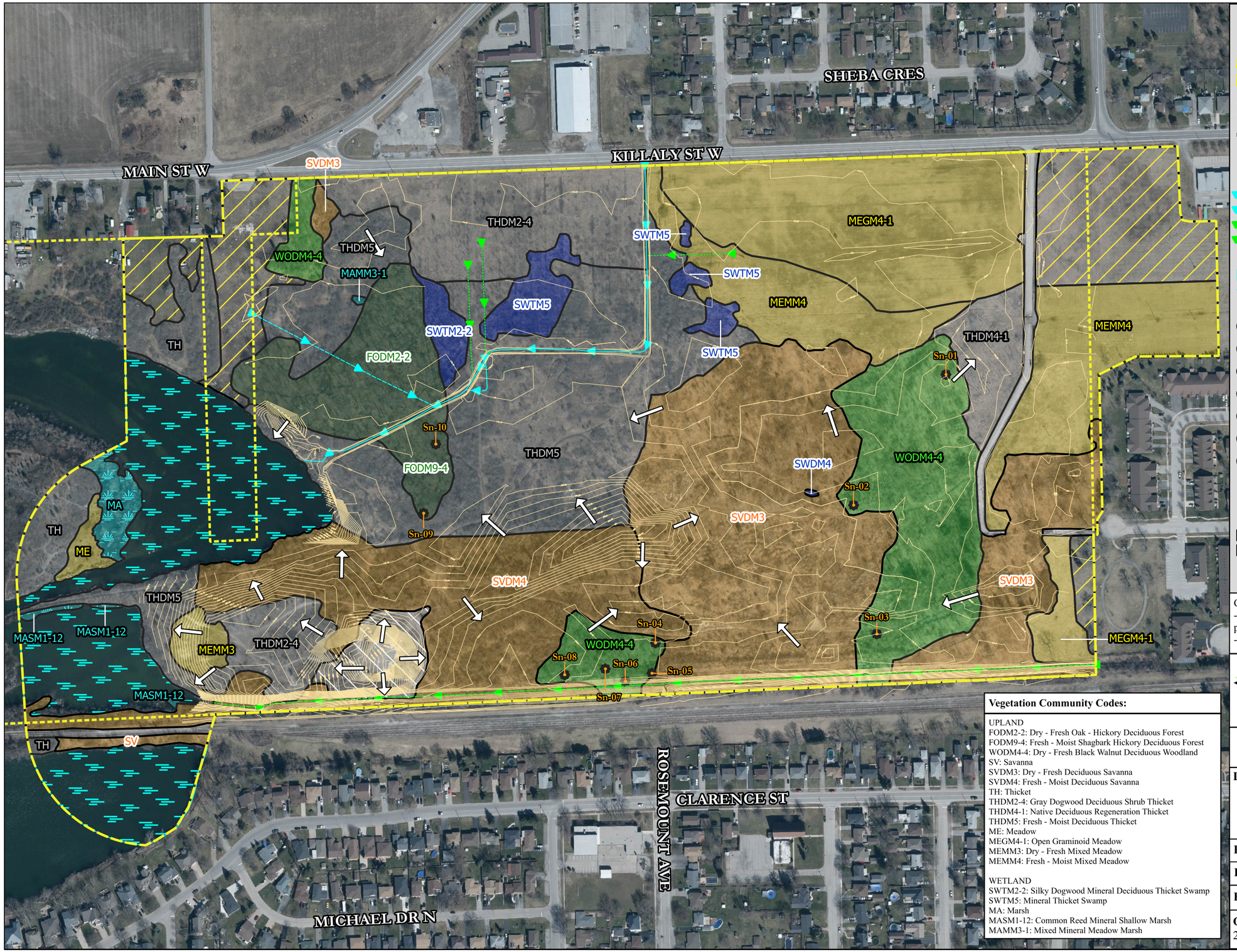
TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

N | 1:3,500 | 0 25 50 75 100 125 m

Location:
Mapleview Subdivision,
City of Port Colborne

Project No.: 22013
Date: 2024-02-17
By: TK **Checked:** --
Orthophotograph Date: 2020 (Niagara Region).

Figure 2:
Survey Stations and Areas



Legend

Area of Assessment
- Subject Property
- Study Area

Biophysical Features and Conditions

Terrain
- Overland Runoff Direction
- Topographic Contours (0.25 m; from Topographic Survey)

Surface Water Drainage Features
- Intermittent Drainage Feature
- Ephemeral Drainage Feature
- Drainage Ditch
- Other Swales

Other Surface Water Features
- Wetlands
- Back-flooded Quarry Pond

Vegetation Communities
- Forest
- Woodland
- Savanna
- Thicket
- Meadow
- Swamp
- Marsh

Other Natural Features
- Potential Bat Roosting Trees and Snags

Anthropogenic Areas
- Manicured Open Areas
- Limestone Stockpile

Vegetation Community Codes:

UPLAND
FODM2-2: Dry - Fresh Oak - Hickory Deciduous Forest
FODM9-4: Fresh - Moist Shagbark Hickory Deciduous Forest
WODM4-4: Dry - Fresh Black Walnut Deciduous Woodland
SV: Savanna
SVDM3: Dry - Fresh Deciduous Savanna
SVDM4: Fresh - Moist Deciduous Savanna
TH: Thicket
THDM2-4: Gray Dogwood Deciduous Shrub Thicket
THDM4-1: Native Deciduous Regeneration Thicket
THDM5: Fresh - Moist Deciduous Thicket
ME: Meadow
MEGM4-1: Open Graminoid Meadow
MEMM3: Dry - Fresh Mixed Meadow
MEMM4: Fresh - Moist Mixed Meadow

WETLAND
SWTM2-2: Silky Dogwood Mineral Deciduous Thicket Swamp
SWTM5: Mineral Thicket Swamp
MA: Marsh
MASM1-12: Common Reed Mineral Shallow Marsh
MAMM3-1: Mixed Mineral Meadow Marsh

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

N | 1:3,500 | 0 25 50 75 100 125 m

Location:
Mapleview Subdivision,
City of Port Colborne

Project No.: 22013
Date: 2024-02-18
By: TK **Checked:** --
Orthophotograph Date: 2020 (Niagara Region).

Figure 3:
Biophysical Features and Conditions

Legend

Area of Assessment
- Subject Property
- Study Area

Significant Natural Features - Agency Identified
- Provincially Significant Wainfleet Eagle Marsh Drain Wetland Complex

Significant Natural Features - Terrastory

Species of Conservation Interest
- Grasshopper Sparrow (Ammodramus savannarum)
- Eastern Meadowlark (Sturnella magna)
- Eastern Wood-pewee (Contopus virens)
- Wood Thrush (Hylocichla mustelina)
- Snapping Turtle (Chelydra serpentina)
- Monarch (Danaus plexippus) - Caterpillar
- Kansas Hawthorn (Crataegus coccinioides) - Confirmed or Suspected
- Powdered Ruffle Lichen (Parmotrema hypotropum)

Significant Natural Features
- Wetland (Terrastory Mapping and/or Confirmed by NPCA)
- Significant Woodland (Terrastory Mapping and/or Confirmed by Region)
- Other Woodland (Terrastory Mapping)
- Eastern Meadowlark Breeding Habitat
- Provincially Rare Vegetation Community (Silky Dogwood Thicket Swamp)
- Area of High Snake Concentration
- Confirmed Significant Snake Hibernaculum

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

N | 1:3,500 | 0 25 50 75 100 125 m

Location:
Mapleview Subdivision,
City of Port Colborne

Project No.: 22013
Date: 2024-02-17
By: TK **Checked:** --
Orthophotograph Date: 2020 (Niagara Region).

Figure 4:
Significant Natural Features and Areas

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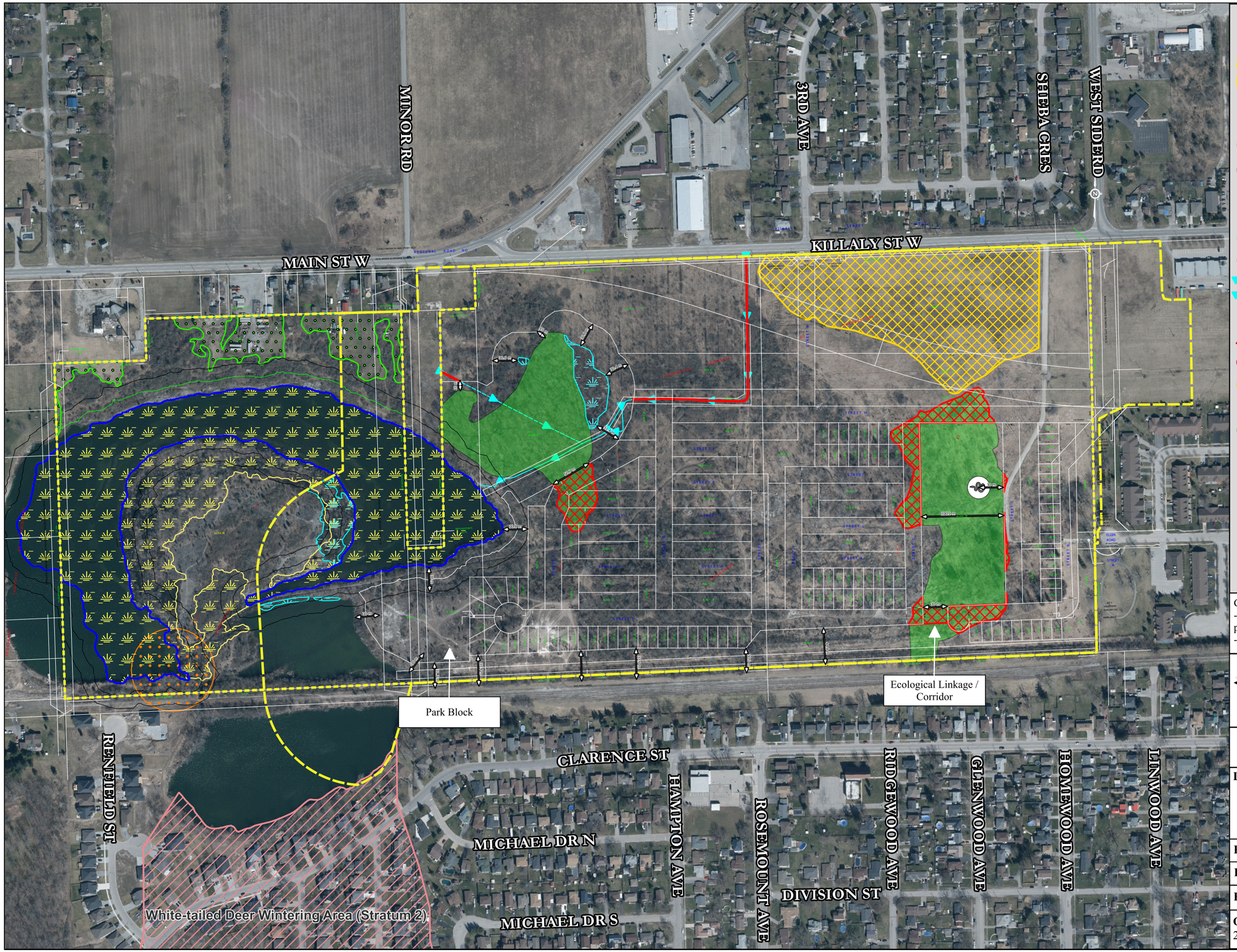

Legend

Area of Assessment
- Subject Property
- Study Area

Significant Natural Features - Agency Identified
- Provincially Significant Wainfleet Eagle Marsh Drain Wetland Complex
- Regionally Significant Onondaga Formation Earth Science ANSI
- White-tailed Deer Wintering Area (Stratum 2)

Significant Natural Features - Terrastory
- Confirmed Significant Snake Hibernaculum
- Wetland to be Retained
- Significant Woodland
- Intermittent Drainage Feature
- Ephemeral Drainage Feature

Proposed Activities
- Draft Plan of Subdivision
- Watercourse Alterations/Enclosures
- Significant Woodland Encroachment (1.1 ha)
- Eastern Meadowlark Habitat Encroachment (5 ha)

Mitigation Measures Recommended
- Conceptual Woodland Replacement Areas

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 905.745.5398

N | 1:4,500 | 0 50 100 150 m

Location:
Mapleview Subdivision,
City of Port Colborne

Project No.: 22013
Date: 2024-04-01
By: TK **Checked:** --
Orthophotograph Date: 2020 (Niagara Region).

Figure 5:
Proposed Development Plan with Natural Heritage Protection Framework

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Appendix 1. Terms of Reference

April 9, 2022
Project No.: 22013

Cara Lampman
Manager Environmental Planning
Planning and Development Services, Niagara Region
905.980.6000 x3430
Cara.Lampman@niagararegion.ca

Sarah Mastroianni
Manager of Planning and Development
250 Thorold Road West, 3rd Floor
Welland, ON L3C 3W2
(905) 788-3135 x249
smastroianni@npca.ca

SUBJECT: EIS Terms of Reference
Killaly Street West (Vacant Lot of Record)
City of Port Colborne

Dear Cara and Sarah,

Terrastory Environmental Consulting Inc. (hereinafter "Terrastory") has been retained by 1000046816 Ontario Inc. (hereinafter "the Applicant") to complete an Environmental Impact Study (EIS) in support of a subdivision application at the above-captioned location in Port Colborne. The Study Area encapsulates lands between Highway 3 (north), quarry ponds (west), former CNR railway (south), and residential areas (east). A Provincially Significant Wetland (Wainfleet Eagle Marsh Drain Wetland Complex) occupies a former extraction area (back-flooded quarry pond) in the western portion of the Study Area. The lands were historically used for industrial purposes.

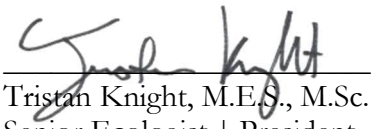
A subdivision application for the lands was submitted around 2012, which at that time was referred to as "Rosemount Estates". The 2012 application was supported by an Environmental Impact Study (EcoTec Environmental Consultants Inc.) submitted in 2012 and revised in 2013. Terrastory has been provided with this report which offers a preliminary (though somewhat outdated) ecological portrait of the lands.

Given the natural features documented, a comprehensive three-season EIS is required. A Terms of Reference (ToR) is provided below for review and approval by Regional Environmental Planning and NPCA staff (see **Figure 1**).

Should you have any questions or require further clarification regarding the contents of this letter, I would be pleased to discuss them further and can be reached by phone (905.745.5398) or email (tristan@terrastoryenviro.com).

Regards,

Terrastory Environmental Consulting Inc.



Tristan Knight, M.E.S., M.Sc.
Senior Ecologist | President

TERMS OF REFERENCE

Approach

Overall, the EIS will be undertaken in accordance with Niagara Region's EIS Guidelines (Jan. 2018) and will incorporate the following components:

- ✓ Identification, description, and delineation of all significant natural heritage features on-site, including their functions;
- ✓ Connections between the identified significant natural features and broader landscape, including potential linkages with off-site features and the natural heritage system (where applicable);
- ✓ Description of the proposed development and assessment of unavoidable impacts, including their implications on the natural environment and any identified significant natural heritage features;
- ✓ Technical recommendations and mitigation measures to address "no negative impacts", including enhancement/restoration measures (where applicable); and
- ✓ Assessment of application conformity with relevant municipal, provincial, and federal natural heritage requirements.

Background Information Gathering

Background biophysical information will be gathered from the following sources:

- Current and historical aerial photographs.
- Existing natural feature mapping.
    - City of Port Colborne OP Schedules A (City-wide Land Use), B (Natural Heritage), B1 (Environmental Protection Areas), B2 (Environmental Conservation Areas), and B3 (Vulnerable Aquifer Areas).
    - Regional Municipality of Niagara OP Schedule C (Core Natural Heritage).
    - Land Information Ontario (LIO).
    - NPCA regulation mapping (screening maps)
- Previous EIS Report (EcoTec 2013).
- Wetland Evaluation Record for the Provincially Significant Wainfleet Eagle Marsh Drain Wetland Complex.
- Ontario Base Mapping, LiDAR, and other sources of topographic information.
- Ontario well records from the local landscape.
- Soils mapping for the local landscape.
- Paleozoic and surficial geology mapping for the local landscape.
- Physiographic mapping for the local landscape.
- NHIC element occurrences.
- iNaturalist element occurrences, including rare species records retrieved through the "(NHIC) Rare Species of Ontario" project.
- eBird.
- Ontario Breeding Bird Atlas database.
- Ontario Butterfly Atlas.
- iNaturalist "Odonata of Ontario" project.
- DFO Aquatic Species at Risk Maps.
- Atlas of the Mammals of Ontario.

Field Work Program

The proposed 2022 fieldwork program in support of the EIS is outlined below in **Table 1**.

Table 1. Fieldwork Program.

2022 Fieldwork Program	Schedule (approx.)
• **Bat snag/cavity tree habitat assessment** will be undertaken based on the Survey Protocol for SAR Bats within Treed Habitats (MNRF 2017). Habitat assessment to be restricted to areas in which tree removal within forest/woodland communities is anticipated (if any). ***Note – need for acoustic monitoring to be determined based on the conditions documented and proposed development plan.**	• April (i.e., before leaf-out)
• Three (3) rounds of **Anuran calling surveys** will be conducted in accordance with the Marsh Monitoring Protocol (Bird Studies Canada et al. 2008). Surveys will occur within the appropriate season (April to June), time of day (between 30 minutes after sunset and 12:00am), and weather conditions (minimal to no rain, wind speed ≤3 on the Beaufort Wind Scale).	• Early April to Early June
• Two (2) rounds of **visual encounter surveys for spring emerging snakes** will be undertaken to document any potential hibernacula within the Subject Property. Surveys will take place within the appropriate season (late March-late April), time of day (approximately 10am – 4pm), and weather conditions (air temperature between 8ºC and 25ºC when sunny, >15 ºC when overcast, no rain, wind speed ≤3 on the Beaufort Wind Scale). Where present, cover objects (e.g., rocks, debris, etc.) will be overturned to detect any individuals beneath.	• Late March to April
• Two (2) rounds of **turtle emergence surveys** are to occur adjacent within the quarry ponds. Surveys will take place between 10:00 am and 4:00 pm under sunny conditions and when air temperature is at least 10 °C. Surveys can be carried out under light overcast conditions only when air temperature is above °15 C and is warmer than water temperature.	• Mid April to June.
• Two (2) rounds of **breeding bird surveys** will be conducted in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001). Surveys will occur within the appropriate season (May 24–July 10), time of day (between dawn and approximately 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). While the OBBA protocol recommends that stations be situated at least 300 m apart (to avoid double counting), the stations will likely be established in closer proximity to ensure more comprehensive survey coverage. Surveys to occur for a minimum duration of 10 minutes at each station. A **third (3) survey round** may be required depending upon the presence or absence of habitat for Eastern Meadowlark and/or Bobolink.	• Late May to Mid June (Round #1) • Mid June to Early July (Round #2) • Late July (Round #3, if needed)
• **Watercourse characterization** will be undertaken in accordance with OSAP module S4.M1 (Rapid Assessment Methodology for Channel Structure). At this time, Terrastory has documented two (2) surface water drainage features within the Subject Property.	• Spring
• **Electrofishing survey** of watercourses containing potential habitat for fish.	• Spring
• **Vegetation community characterization** will be undertaken in accordance with the Ecological Land Classification (ELC) System for Southern Ontario (Lee et al. 1998).	• June
• **Three-season vascular plant survey** (i.e., late spring/early summer and fall) will be undertaken via an area search (i.e., "wandering transects"). All species recorded will be listed in an appendix along with their respective Coefficient of Conservatism, Wetness Coefficient, and local rank (according to (Oldham 2017).	• June-early Sept
• **Plot-based Canopy Cover Analysis** in areas which contain partial tree cover to clarify ELC community type (e.g., forest, woodland, savanna, thicket) and inform regulatory considerations related to forests/woodlands.	• Summer

• **Natural feature staking** will be undertaken with Regional and NPCA Planning Ecology staff to confirm 1) woodland driplines (where present), and 2) wetland boundaries according to OWES. Potentially regulated surface water features will be reviewed with NPCA. Approved natural feature boundaries to be surveyed.	• Summer
• **Incidental observations** of flora/fauna during all site visits.	• April-early Sept

Proposed Report Table of Contents

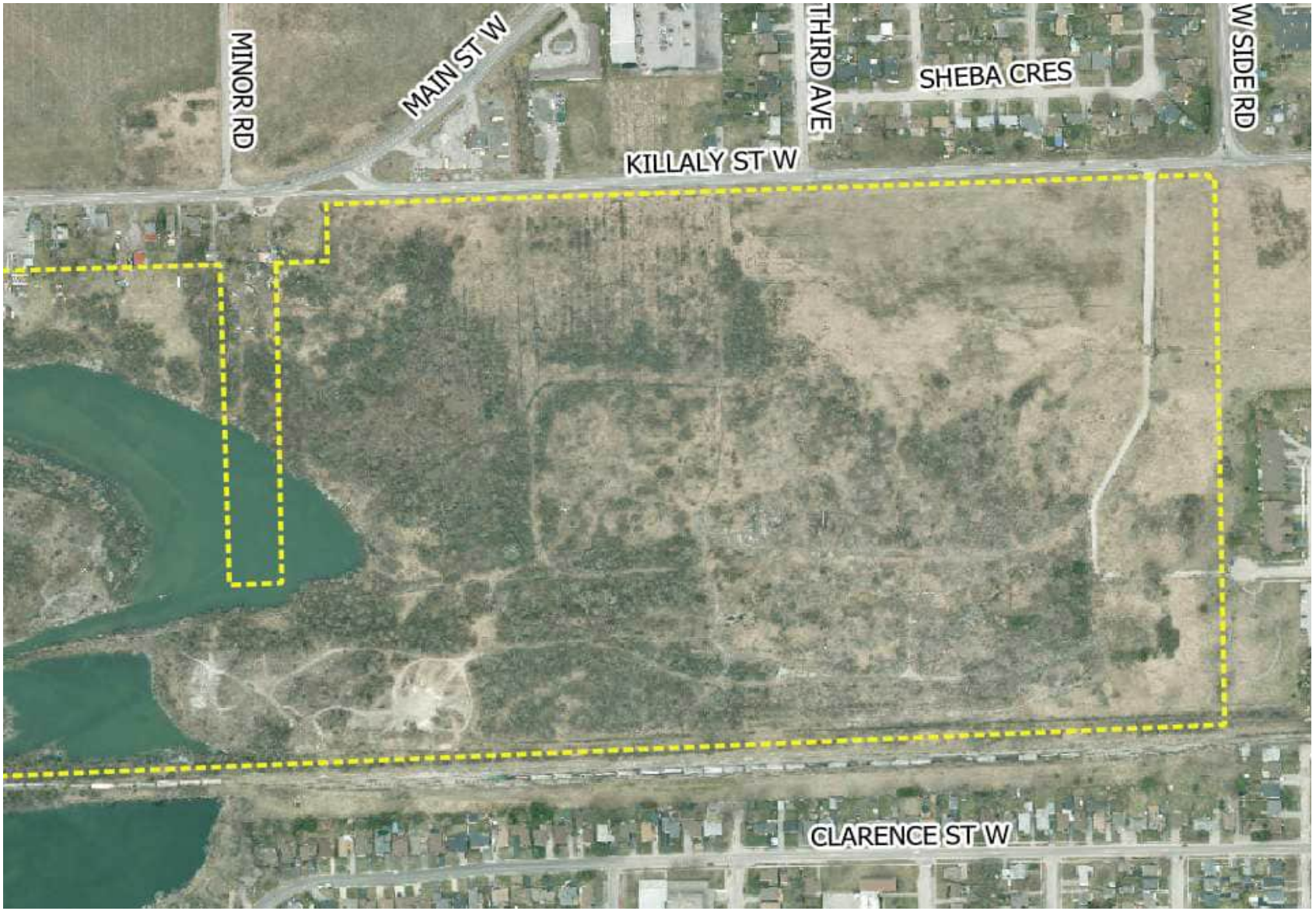
The on-site biophysical information collected per **Table 1** will be assessed and reviewed in concert with background biophysical information collected from a variety of sources. The information will be summarized into an EIS report which will address the requirements of the Region's Environmental Impact Study Guidelines (Jan. 2018) and relevant natural heritage policies.

A proposed Table of Contents for the EIS will generally follow the outline below:

1) Introduction
    a. Study Background
    b. Study Purpose
2) Approach and Methods
    a. Background Biophysical Information Collected (see above).
    b. Agency correspondence (as needed).
    c. Site Assessments and Survey Methodologies (*see fieldwork plan in **Table 1**).
    d. Impact/Effects Assessment and Mitigation
    e. Natural Heritage and Environmental Policy Context
        i. City of Port Colborne Official Plan
        ii. Regional Municipality of Niagara Official Plan
        iii. Growth Plan pursuant to the *Places to Grow Act*
        iv. Provincial Policy Statement pursuant to the *Planning Act*
        v. NPCA regulation (O. Reg. 155/06) and related policies pursuant to the *Conservation Authorities Act*
        vi. *Endangered Species Act* including Ontario Regulation 242/08
        vii. *Fisheries Act*
        viii. *Fish and Wildlife Conservation Act*
        ix. *Migratory Birds Convention Act*
3) Existing Biophysical Conditions
    a. Land-use Setting
    b. Physical Setting (e.g., hydrology, surficial geology, etc.).
    c. Ecological Setting
        i. Vegetation Communities, including ELC mapping.
        ii. Vascular Plants, including mapping of all SAR and provincially/regionally rare species documented (*if any).
        iii. Anuran breeding
        iv. Bat habitat (and acoustic monitoring results, if needed).
        v. Breeding birds (including marsh birds and nightjars, if documented).
        vi. Herpetofauna
        vii. Fish Habitat
        viii. Incidental Wildlife Recorded
4) Significance Assessment

   a. Significant Natural Features
      i. Wetlands
      ii. Significant Woodland
      iii. Candidate/Confirmed Significant Wildlife Habitat
      iv. Potential/Confirmed Endangered and Threatened Species Habitat
      v. Watercourse/fish habitat
      vi. Any additional features (*if present)
   b. Significant Species (*if present)
   c. Other
5) Description of the Proposed Development
   a. Include consideration for and review of other overlapping technical studies/plans (e.g., stormwater management, hydrogeology).
6) Impact Assessment
   a. Development Alternatives and Avoidance Measures incorporated into Project Design.
   b. Effects Assessment (e.g., Spatial extent, magnitude, frequency, duration, adjacent lands, etc.).
   c. Wetland Water Balance Risk Evaluation (TRCA 2017).
7) Mitigation Strategy
8) Conclusions
9) References

Figure 1. Location of the Subject Property.



Tristan Knight

From: Boudens, Adam <Adam.Boudens@niagararegion.ca>
Sent: May 25, 2022 10:50 AM
To: Tristan Knight; Lampman, Cara; smastroianni@npca.ca
Cc: Karlewicz, Lori
Subject: RE: EIS Terms of Reference - Killaly Street West, Port Colborne
Attachments: EIS Terms of Reference - Killaly Street West, Port Colborne

Hi Tristan,

Regional Environmental Planning staff have reviewed the attached Terms of Reference for the Environmental Impact Study required for the vacant lot located on Killaly Street West, Port Colborne. As it relates to reptile surveys, staff request that additional survey effort be considered should potential habitat be identified on the subject lands. Otherwise, staff offer no objection to the proposed work plan. Please contact me to coordinate a site visit to stake the extent of Significant Woodlands, if determined to be present, and please include a copy of this correspondence in the Final Report.

Please let me know if you have any questions.

Thanks,

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: Tristan Knight <tristan@terrastoryenviro.com>
Sent: Friday, April 15, 2022 7:20 AM
To: Lampman, Cara <Cara.Lampman@niagararegion.ca>; smastroianni@npca.ca
Subject: EIS Terms of Reference - Killaly Street West, Port Colborne

Hi Cara, Sarah,

Terrastory has been retained to complete an EIS report in support of a subdivision application on the south side of Killaly Street West in Port Colborne. Please find attached our proposed ToR for review and comment.

As the field season has commenced we are proceeding with the fieldwork program as proposed. We look forward to your comments.

Cheers,
T.

—
Tristan Knight M.E.S., M.Sc.
Senior Ecologist | President
Terrastory Environmental Consulting Inc.
(c) 905-745-5398
www.terrastoryenv.com

Tristan Knight

From: Nikolas Wensing <nwensing@npca.ca>
Sent: June 6, 2022 4:40 PM
To: Tristan Knight
Subject: Re: Question Regarding TOR for Killaly Street West, Port Colborne

Hello Tristan,

Thank you for the clarification, it is greatly appreciated.

I can confirm that NPCA staff have completed their review of the provided Terms of Reference, *EIS Terms of Reference*
Killaly Street West (Vacant Lot of Record) City of Port Colborne submitted on April 9th, 2022, and prepared by Terrastory Environmental Consulting Inc. In general, NPCA staff are satisfied with the TOR submitted by Terrastory Environmental Consulting Inc. but note that the *Pre-Application Consultation Concept Site Plan (file ENG-1.0-V5)* may be subject to modification based on results presented in an Environmental Impact Study. Further, NPCA staff are supportive of a summer site visit to verify wetland staking.

Sincerely,

Nikolas Wensing, B.A., MPlan
Watershed Planner
Niagara Peninsula Conservation Authority (NPCA)
250 Thorold Road West, 3rd Floor, Welland, ON, L3C 3W2
905-788-3135, ext. 228
nwensing@npca.ca
www.npca.ca

From: Tristan Knight <tristan@terrastoryenviro.com>
Sent: Sunday, May 22, 2022 5:22 PM
To: Nikolas Wensing <nwensing@npca.ca>

Cc: Theresa Bukovics <tbukovics@npca.ca>
Subject: RE: Question Regarding TOR for Killaly Street West, Port Colborne

Hi Nik,

As part of NPCA's ToR review, I believe it is appropriate to consider the previous concept plan that was circulated through pre-con to assemble your comments/notes on the ToR.

This is a large site requiring several supporting technical studies (EIS, HydroG, etc.). The overall plan that the Applicant ultimately proceeds with must reflect the outcome of the technical studies which are currently ongoing, which of course may result in modifications to the plan that was circulated at pre-con.

Cheers,
T.

—
Tristan Knight M.E.S., M.Sc.
Senior Ecologist | President
Terrastory Environmental Consulting Inc.
(c) 905-745-5398
www.terrastoryenv.com

From: Nikolas Wensing <nwensing@npca.ca>
Sent: May 17, 2022 8:54 AM
To: Tristan Knight <tristan@terrastoryenviro.com>
Cc: Theresa Bukovics <tbukovics@npca.ca>
Subject: Question Regarding TOR for Killaly Street West, Port Colborne

Hello Tristan,

I am emailing you regarding the proposed TOR for Killaly Street West, Port Colborne. NPCA staff are currently finalizing their review of the provided TOR, but before they complete their review, I was wondering if you had a Site Plan for the proposed development that you could share with the NPCA?

I note that the subject property was previously in pre-con with the NPCA, and I am wondering if the previous proposed development that we had commented on is the same as the current proposed development.

Sincerely,

Nikolas Wensing, B.A., MPlan
Watershed Planner
Niagara Peninsula Conservation Authority (NPCA)
250 Thorold Road West, 3rd Floor, Welland, ON, L3C 3W2
905-788-3135, ext. 228
nwensing@npca.ca
www.npca.ca

Updates regarding NPCA operations and activities can be found at Get Involved NPCA Portal, or on social media at [facebook.com/NPCAOntario]facebook.com/NPCAOntario & twitter.com/NPCA_Ontario.

For more information on Permits, Planning and Forestry please go to the Permits & Planning webpage at https://npca.ca/administration/permits.

For mapping on features regulated by the NPCA please go to our GIS webpage at https://gis-npca-camaps.opendata.arcgis.com/ and utilize our Watershed Explorer App or GIS viewer.

To send NPCA staff information regarding a potential violation of Ontario Regulation 155/06 please go to the NPCA Enforcement and Compliance webpage at https://npca.ca/administration/enforcement-compliance

Due to the COVID-19 pandemic, the NPCA has taken measures to protect staff and public while providing continuity of services. The NPCA main office is open by appointment only with limited staff, please refer to the Staff Directory and reach out to the staff member you wish to speak or meet with directly. Our Conservation Areas are currently open, but may have modified amenities and/or regulations.

Updates regarding NPCA operations and activities can be found at Get Involved NPCA Portal, or on social media at NPCA's Facebook Page & NPCA's Twitter page.

Appendix 2. Representative Photographs

Photo 1. Intermittent Drainage Feature during late-winter freshet in 2022 (17 February 2022).

Photo 2. Provincially Rare Powdered Ruffle Lichen (17 February 2022).

Photo 3. Intermittent Drainage Feature where it outlets (cascades) into the Northern Quarry Pond (17 February 2022).

Photo 4. Intermittent Drainage Feature in early spring 2022 (07 April 2022).

Photo 5. Eastern Garter Snake (12 April 2022).

Photo 6. CSP culvert where the Intermittent Drainage Feature is conveyed beneath Killaly Street West onto the Subject Property facing north (24 May 2022).

Photo 7. Bedrock channel of the Intermittent Drainage Feature showing mostly dry conditions by mid-spring 2022 facing north towards Killaly Street West (24 May 2022).

Photo 8. Deciduous Forest (24 May 2022).

Photo 9. Slender Loose-flowered Sedge within the Deciduous Forest (24 May 2022).

Photo 10. Thicket (19 June 2022).

Photo 11. Thicket (19 June 2022).

Photo 12. Mixed Mineral Meadow Marsh (MAMM3-1) along the western edge of the Deciduous Forest (19 June 2022).

Photo 13. Halloween Pennant (19 June 2022).

Photo 14. Midland Painted Turtles and Red-eared Slider basking within the Northern Quarry Pond (19 June 2022).

Photo 15. Native Deciduous Regeneration Thicket (THDM4-1) (11 July 2022).

Photo 16. Rocky, mounded soils overlapping with the envelope of the historically demolished industrial buildings within the deciduous savanna (11 July 2022).

Photo 17. Drainage Ditch within the City drainage easement (11 July 2022).

Photo 18. Limestone Stockpile with dirt bike trails (11 July 2022).

Photo 19. Northern Quarry Pond facing northwest showing an absence of aquatic vegetation despite existing PSW mapping (11 July 2022).

Photo 20. Monarch caterpillar (11 July 2022).

Photo 21. Central Quarry Pond facing northwest (17 August 2022).

Photo 22. Hayfield (MEGM4-1) following cutting (17 August 2022).

Photo 23. Maintained and manicured trail (17 August 2022).

Photo 24. Provincially Rare Kansas Hawthorn (16 May 2023).

Appendix 3. Vascular Plant List

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Acer nigrum	Black Maple	Aceraceae	S4?		7	3
Acer platanoides	Norway Maple	Aceraceae	SNA		0	5
Acer saccharum	Sugar Maple	Aceraceae	S5		4	3
Acer x freemanii	Freeman's Maple	Aceraceae	SNA		NA	-5
Achillea millefolium	Common Yarrow	Asteraceae	SNA		0	3
Agrimonia gryposepala	Hooked Agrimony	Rosaceae	S5		2	3
Agrostis gigantea	Redtop	Poaceae	SNA		0	-3
Agrostis stolonifera	Creeping Bentgrass	Poaceae	SNA		0	-3
Alisma triviale	Northern Water-plantain	Alismataceae	S5		1	-5
Alliaria petiolata	Garlic Mustard	Brassicaceae	SNA		0	0
Allium sativum	Cultivated Garlic	Liliaceae	SNA		0	5
Ambrosia artemisiifolia	Common Ragweed	Asteraceae	S5		0	3
Ambrosia trifida	Great Ragweed	Asteraceae	S5		0	0
Amelanchier spicata	Running Serviceberry	Rosaceae	S4		4	3
Anemone virginiana	Tall Anemone	Ranunculaceae	S5		4	3
Apocynum androsaemifolium	Spreading Dogbane	Apocynaceae	S5		3	5
Apocynum cannabinum	Hemp Dogbane	Apocynaceae	S5		3	0
Artemisia vulgaris	Common Wormwood	Asteraceae	SNA		0	5
Asclepias incarnata	Swamp Milkweed	Asclepiadaceae	S5		6	-5
Asclepias syriaca	Common Milkweed	Asclepiadaceae	S5		0	5
Asclepias tuberosa	Butterfly Milkweed	Asclepiadaceae	S4	Yes	8	5
Barbarea vulgaris	Bitter Wintercress	Brassicaceae	SNA		0	0
Betula pendulina	Weeping Birch	Betulaceae	SNA		0	0
Bidens frondosa	Devil's Beggarticks	Asteraceae	S5		3	-3
Bidens vulgata	Tall Beggarticks	Asteraceae	S5		5	0
Bromus commutatus	Hairy Brome	Poaceae	SNA		0	5
Bromus tectorum	Downy Brome	Poaceae	SNA		0	5
Calamagrostis canadensis	Bluejoint Reedgrass	Poaceae	S5		4	-5
Calystegia sepium	Hedge False Bindweed	Convolvulaceae	S5		2	0
Carex aurea	Golden Sedge	Cyperaceae	S5		4	-3
Carex bebbii	Bebb's Sedge	Cyperaceae	S5		3	-5
Carex blanda	Woodland Sedge	Cyperaceae	S5		3	0
Carex cephalophora	Oval-leaved Sedge	Cyperaceae	S5		5	3
Carex cristatella	Crested Sedge	Cyperaceae	S5		3	-3
Carex gracilescens	Slender Loose-flowered Sedge	Cyperaceae	S4		7	5
Carex gracillima	Graceful Sedge	Cyperaceae	S5		4	3
Carex granularis	Limestone Meadow Sedge	Cyperaceae	S5		3	-3
Carex grisea	Gray Sedge	Cyperaceae	S4		8	0
Carex molesta	Troublesome Sedge	Cyperaceae	S4S5		5	0

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Carex radiata	Eastern Star Sedge	Cyperaceae	S5		4	0
Carex scoparia	Pointed Broom Sedge	Cyperaceae	S5		5	-3
Carex tenera	Tender Sedge	Cyperaceae	S5		4	0
Carex vulpinoidea	Fox Sedge	Cyperaceae	S5		3	-5
Carpinus caroliniana	Blue-beech	Betulaceae	S5		6	0
Carya cordiformis	Bitternut Hickory	Juglandaceae	S5		6	0
Carya ovata	Shagbark Hickory	Juglandaceae	S5		6	3
Centaurea nigrescens	Short-fringed Knapweed	Asteraceae	SNA		0	5
Centaurea stoebe	Spotted Knapweed	Asteraceae	SNA		0	5
Cichorium intybus	Chicory	Asteraceae	SNA		0	5
Circaea canadensis	Broad-leaved Enchanter's Nightshade	Onagraceae	S5		2	3
Cirsium arvense	Canada Thistle	Asteraceae	SNA		0	3
Cirsium vulgare	Bull Thistle	Asteraceae	SNA		0	3
Clinopodium vulgare	Field Basil	Lamiaceae	S5		4	5
Convolvulus arvensis	Field Bindweed	Convolvulaceae	SNA		0	5
Cornus obliqua	Pale Dogwood	Cornaceae	S5		2	-3
Cornus racemosa	Gray Dogwood	Cornaceae	S5		2	0
Cornus stolonifera	Red-osier Dogwood	Cornaceae	S5		2	-3
Crataegus calpodendron	Pear Hawthorn	Rosaceae	S4		4	5
Crataegus coccinioides	Kansas Hawthorn	Rosaceae	S2	Yes	7	5
Crataegus crus-galli	Cockspur Hawthorn	Rosaceae	S4		4	0
Crataegus pruinosa var. *pruinosa*	Frosted Hawthorn	Rosaceae	S4S5		4	5
Crataegus punctata	Dotted Hawthorn	Rosaceae	S5		4	5
Crataegus succulenta	Fleshy Hawthorn	Rosaceae	S5		4	5
Dactylis glomerata	Orchard Grass	Poaceae	SNA		0	3
Danthonia spicata	Poverty Oatgrass	Poaceae	S5		5	5
Daucus carota	Wild Carrot	Apiaceae	SNA		0	5
Dichanthelium implicatum	Slender-stemmed Panicgrass	Poaceae	S5		3	0
Digitaria sanguinalis	Hairy Crabgrass	Poaceae	SNA		0	3
Diplotaxis tenuifolia	Slim-leaved Wallrocket	Brassicaceae	SNA		0	5
Dipsacus fullonum	Common Teasel	Dipsacaceae	SNA		0	3
Echinacea purpurea	Eastern Purple Coneflower	Asteraceae	SNA		0	5
Echium vulgare	Common Viper's Bugloss	Boraginaceae	SNA		0	5
Elaeagnus umbellata	Autumn Olive	Elaeagnaceae	SNA		0	3
Eleocharis palustris	Creeping Spikerush	Cyperaceae	S5		6	-5
Elodea canadensis	Canada Waterweed	Hydrocharitaceae	S5		4	-5
Elymus repens	Creeping Wildrye	Poaceae	SNA		0	3
Epilobium coloratum	Purple-veined Willowherb	Onagraceae	S5		3	-5
Epilobium parviflorum	Small-flowered Willowherb	Onagraceae	SNA		0	3

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Epipactis helleborine	Eastern Helleborine	Orchidaceae	SNA		0	3
Equisetum arvense	Field Horsetail	Equisetaceae	S5		0	0
Eragrostis pectinacea	Tufted Lovegrass	Poaceae	S5		0	0
Erigeron annuus	Annual Fleabane	Asteraceae	S5		0	3
Erigeron canadensis	Canada Horseweed	Asteraceae	S5		0	3
Erigeron philadelphicus	Philadelphia Fleabane	Asteraceae	S5		1	-3
Erigeron strigosus	Rough Fleabane	Asteraceae	S5		4	3
Eupatorium perfoliatum	Common Boneset	Asteraceae	S5		2	-3
Euphorbia maculosa	Spotted Spurge	Euphorbiaceae	SNA		0	3
Euphorbia nutans	Nodding Spurge	Euphorbiaceae	S4	Yes	0	3
Eutrochium maculatum var. *maculatum*	Spotted Joe Pye Weed	Asteraceae	S5		3	-5
Festuca rubra	Red Fescue	Poaceae	S5		0	3
Filipendula rubra	Queen-of-the-prairie	Rosaceae	SNA		0	-3
Fragaria virginiana	Wild Strawberry	Rosaceae	S5		2	3
Fraxinus americana	White Ash	Oleaceae	S4		4	3
Galium aparine	Cleavers	Rubiaceae	S5		4	3
Galium palustre	Marsh Bedstraw	Rubiaceae	S5		5	-5
Geranium maculatum	Spotted Geranium	Geraniaceae	S5		6	3
Geranium robertianum	Herb-Robert	Geraniaceae	S5		2	3
Geum aleppicum	Yellow Avens	Rosaceae	S5		2	0
Geum canadense	White Avens	Rosaceae	S5		3	0
Geum laciniatum	Rough Avens	Rosaceae	S4		4	-3
Gleditsia triacanthos	Honey-locust	Fabaceae	S2?	Yes	8	0
Glyceria striata	Fowl Mannagrass	Poaceae	S5		3	-5
Hemerocallis fulva	Orange Daylily	Liliaceae	SNA		0	5
Hesperis matronalis	Dame's Rocket	Brassicaceae	SNA		0	3
Hypericum perforatum	Common St. John's-wort	Clusiaceae	SNA		0	5
Juncus articulatus	Jointed Rush	Juncaceae	S5		5	-5
Juncus canadensis	Canada Rush	Juncaceae	S5		6	-5
Juncus dudleyi	Dudley's Rush	Juncaceae	S5		1	-3
Juncus nodosus	Knotted Rush	Juncaceae	S5		5	-5
Juniperus communis	Common Juniper	Cupressaceae	S5		4	3
Juniperus virginiana	Eastern Red Cedar	Cupressaceae	S5		4	3
Lactuca canadensis	Canada Lettuce	Asteraceae	S5		3	3
Lactuca serriola	Prickly Lettuce	Asteraceae	SNA		0	3
Lathyrus latifolius	Everlasting Pea	Fabaceae	SNA		0	5
Leersia oryzoides	Rice Cutgrass	Poaceae	S5		3	-5
Lemna minor	Lesser Duckweed	Lemnaceae	S5?		5	-5
Leucanthemum vulgare	Oxeye Daisy	Asteraceae	SNA		0	5

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Ligustrum vulgare	European Privet	Oleaceae	SNA		0	3
Linaria vulgaris	Butter-and-eggs	Scrophulariaceae	SNA		0	5
Lolium pratense	Meadow Fescue	Poaceae	SNA		0	3
Lonicera morrowii	Morrow's Honeysuckle	Caprifoliaceae	SNA		0	3
Lotus corniculatus	Garden Bird's-foot Trefoil	Fabaceae	SNA		0	3
Ludwigia palustris	Marsh Seedbox	Onagraceae	S5		5	-5
Lycopus americanus	American Water-horehound	Lamiaceae	S5		4	-5
Lycopus europaeus	European Water-horehound	Lamiaceae	SNA		0	-5
Lysimachia nummularia	Creeping Jennie	Primulaceae	SNA		0	-3
Lythrum salicaria	Purple Loosestrife	Lythraceae	SNA		0	-5
Malus pumila	Common Apple	Rosaceae	SNA		0	5
Medicago lupulina	Black Medic	Fabaceae	SNA		0	3
Medicago sativa	Alfalfa	Fabaceae	SNA		0	5
Melilotus albus	White Sweet-clover	Fabaceae	SNA		0	3
Melilotus officinalis	Yellow Sweet-clover	Fabaceae	SNA		0	3
Monarda fistulosa	Wild Bergamot	Lamiaceae	S5		6	3
Morus alba	White Mulberry	Moraceae	SNA		0	0
Myriophyllum sibiricum	Siberian Water-milfoil	Haloragaceae	S5		6	-5
Oenothera biennis	Common Evening Primrose	Onagraceae	S5		0	3
Oenothera parviflora	Small-flowered Evening Primrose	Onagraceae	S5		1	3
Onoclea sensibilis	Sensitive Fern	Dryopteridaceae	S5		4	-3
Ornithogalum umbellatum	Common Star-of-Bethlehem	Liliaceae	SNA		0	3
Ostrya virginiana	Eastern Hop-hornbeam	Betulaceae	S5		4	3
Panicum capillare	Common Panicgrass	Poaceae	S5		0	0
Panicum flexile	Wiry Panicgrass	Poaceae	S4	Yes	8	-3
Panicum virgatum	Old Switch Panicgrass	Poaceae	S4		6	0
Parthenocissus quinquefolia	Virginia Creeper	Vitaceae	S4?		6	3
Parthenocissus vitacea	Thicket Creeper	Vitaceae	S5		4	3
Pastinaca sativa	Wild Parsnip	Apiaceae	SNA		0	5
Penstemon hirsutus	Hairy Beardtongue	Scrophulariaceae	S4		7	5
Penthorum sedoides	Ditch-stonecrop	Crassulaceae	S5		4	-5
Persicaria hydropiper	Marshpepper Smartweed	Polygonaceae	SNA		0	-5
Persicaria virginiana	Virginia Smartweed	Polygonaceae	S4		6	0
Phalaris arundinacea	Reed Canary Grass	Poaceae	S5		0	-3
Phleum pratense	Common Timothy	Poaceae	SNA		0	3
Phragmites australis ssp. australis	European Reed	Poaceae	SNA		0	-3
Phytolacca americana	Common Pokeweed	Phytolaccaceae	S4		3	3
Picea abies	Norway Spruce	Pinaceae	SNA		0	5
Picea glauca	White Spruce	Pinaceae	S5		6	3

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Picris hieracioides	Hawkweed Oxtongue	Asteraceae	SNA		0	5
Pilosella caespitosa	Meadow Hawkweed	Asteraceae	SNA		0	5
Pilosella piloselloides spp. *praealta*	Tall Hawkweed	Asteraceae	SNA		0	5
Plantago lanceolata	English Plantain	Plantaginaceae	SNA		0	3
Plantago major	Common Plantain	Plantaginaceae	SNA		0	3
Plantago rugelii	Rugel's Plantain	Plantaginaceae	S5		1	0
Platanus x hispanica	Sycamore	Platanaceae	S4		8	-3
Poa compressa	Canada Bluegrass	Poaceae	SNA		0	3
Poa nemoralis	Woods Bluegrass	Poaceae	SNA		0	3
Poa palustris	Fowl Bluegrass	Poaceae	S5		5	-3
Poa pratensis ssp. *pratensis*	Kentucky Bluegrass	Poaceae	SNA		0	3
Polygonum aviculare	Prostrate Knotweed	Polygonaceae	S4?		0	3
Populus deltoides	Eastern Cottonwood	Salicaceae	S5		4	0
Populus tremuloides	Trembling Aspen	Salicaceae	S5		2	0
Potamogeton nodosus	Long-leaved Pondweed	Potamogetonaceae	S5	Yes	7	-5
Potentilla recta	Sulphur Cinquefoil	Rosaceae	SNA		0	5
Prunella vulgaris	Heal-all	Lamiaceae	S5		0	0
Prunus serotina	Black Cherry	Rosaceae	S5		3	3
Prunus virginiana	Choke Cherry	Rosaceae	S5		2	3
Pyrus communis	Common Pear	Rosaceae	SNA		0	5
Quercus bicolor	Swamp White Oak	Fagaceae	S4		8	-3
Quercus macrocarpa	Bur Oak	Fagaceae	S5		5	3
Quercus palustris	Pin Oak	Fagaceae	S4		9	-3
Quercus rubra	Northern Red Oak	Fagaceae	S5		6	3
Ranunculus acris	Tall Buttercup	Ranunculaceae	SNA		0	0
Rhus typhina	Staghorn Sumac	Anacardiaceae	S5		1	3
Ribes rubrum	Northern Red Currant	Grossulariaceae	SNA		0	5
Rosa canina	Dog Rose	Rosaceae	SNA		0	5
Rosa multiflora	Multiflora Rose	Rosaceae	SNA		0	3
Rubus occidentalis	Black Raspberry	Rosaceae	S5		2	5
Rudbeckia hirta	Black-eyed Susan	Asteraceae	S5		0	3
Rudbeckia triloba	Brown-eyed Susan	Asteraceae	SNA		0	3
Rumex britannica	Water Dock	Polygonaceae	S5	Yes	6	-5
Rumex crispus	Curly Dock	Polygonaceae	SNA		0	0
Salix amygdaloides	Peach-leaved Willow	Salicaceae	S5		6	-3
Salix discolor	Pussy Willow	Salicaceae	S5		3	-3
Salix eriocephala	Heart-leaved Willow	Salicaceae	S5		4	-3
Salix interior	Sandbar Willow	Salicaceae	S5		1	-3
Saponaria officinalis	Bouncing-bet	Caryophyllaceae	SNA		0	3

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	Cyperaceae	S5		5	-5
Scirpus atrovirens	Dark-green Bulrush	Cyperaceae	S5		3	-5
Scirpus cyperinus	Cottongrass Bulrush	Cyperaceae	S5		4	-5
Scirpus pendulus	Rufous Bulrush	Cyperaceae	S5		3	-5
Securigera varia	Common Crown-vetch	Fabaceae	SNA		0	5
Sedum acre	Gold-moss	Crassulaceae	SNA		0	5
Setaria pumila	Yellow Foxtail	Poaceae	SNA		0	0
Setaria viridis	Green Foxtail	Poaceae	SNA		0	5
Silene latifolia	White Campion	Caryophyllaceae	SNA		0	5
Sisyrinchium montanum	Strict Blue-eyed-grass	Iridaceae	S5		4	0
Solanum dulcamara	Bittersweet Nightshade	Solanaceae	SNA		0	0
Solidago altissima	Tall Goldenrod	Asteraceae	S5		1	3
Solidago nemoralis ssp. *nemoralis*	Gray-stemmed Goldenrod	Asteraceae	S5		2	5
Solidago rugosa ssp. rugosa	Northern Rough-stemmed Goldenrod	Asteraceae	S5		4	0
Sphenopholis intermedia	Slender Wedge Grass	Poaceae	S4S5		6	0
Symphyotrichum cordifolium	Heart-leaved Aster	Asteraceae	S5		5	5
Symphyotrichum ericoides var. ericoides	White Heath Aster	Asteraceae	S5		4	3
Symphyotrichum lanceolatum	Panicled Aster	Asteraceae	S5		3	-3
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	Asteraceae	S5		3	0
Symphyotrichum novae-angliae	New England Aster	Asteraceae	S5		2	-3
Symphyotrichum pilosum var. pilosum	Old Field Aster	Asteraceae	S5		1	3
Taraxacum officinale	Common Dandelion	Asteraceae	SNA		0	3
Tilia americana	American Basswood	Tiliaceae	S5		4	3
Toxicodendron radicans	Poison Ivy	Anacardiaceae	S5		2	0
Tragopogon dubius	Yellow Goat's-beard	Asteraceae	SNA		0	5
Tragopogon pratensis	Meadow Goat's-beard	Asteraceae	SNA		0	5
Trifolium pratense	Red Clover	Fabaceae	SNA		0	3
Trifolium repens	White Clover	Fabaceae	SNA		0	3
Trillium erectum	Red Trillium	Liliaceae	S5		6	3
Typha angustifolia	Narrow-leaved Cattail	Typhaceae	SNA		0	-5
Ulmus americana	American Elm	Ulmaceae	S5		3	-3
Ulmus pumila	Siberian Elm	Ulmaceae	SNA		0	3
Ulmus rubra	Slippery Elm	Ulmaceae	S5		6	0
Verbascum thapsus	Common Mullein	Scrophulariaceae	SNA		0	5
Verbena urticifolia	White Vervain	Verbenaceae	S5		4	0
Veronica officinalis	Common Speedwell	Scrophulariaceae	SNA		0	5
Veronica serpyllifolia ssp. serpyllifolia	Thyme-leaved Speedwell	Scrophulariaceae	SNA		0	0
Viburnum lentago	Nannyberry	Caprifoliaceae	S5		4	0
Viburnum opulus ssp. *opulus*	Cranberry Viburnum	Caprifoliaceae	SNA		0	-3

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Regionally Rare per Oldham?	Coefficient of Conservatism	Coefficient of Wetness
Viburnum rafinesquianum	Downy Arrowwood	Caprifoliaceae	S5		7	5
Viburnum recognitum	Smooth Arrowwood	Caprifoliaceae	S4		7	0
Vicia cracca	Tufted Vetch	Fabaceae	SNA		0	5
Vicia tetrasperma	Four-seeded Vetch	Fabaceae	SNA		0	5
Vinca minor	Periwinkle	Apocynaceae	SNA		0	5
Viola odorata	English Violet	Violaceae	SNA		0	5
Viola sororia	Woolly Blue Violet	Violaceae	S5		4	0
Vitis riparia	Riverbank Grape	Vitaceae	S5		0	0

Appendix 4. Anuran Calling Survey Results

1 ANURAN CALLING SURVEY METHODOLOGY

Calling anuran surveys were conducted in accordance with the *Marsh Monitoring Program for Surveying Amphibians* (Bird Studies Canada et al. 2008). This protocol involves the completion of three (3) rounds of surveys once per month between April and June from 30 minutes after sunset until approximately midnight. Appropriate weather conditions include no or very light precipitation and wind speed ≤3 on the Beaufort wind scale. As the Subject Property is located within the central region (between the 43rd and 47th parallels), all three (3) rounds of surveys should occur during the second half of the month (i.e., April 15-30, May 15-31, and June 15-30).

A total of four (4) anuran calling stations were established and situated systematically to cover potentially significant anuran breeding habitats, particularly those that are near proposed areas disturbance. Each station was surveyed for a minimum duration of three (3) minutes. Anurans and evidence of anuran breeding (i.e., vocalizations, tadpoles, etc.) were also recorded incidentally during other field activities on-site.

2 RESULTS

Table 1. Results of Anuran Calling Surveys.

Station ID[1]	**Feature or Vegetation Community Surveyed**	**Bearing (°)**	**Survey #1 –** 6 April 2022[2]	**Survey #2 –** 9 May 2022[2]	**Survey #3 –** 11 June 2022[2]	**Comments**
AN-1	Northern Quarry Pond	256	Western Chorus Frog (3)	Spring Peeper (1-1) American Toad (1-2)	Grey Treefrog (1-2) Green Frog (1-5)	**Survey #1:** Loud chorus of Western Chorus Frog emanating from marshes centrally within the Northern Quarry Pond. **Survey #2:** American Toad calling west of station within the Northern Quarry Pond. **Survey #3:** n/a
AN-2	Central Quarry Pond	209	American Toad (1-2) Spring Peeper (2-3) Western Chorus Frog (3)	No calling anurans	Green Frog (1-1)	**Survey #1:** n/a **Survey #2:** Minimal standing water present. **Survey #3:** Green Frog vocalizing from the City drainage easement.
AN-3	Thicket swamps	344	Northern Leopard Frog (1-1) Western Chorus Frog (2-7)	American Toad (1-1) American Toad (1-1) Northern Leopard Frog (1-1) Western Chorus Frog (1-1)	Green Frog (1-2)	**Survey #1:** n/a **Survey #2:** Two separate groups of American Toad (1-1) vocalizing north and east of the station. **Survey #3:** Green Frog vocalizing from the Intermittent Drainage Feature; otherwise, negligible standing water present.
AN-4	Thicket swamps	348	Spring Peeper (1-2) Western Chorus Frog (1-1)	American Toad (1-1)	No calling anurans	**Survey #1:** n/a **Survey #2:** n/a **Survey #3:** Negligible standing water.

[1] Locations of Anuran Calling Stations are shown in **Figure 2**.

[2] **Call Code 1** = Individuals can be counted; calls not simultaneous; **Call Code 2** = Calls distinguishable; some simultaneous calling; **Call Code 3** = Full chorus; calls continuous and overlapping. Second number after the call code indicates the estimated number of individuals calling; no estimate of individuals is provided for Call Code 3.

Appendix 5. Breeding Bird Survey Results

1 BREEDING BIRD SURVEY METHODOLOGY

Two breeding bird surveys were conducted following Ontario Breeding Bird Atlas (OBBA) protocols (Bird Studies Canada et al. 2001). The surveys occurred within the appropriate season (May 24–July 10), time of day (between dawn and 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). The station was surveyed for a minimum duration of ten (10) minutes.

Ten (10) survey stations were established and situated systematically to cover the variety of bird habitats on-site, particularly habitats with a high potential to support significant bird species and those that occur within or adjacent to proposed areas of disturbance. The locations of all point count stations and significant bird species were recorded in the field with a high-accuracy GPS.

Signs of breeding activity accompanied each bird record (e.g., singing male, probable pair, agitation, carrying nest material, etc.). The OBBA provides four (4) breeding categories to accompany each observation:

> ***Observed:*** Species observed during its breeding season (no evidence of breeding).
>
> ***Possible Breeding:*** Includes any of the following observation types: 1) species observed in its breeding season in suitable nesting habitat, and 2) singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.
>
> ***Probable Breeding:*** Includes any of the following observation types: 1) pair observed in their breeding season in suitable nesting habitat, 2) permanent territory presumed through registration of territorial song on at least 2 days, a week or more apart, at the same place, 3) courtship or display between a male and a female or 2 males, including courtship feeding or copulation, 4) visiting probable nest site, 5) agitated behaviour or anxiety calls of an adult, 6) brood patch on adult female or cloacal protuberance on adult male, and 7) nest-building or excavation of nest hole.
>
> ***Confirmed Breeding:*** Includes any of the following observation types: 1) distraction display or injury feigning, 2) used nest or egg shell found (occupied or laid within the period of the study), 3) recently fledged young or downy young, including young incapable of sustained flight, 4) adults leaving or entering nest site in circumstances indicating occupied nest, 5) adult carrying fecal sac, 6) adult carrying food for young, 7) nest containing eggs, and 8) nest with young seen or heard.

2 RESULTS

Table 1. Results of Breeding Bird Surveys.

Common Name	Scientific Name	Breeding Bird Survey Stations[2]									
		BI-1	**BI-2**	**BI-3**	**BI-4**	**BI-5**	**BI-6**	**BI-7**	**BI-8**	**BI-9**	**BI-10**
American Crow	*Corvus brachyrhynchos*							Po			
American Goldfinch	*Spinus tristis*	Po	Pr	Po	Pr	Po	Pr	Pr	Po	Po	Po
American Robin	*Turdus migratorius*	Pr	Pr	Pr		Pr	Pr	Pr	Pr	Pr	Po
American Woodcock	*Scolopax minor*										
Baltimore Oriole	*Icterus galbula*	Po	Po		Po	Po	Po	Pr	Po	Pr	Pr
Barn Swallow	***Hirundo rustica***					**O**					
Black-billed Cuckoo	*Coccyzus erythropthalmus*				Po						
Black-capped Chickadee	*Poecile atricapillus*		Po		Po	Pr				Po	Po
Blue Jay	*Cyanocitta cristata*					Pr	Po	Po	Po		
Blue-winged Warbler	*Vermivora cyanoptera*			Po							
Brown-headed Cowbird	*Molothrus ater*	Po	Po	Pr	Po		Po	Po	Pr	Pr	Po
Canada Goose	*Branta canadensis*					Po					
Carolina Wren	*Thryothorus ludovicianus*				Pr	Po	Po		Pr	Pr	Po
Cedar Waxwing	*Bombycilla cedrorum*				Po		Po		Po		
Chimney Swift	***Chaetura pelagica***								**O**		
Chipping Sparrow	*Spizella passerina*							Po			Po
Common Grackle	*Quiscalus quiscula*	Pr	Po	Po	Pr	Pr	Po	Pr	Po		Pr
Common Yellowthroat	*Geothlypis trichas*			Po	Po		Po				
Eastern Kingbird	*Tyrannus tyrannus*										Po
Eastern Meadowlark	***Sturnella magna***	**Pr**									
Eastern Towhee	*Pipilo erythrophthalmus*									Po	
Eastern Wood-pewee	***Contopus virens***		**Po**		**Po**					**Po**	**Po**
European Starling	*Sturnus vulgaris*	Po		Po			Po		Pr		
Field Sparrow	*Spizella pusilla*		Po				Pr	Pr	Po		Pr
Grasshopper Sparrow	***Ammodramus savannarum***	**Po**									
Gray Catbird	*Dumetella carolinensis*		Pr	Po	Pr		Pr	Pr		Pr	Po
Great Blue Heron	*Ardea herodias*					Po					
Great Crested Flycatcher	*Myrarchus crinitus*				Pr	Po	Po				
House Sparrow	*Passer domesticus*	Po									
House Finch	*Haemorhous mexicanus*					Po					
House Wren	*Troglodytes aedon*	Po			Po	Po		Po	Pr	Po	

Common Name	Scientific Name	Breeding Bird Survey Stations[2]									
		BI-1	**BI-2**	**BI-3**	**BI-4**	**BI-5**	**BI-6**	**BI-7**	**BI-8**	**BI-9**	**BI-10**
Indigo Bunting	*Passerina cyanea*									Po	
Killdeer	*Charadrius vociferus*					Po					
Least Flycatcher	*Empidonax minimus*					Po					
Marsh Wren	*Cistothorus palustris*					Pr					Pr
Merlin	*Falco columbarius*	Po									
Mourning Dove	*Zenaida macroura*	Po		Pr					Pr	Pr	Po
Northern Cardinal	*Cardinalis cardinalis*	Po	Po	Pr	Pr	Po		Pr	Pr	Pr	Pr
Northern Flicker	*Colaptes auratus*		Po						Po		
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					Po					
Osprey	*Pandion haliaetus*					Po					
Red-bellied Woodpecker	*Melanerpes carolinus*				Po						
Red-eyed Vireo	*Vireo olivaceus*				Pr		Po				
Red-winged Blackbird	*Agelaius phoeniceus*	Pr	Pr	Pr	Pr		Pr		Po		Pr
Ring-billed Gull	*Larus delawarensis*	O	O	O	O	O	O				O
Sandhill Crane	*Antigone canadensis*								O		
Savannah Sparrow	*Passerculus sandwichensis*	Pr	Pr						Po		
Song Sparrow	*Melospiza melodia*	Pr	Po	Pr	Pr		Pr	Po	Po		Pr
Spotted Sandpiper	*Actitis macularius*										Po
Swamp Sparrow	*Melospiza georgiana*				Po						
Tennessee Warbler	*Leiothlypis peregrina*							O			
Turkey Vulture	*Cathartes aura*					O		O			O
Tree Swallow	*Tachycineta bicolor*						Po				
Warbling Vireo	*Vireo gilvis*		Po		Po			Pr	Pr		Po
Willow Flycatcher	*Empidonax traillii*		Po	Pr	Po		Po				
Wood Thrush	***Hylocichla mustelina***				**Pr**						
Yellow Warbler	*Setophaga petechia*	Po	Pr	Pr	Pr	Pr	Pr	Pr	Po	Po	Pr

1 Locations of breeding bird survey stations are indicated in **Figure 2**.

2 Co = Confirmed Breeder; Pr = Probable Breeder; Po = Possible Breeder; O = Observed (no evidence of breeding). Breeding status determined based on the results of the formal breeding bird surveys; where a higher level of breeding status was documented incidentally (i.e., during other field surveys), this is noted in within the main body of the report (where applicable).

Appendix 6. Bat Assessment Results

Table 1. Snag and Cavity Tree Assessment

Tree No.	Common Name	Scientific Name	DBH	Decay Class	Height Class	No. of Cavities	Loose Bark?	Notes
01	Black Walnut	*Juglans nigra*	22	6 – Very old dead tree, advanced decay, no branches, parts of the stem have rotted away	4 - Suppressed	2 (20 cm)	No	--
02	Eastern Cottonwood	*Populus deltoides*	85	1 – Healthy, Live Tree	1 - Dominant (above canopy)	--	Yes	Some dead branches with loose bark, Crown 14
03	Manitoba Maple	*Acer negundo*	35,.35 , 40, 20	2 – Declining live tree, part of canopy lost	3 - Intermediate (just below canopy) (well below canopy).	--	Yes	Large dead branches with loose bark, crown 10
04	Green Ash	*Fraxinus pennsylvanica*	40	4 – Recently dead, bark peeling, only large branches intact	2 - Co-dominant (canopy height)	--	Yes	Lots of peeling bark, crown 8
05	Green Ash	*Fraxinus pennsylvanica*	60	4 – Recently dead, bark peeling, only large branches intact	2 - Co-dominant (canopy height)	--	Yes	Lots of loose bark, crown mostly gone, crown 4
06	Green Ash	*Fraxinus pennsylvanica*	40	6 – Very old dead tree, advanced decay, no branches, parts of the stem have rotted away	2 - Co-dominant (canopy height)	2 (10 cm) at top of tree, broken top at 8 m,.1 (10 cm) on side branch.	Yes	--
07	Green Ash	*Fraxinus pennsylvanica*	112	4 – Recently dead, bark peeling, only large branches intact	1 - Dominant (above canopy)	1 (25 cm) at trunk base, 2 (10 m) at terminus	Yes	Lots of loose bark
08	Green Ash	*Fraxinus pennsylvanica*	42	4 – Recently dead, bark peeling, only large branches intact	2 - Co-dominant (canopy height)	1 know hole at terminal branch (15 cm)	No	Lots of loose bark, crown 6
09	Green Ash	*Fraxinus pennsylvanica*	23	4 – Recently dead, bark peeling, only large branches intact	3 - Intermediate (just below canopy) (well below canopy).	--	Yes	Tree fallen over but still upright, crown 2, 8 m tall
010	Common Pear	*Pyrus communis*	17	6 – Very old dead tree, advanced decay, no	4 - Suppressed	3 (5 cm) at terminus	No	Tree 4 m tall.

Tree No.	Common Name	Scientific Name	DBH	Decay Class	Height Class	No. of Cavities	Loose Bark?	Notes
				branches, parts of the stem have rotted away				

[1] Height classes are as follows: 1 = Less than 4.9 m; 2 = 5-9.9 m; 3 – 10-14.9 m; 4 – 15-19.9 m; 5 = 20-24.9 m, 6 = > 25 m.

Table 2. Results of Ultrasonic Acoustic Monitoring.

Survey Station	Start Date	End Date	Species Detection (No. of Passess)
BA-1	28 June 2023 (PM)	28 June 2023 (PM)	Big Brown Bat / Silver-haired Bat (16) Hoary Bat (9) Little Brown Myotis (1) Red Bat (1) **TOTAL PASSES (27)**

Appendix 7. Significant Wildlife Habitat Assessment

Table 1. Results of the Significant Wildlife Habitat Assessment.

Ecoregion 7E	Do any Features, Habitats, or Areas within the Proposed Limit of Disturbance or Adjacent Lands meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Proposed Limit of Disturbance or Adjacent Lands meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Seasonal Concentration Areas of Animals			
Waterfowl Stopover and Staging Areas (Terrestrial)	**No.** Meadows, fields, and/or thickets that annually flood during spring and could support significant congregations of migrating waterfowl are absent.	--	--
Waterfowl Stopover and Staging Areas (Aquatic)	**Yes.** Large surface water features (e.g., ponds, lakes, bays, coastal inlets, large watercourses) and/or wetlands that annually flood during spring and could support significant congregations of migrating waterfowl may be absent.	**No.** While targeted waterfowl stopover/staging surveys of the Northern and/or Central Quarry Pond were not undertaken, congregations of migrating ducks were not documented incidentally during spring (April) and fall (October) fieldwork in 2022.	--
Shorebird Migratory Stopover Areas	**No.** Unvegetated open areas adjacent to surface water features (e.g., shorelines, beaches, mudflats) which could support significant congregations of migrating shorebirds are absent	--	--
Raptor Wintering Areas	**No.** While forest and (to a lesser extent) meadow habitats are present, which likely occasionally support wintering raptors, such habitats are too small to support significant congregations of wintering raptors.	--	--
Bat Hibernacula	**No.** Natural features and habitats that could support hibernating bats (e.g., caves, mine shafts, crevices, karsts) are absent.	--	--
Bat Maternity Colonies	**Yes.** Mature deciduous and mixed forests with a high-density (i.e., >10/ha) of large-diameter (i.e., ≥25 cm DBH) trees containing cracks/cavities may be present.	**Candidate.** The potential bat tree roost assessment undertaken as part of the fieldwork program only focused on those portions of the Deciduous Forest, Deciduous Woodland, and other woodlands which were proposed to be removed as part of the development application. Portions of the forest/woodlands to be protected were not assessed in detail (as potential bat roosting habitat within these areas will remain and form part of natural heritage blocks).	**Negligible.** The results of the potential bat tree roost assessment indicated that none of the forest/woodland areas to be removed contain sufficient density (>10/ha) of large-diameter (i.e., ≥25 cm DBH) trees containing suitable cracks, cavities, and/or loose bark. Thus, this SWH does not overlap with portions of the forest/woodland areas to be removed (but may be present within the protected natural heritage blocks).
Turtle Wintering Areas	**Yes.** Surface water features and/or wetlands with soft, muddy substrate which do not freeze to the bottom during winter may be present.	**No.** Both the Central and Northern Quarry Ponds are constructed ("human-made") and thus cannot be considered significant turtle wintering habitat per the Ecoregion 7E Criteria Schedules.	--
Reptile Hibernaculum	**Yes.** Features (e.g., small mammal burrows, rock crevices, etc.) and/or habitats (e.g., certain wetlands with a fluctuating water table, etc.) that could provide snakes with access below the frost line are present.	**Yes.** Spring emergence surveys confirmed the presence of a significant snake hibernaculum based on the presence of five (5) Eastern Gartersnake documented on 12 April 2022 in association with a mounded rock pile (see **Figure 3**).	**Negligible.** The Deciduous Woodland surrounding the snake hibernaculum will be protected as a natural heritage block with a 100 m (width) by 220 m (length) configuration. No development or site alteration are proposed within 30 m of the assumed hibernaculum. Snakes which occupy this woodland have access to suitable foraging habitat to the southwest/west through a 30 m connective corridor in the southwest corner of the woodland.
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	**Yes.** Features that could support nesting by Cliff Swallow and Northern Rough-winged swallow (e.g., eroding banks, sandy hills, borrow pits, steep slopes, cliff faces, etc.) are present.	**No.** While the quarry faces could support nesting by Cliff Swallow, this species was not documented during 2022 breeding bird surveys or incidentally. There is an absence of features which could support significant breeding colonies of Northern Rough-winged Swallow (which excavate nest burrows in sandy banks).	--

Ecoregion 7E	Do any Features, Habitats, or Areas within the Proposed Limit of Disturbance or Adjacent Lands meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Proposed Limit of Disturbance or Adjacent Lands meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	**No.** Swamp and treed fen communities which could support significant congregations of colonially nesting birds are absent.	--	--
Colonially - Nesting Bird Breeding Habitat (Ground)	**No.** Rocky islands or peninsulas along lakes or large rivers are absent.	--	--
Migratory Butterfly Stopover Areas	**Yes.** A mixture of fields and forests within 5 km of the shoreline of Lake Erie or Lake Ontario are present.	**No.** Significant congregations of migratory butterflies were not observed incidentally during the 2022 fieldwork program.	--
Landbird Migratory Stopover Areas	**Yes.** The Subject Property is < 2 km from the shoreline of Lake Erie with a mixture of forest and woodland communities.	**No.** None of the forest or woodlands present exceed 5 ha in size.	--
Deer Winter Congregation Areas	**Yes.** A small portion of the extreme southwestern limit of the Study Area has been designated as a Stratum II Deer Wintering Area by MNRF.	**Yes.** A small portion of the extreme southwestern limit of the Study Area has been designated as a Stratum II Deer Wintering Area by MNRF.	**Negligible.** The area indicated as a Stratum II Deer Wintering Area was previously developed (pre-2009) with a residential subdivision and therefore is no longer considered extant. Regardless, this area is generally > 120 m from the limit of development.
Rare Vegetation Communities or Specialized Habitats for Wildlife			
Cliffs and Talus Slopes	**No.** Cliffs and talus slope communities are absent.	--	--
Sand Barren	**No.** Sand barren communities are absent.	--	--
Alvar	**No.** Flora characteristic of alvars are absent.	--	--
Old Growth Forest	**No.** Based on a review of historical aerial photographs compared with on-site data, the Deciduous Forest appears to reflect a pre-settlement forest community; however, this feature was quite open historically and is generally disturbed as a result of previous industrial activities and contemporary walking trails and ATV use. The Deciduous Woodland and other woodlands have emerged recently (generally following cessation of industrial operations) and are not considered candidate old-growth features.	--	--
Savannah	**No.** Flora characteristic of savannahs are absent.	--	--
Tallgrass Prairie	**No.** Flora characteristic of tallgrass prairies are absent.	--	--
Other Rare Vegetation Community	**No.** Provincially rare vegetation communities are absent.	--	--
Waterfowl Nesting Area	**No.** Wetland communities which could support nesting by the listed indicator waterfowl species are absent.	--	--
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	**Yes.** Forest communities adjacent to large surface water features are present.	**No**. Osprey were observed during breeding bird surveys in 2022; however, no Osprey or Bald Eagle stick nests were documented.	--
Woodland Raptor Nesting Habitat	**No.** On-site forest communities do not exceed 30 ha and size and lack interior forest. No woodland raptors were observed during the breeding bird surveys.	--	--

Ecoregion 7E	Do any Features, Habitats, or Areas within the Proposed Limit of Disturbance or Adjacent Lands meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas within the Proposed Limit of Disturbance or Adjacent Lands meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Turtle Nesting Areas	**No.** Exposed mineral soils adjacent to surface water features (e.g., lakes, ponds, etc.) and/or wetlands that may support turtles are absent from the Study Area (turtle nesting is expected further west, beyond Adjacent Lands).	--	--
Seeps and Springs	**No.** Areas where groundwater emerges at the surface and may support specialized habitat for plants and wildlife are absent.	--	--
Amphibian Breeding Habitat (Woodland)	**Yes.** Forests with wetlands, ponds, and/or pools that may support significant congregations of breeding amphibians may be present.	**No.** The results of anuran calling surveys in 2022 confirmed the absence of this SWH type within the Study Area.	--
Amphibian Breeding Habitat (Wetlands)	**Yes.** Wetlands and surface water features (e.g., ponds, lakes, etc.) that may support significant congregations of breeding amphibians may be present.	**No.** The results of anuran calling surveys in 2022 confirmed the absence of this SWH type within the Study Area.	--
Woodland Area-Sensitive Bird Breeding Habitat	**No.** Interior forest conditions (i.e., > 200 m from edge) are absent.	--	--
Habitat for Species of Conservation Concern			
Marsh Bird Breeding Habitat	**No.** Wetlands with shallow water and emergent aquatic vegetation are absent.	--	--
Open Country Bird Breeding Habitat	**No.** Meadow habitats of sufficient size (> 30 ha) are absent. On-site large meadows (e.g., MEGM4-1) are maintained for haying.	--	--
Shrub/Early Successional Bird Breeding Habitat	**Yes.** Shrub/early-successional habitats of sufficient size are present.	**No.** None of the indicator species or Special Concern species associated with this SWH were documented during breeding bird surveys.	--
Terrestrial Crayfish	**Yes.** Marsh and swamp communities and/or wet fields are present.	**No.** Terrestrial crayfish chimneys were not documented during field surveys in 2022.	--
Special Concern and Rare Wildlife Species	**Yes.** See **Table 2** below.	**Yes.** See **Table 2** below.	**Possible.** See **Table 2** below.
Animal Movement Corridors			
Amphibian Movement Corridors	**No.** Significant amphibian breeding habitat is absent. The proposed development area is not expected to overlap with a significant amphibian movement corridor.	--	--

Table 2. Results of the Special Concern and Provincially Rare Species Assessment.

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Birds					
American Coot (*Fulica americana*)	S3B	OBBA	• Breeds in a variety of freshwater wetlands from prairie potholes to swamps and marshes to suburban park and sewage ponds to the edges of large lakes.	**Unlikely.** Study Area (e.g., Central and Northern Quarry Ponds) contain open water but are unlikely to support this species, which is very rare during the breeding season in Niagara Region. Species was not observed during the 2022 fieldwork program.	--
Bald Eagle (*Haliaeetus leucocephalus*)	SC	iNaturalist	• Generally found feeding along waterbodies and shorelines, and adjacent deciduous and mixed forests. • Super-canopy trees are used for nesting and roosting. • Feeds largely on fish and carrion.	**Negligible.** Bald Eagle was not observed during breeding bird surveys in 2022 (or incidentally), and no large stick nests are present within the Deciduous Forest.	--
Barn Swallow (*Hirundo rustica*)	SC	OBBA	• Nests in barns, bridge/culvert undersides, awnings/overhangs on sides of buildings, and (historically) tree cavities. • Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies.	**Negligible.** While this species may forage over open areas within the Study Area for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites are absent. One (1) bird was observed foraging west of breeding bird station BI-5 on 24 May 2022.	--
Black-crowned Night Heron (*Nycticorax nycticorax*)	S3B	OBBA	• Nest in a variety of wetlands, including estuaries, marshes, streams, lakes, and reservoirs.	**Negligible.** Species was not observed during the 2022 fieldwork program, and no stick nests were observed along trees growing below the eastern quarry wall. Breeding populations are very rare in Niagara Region.	--
Canada Warbler (*Cardellina canadensis*)	SC	OBBA	• Breeds and forages in a wet thickets, swamps, and mature deciduous forest.	**Negligible.** Species was not observed during breeding bird surveys in 2022.	--
Common Nighthawk (*Chordeiles minor*)	SC	OBBA	• Breeds and forages in a variety of open habitats with sparse cover of woody vegetation. • Also occupies urban areas and nests on flat roof tops.	**Unlikely.** While suitable habitat is present within the Study Area, species was not documented during any morning (breeding bird surveys) or evening (anuran, bat) surveys conducted in 2022 and 2023.	--
Eastern Wood-pewee (*Contopus virens*)	SC	OBBA	• Breeds and forages in relatively open, deciduous and mixed forests of various sizes (including urban forest fragments) and along forest edges.	**Confirmed.** Two (2) singing males were detected during the first breeding bird survey on 24 May 2022 at breeding bird stations BI-9 and BI-10. One (1) bird was detected during the second breeding bird survey on 19 June 2022 at breeding bird station BI-4.	**Negligible.** All observations of this species within the Study Area represented "Possible" breeders (rather than "Probable" or "Confirmed"). Individuals documented in the vicinity of BI-4 and BI-10 vocalized from areas which have been protected (or are beyond the proposed limit of disturbance). The singing male at BI-9 vocalized from marginally suitable habitat (e.g., savanna) and may have represented a migrant (given the record date of 24 May 2022).
Grasshopper Sparrow (*Ammodramus savannarum*)	SC	OBBA	• Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, and prairies.	**Confirmed.** One (1) Grasshopper Sparrow was detected during the second breeding bird survey on 19 June 2022.	**Negligible.** While the location in which this species was documented is proposed to be developed, it is only considered a "Possible" breeder based on the outcome of the 2022 breeding bird surveys (rather than "Probable" or "Confirmed"). There is a relatively robust population of Grasshopper Sparrow in the local landscape (i.e., fields

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
					between the Welland Canal, Highway 140, and the railway lands).
Peregrine Falcon (*Falco peregrinus*)	SC	OBBA	• Nests on tall, steep ledges usually close to waterbodies, including cliffs, quarry walls, and buildings.	**Negligible.** While this species was documented incidentally during late winter 2022, no individuals were recorded during the breeding season.	--
Purple Martin (*Progne subis*)	S3B	Species distribution and on-site habitats	• Forages over towns, cities, parks, open fields, dunes, streams, wet meadows, beaver ponds, and other open areas. • Nests in cavities (both artificial and natural), though is almost entirely dependent on human constructed nesting structures (martin houses) in Ontario.	**Negligible.** Species was not observed during breeding bird surveys in 2022.	--
Tufted Titmouse (*Baeolophus bicolor*)	S3	OBBA, NHIC	• Breeds in deciduous woods or mixed evergreen-deciduous woods, typically in areas with a dense canopy and many tree species. They are also common in orchards, parks, and suburban areas.	**Confirmed.** While no individuals were recorded during breeding bird surveys, two (2) Tufted Titmouse were observed incidentally on 24 April 2022 and on 24 October 2022. As this species is non-migratory, these individuals may or may not be breeding locally.	**Negligible.** Species was not recorded within the designated "Safe Date" period per OBBA3 (May 15 to July 13), suggesting that all observations from within the Subject Property represented migrants and/or non-breeding individuals.
Upland Sandpiper (*Bartramia longicauda*)	S2B	OBBA	• Nests in grasslands, pastures, both grazed and ungrazed, and in agricultural fields, especially fallow fields, but sometimes hay or other crop fields.	**Negligible.** Species was not observed during breeding bird surveys in 2022.	--
Wood Thrush (*Hylocichla mustelina*)	SC	OBBA	• Breeds and forages in second-growth and mature deciduous and mixed forests with a well-developed understory.	**Confirmed.** Two (2) Wood Thrush were detected within the Study Area, one during the second breeding bird survey on 19 June 2022 at breeding bird station BI-4 and a second was detected incidentally on 11 June 2022 close to breeding bird station BI-5.	**Negligible.** Suitable habitat within the Deciduous Forest (to become a protected natural heritage block) will remain post-development.
Insects					
Monarch (*Danaus plexippus*)	SC	Ont. Butterfly Atlas	• Oviposits on Milkweeds (*Asclepias* spp.). • Generalist foraging that nectars in most areas with wildflowers.	**Confirmed.** Ovipositing sites (i.e., species in the genus *Asclepias*) are present. One (1) caterpillar was observed on 11 July 2022 in the northeast section of the Subject Property, while adults were observed on various dates during the fieldwork program.	**Negligible.** The landscape surrounding the Study Area provides sufficient and suitable nectaring and ovipositing sites for this species.
Painted Skimmer (*Libellula semifasciata*)	S3	NHIC	• Breeds in Shallow, vegetated ponds, pools and puddles often near woodlands.	**Unlikely.** Potentially suitable habitat is considered marginal within the Study Area and unlikely to support this species.	--
Yellow Banded Bumble Bee (*Bombus terricola*)	SC	Species distribution and on-site habitats	• Occupies a range of open areas with nectaring sites. • Nests underground in abandoned rodent burrows or decomposing logs.	**Unlikely.** Although species is a habitat generalist there is a dearth of records of this species from Niagara Region, suggesting it is unlikely to occur within the Study Area.	--
Lichens					
Powdered Ruffle Lichen (*Parmotrema hypotropum*)	S3	Documented on-site	• Occupies bark (i.e., corticolous) of a variety of tree species in mature, pre-settlement woodlands and swamps in southern Ontario.	**Confirmed.** One (1) individual was documented in the along the northwest edge of the Deciduous Forest.	**Negligible.** No development or site alteration is proposed within 30 m of the individual documented. The Deciduous Forest has been afforded a minimum 10 m setback and the

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
					feature itself will form part of a protected natural heritage block.
Mammals					
Woodland Vole (*Microtus pinetorum*)	SC	Atlas of the Mammals of Ontario	• Occupies deciduous forests in areas of soft, friable, often sandy soil beneath deep humus to facilitate burrowing.	**Unlikely.** While forests and woodlands are present, generally they are small and do not contain soft, sandy soil (the site is underlain by silty clay).	--
Molluscs					
Liver Elimia (*Elimia livescens*)	S3S4	NHIC	• Inhabits rocky, sandy, and muddy substrate in lakes, ponds, and rivers. Tolerant of brackish water but does not tolerate pollution or anoxic conditions.	**Unlikely.** The Central or Northern Quarry Ponds may provide suitable habitat but are excavated features. This species is more often associated with rivers.	--
Sharp Hornsnail (*Pleurocera acuta*)	S2?	iNaturalist	• Inhabits freshwater rivers and streams where it burrows in sand and mud.	**Negligible.** No suitable habitat within the Study Area.	--
Plants					
Eastern Few-fruited Sedge (*Carex oligocarpa*)	S3	NHIC	• Inhabits deciduous woods, wooded bluffs and slopes.	**Negligible.** Species was not documented during vascular plant surveys.	--
Kansas Hawthorn (*Crataegus coccinioides*)	S2	Documented on-site	• Occupies various treed and scrubby areas including forest edges, forests, meadows and fields. • Exhibits a Carolinian distribution in southern Ontario.	**Confirmed.** Species was documented in several locations within the Study Area (verified through photographs reviewed by Dr. J. Phipps).	**Negligible.** Mitigation measures (e.g., additional surveys and relocating healthy individuals) have been recommended with the intent to allow the species to persist on-site post development. See EIS report for further details.
Long-stalked Haircap Moss (*Polytrichum longisetum*)	S3	NHIC	• Typically found in or near wetlands with acidic soils.	**Negligible**. Suitable habitat is absent.	--
Schweinitz's Flatsedge (*Cyperus schweinitzii*)	S3	NHIC	• Inhabits dry, sandy soils and sand dunes along shorelines.	**Negligible**. Suitable habitat is absent.	--
Swamp Rosemallow (*Hibiscus moscheutos*)	SC	NHIC	• Occupies shoreline marshes along the Great Lakes and Lake St. Clair.	**Negligible.** Species was not documented during vascular plant surveys.	--
White-tinged Sedge (*Carex albicans var. albicans*)	S3	NHIC	• Inhabits dry deciduous forests and woodlands.	**Negligible.** Species was not documented during vascular plant surveys.	--
Virginia Bluebells (*Mertensia virginica*)	S3	NHIC	• Inhabits low moist deciduous forests and floodplains.	**Negligible.** Species was not documented during vascular plant surveys.	--
Reptiles					
Northern Map Turtle (*Graptemys geographica*)	SC	NHIC	• Occupies lakes and large rivers with slow moving currents. • Nests in exposed, usually coarse, friable substrate.	**Unlikely.** The large pond may provide suitable habitat for this species; however, no individuals were observed during surveys in 2022.	--

Species	Status per O. Reg. 230/08 under the ESA and/or NHIC	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2020 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Snapping Turtle (*Chelydra serpentina*)	SC	NHIC	• Occupies a variety of aquatic habitats with slow moving water. • Nests in exposed, usually coarse, friable substrate. • Known to make long-distance overland movements (i.e., several kilometers) between habitats.	**Confirmed.** Species was observed on 24 May and 17 August 2022 in the Northern Quarry Pond.	**Negligible.** All proposed development and site alteration are restricted a minimum of 30 m from the edge of the Northern and Central Quarry Ponds (apart from installation of the stormwater outlet to the Northern Quarry Pond). Areas adjacent to the quarry ponds are generally proposed as park and natural heritage blocks, which will further buffer the potential for adverse affects to Snapping Turtle post-development.

[1] Likelihood categories should be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

Unlikely: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

Appendix 8. Endangered and Threatened Species Assessment

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Amphibians					
Fowler's Toad (*Anaxyrus fowleri*)	END	Ont. Herp Atlas	• Forages in a variety of shoreline environments including sand dunes, beaches (sand, gravel, or cobble), and limestone pavement along Lake Erie. • Hibernates in relatively open sand dunes and areas with sufficiently deep sand where individuals can dig below the frost line. • Breeds along stream mouths, bedrock pools, and shallow bays in areas that may be temporarily or semi-permanently flooded by Lake Erie. • Dispersal may occur in a variety of shoreline environments.	**Negligible.** Suitable habitat is absent from the Study Area.	--
Birds					
Acadian Flycatcher (*Empidonax virescens*)	END	OBBA	• Breeds and forages in mature, relatively undisturbed deciduous forest and swamps, often in valleys/ravines.	**Negligible.** Species was not documented during breeding bird surveys in 2022.	--
Bank Swallow (*Riparia riparia*)	THR	OBBA	• Nests in natural or anthropogenically derived exposed, sandy substrates on vertical or steep surfaces. • Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies.	**Negligible.** While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent. Species was not detected during breeding bird surveys in 2022 but was detected on-site incidentally in early May 2023.	--
Barn Owl (*Tyto alba*)	END	OBBA	• Nesting areas include barns, abandoned buildings, and (historically) tree cavities. • Forages in a variety of open areas including orchards, grasslands, agricultural lands, and meadows.	**Negligible.** Suitable breeding habitat is absent from the Study Area.	--
Bobolink (*Dolichonyx oryzivorus*)	THR	OBBA	• Breeds and forages in hayfields, pastures, meadows, grasslands, and prairies which are often (but not always) greater 4 ha. • May be found in more marginal habitats (e.g., shrubby fields, smaller fields, etc.) during migration or following disturbance to breeding habitats (e.g., hay cutting).	**Negligible.** Species was not documented during breeding bird surveys in 2022.	--
Chimney Swift (*Chaetura pelagica*)	THR	OBBA	• Nests in large, uncapped chimneys and (historically) tree cavities. • May forage above a wide variety of anthropogenic (e.g., cities, towns) and natural (e.g., fields, forests) areas.	**Negligible.** While this species may forage over open areas on the Subject Property for brief periods during migration or forays from adjacent breeding sites, suitable breeding sites within the Subject Property are absent. Chimney Swift was observed flying over the Subject Property during the second breeding bird survey on 19 June 2022.	--
Eastern Meadowlark (*Sturnella magna*)	THR	OBBA	• Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, prairies, and shrubby fields.	**Confirmed.** Species was detected as a "Probable" breeder during the 2022 fieldwork program.	Approval under the ESA (e.g., O. Reg. 829/21) is required to facilitate development within Eastern Meadowlark habitat.
Eastern Whip-poor-will (*Caprimulgus vociferus*)	THR	OBBA	• Breeds and forages in semi-open deciduous forests and thickets, and their edges.	**Unlikely.** While suitable habitat is present within the Study Area, species was not documented during any morning (breeding bird surveys) or evening (anuran,	--

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
				bat) surveys conducted in 2022 and 2023. Species rarely breeds in Niagara Region outside of Wainfleet Bog.	
Henslow's Sparrow (*Ammodramus henslowii*)	END	OBBA	• Breeds and forages in hayfields, pastures, meadows, and wet meadows.	**Negligible.** Species was not documented during breeding bird surveys in 2022.	--
Least Bittern (*Ixobrychus exilis*)	THR	OBBA	• Breeds and forages in marshes dominated by robust emergent vegetation containing areas of open water (i.e., interspersion).	**Negligible.** Suitable breeding habitat is absent from the Study Area.	--
Piping Plover (*Charadrius melodus*)	END	NHIC	• Nest exclusively on dry sandy or gravelly beaches just above the reach of high water and waves.	**Negligible.** Suitable breeding habitat is absent from the Study Area.	--
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	END	OBBA	• Breeds and forages in open forests, savannahs, and forest edges that tend to contain large, mature trees.	**Negligible.** Suitable breeding habitat is absent from the Study Area.	--
Yellow-breasted Chat (*Icteria virens*)	END	NHIC	• Breeds and forages in areas of dense shrubbery, including abandoned farm fields, clearcuts, powerline corridors, fencerows, forest edges and openings, swamps, and edges of streams and ponds.	**Negligible.** Suitable breeding habitat is absent from the Study Area.	--
Mammals					
Eastern Small-footed Myotis (*Myotis leibii*)	END	Species distribution and on-site habitats	• Maternal roosting sites include exposed rock outcrops, crevices, and cliffs. • Overwinters in caves and mines that maintain temperatures above 0°C.	**Unlikely.** While species may forage above open habitats within the Study Area, potential maternal roosting habitat could be associated with rock outcrops and cliffs along the walls of the Central and Northern Quarry Ponds. Notwithstanding this, a targeted assessment on 28 June 2023 revealed no evidence that this species was roosting along the eastern portion of the Northern Quarry Pond on that date.	--
Little Brown Myotis (*Myotis lucifugus*)	END	Species distribution and on-site habitats	• Maternity roosts sites most often include buildings and large diameter trees with cracks, crevices, and/or exfoliating bark. • Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species. Species was documented on 28 June 2023 during targeted survey for Eastern Small-footed Myotis; however, it is unknown if the individual documented roosted or foraged within the Study Area in 2023.	**Negligible.** A timing window restriction is applied to necessary tree removal activities to avoid impacting roosting bats. Much of the Deciduous Forest and Deciduous Woodland will be retained as natural heritage blocks, thus offering suitable roosting habitat opportunities post-development. Additional mitigation measures for construction and detailed design are also provided. See report for greater details.
Northern Myotis (*Myotis septentrionalis*)	END	Species distribution and on-site habitats	• Maternity roosts most often include large diameter trees with cracks, crevices, and/or exfoliating bark (buildings rarely used). • Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with	**Negligible.** A timing window restriction is applied to necessary tree removal activities to avoid impacting roosting bats. Large portions of the Deciduous Forest and Deciduous Woodland will be retained as natural

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
				cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	heritage blocks, thus offering suitable roosting habitat opportunities post-development. Additional mitigation measures for construction and detailed design are also provided. See report for greater details.
Tri-colored Bat (*Perimyotis subflavus*)	END	Species distribution and on-site habitats	• Maternal roosting sites include Maple (*Acer* spp.) and Oak (*Quercus* spp.) with dead/dying leaf clusters. • Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	**Negligible.** Areas of tree removal generally avoid forests/woodlands containing native oaks and maples. A timing window restriction is applied to necessary tree removal activities to avoid impacting roosting bats. Large portions of the Deciduous Forest and Deciduous Woodland will be retained as natural heritage blocks, thus offering suitable roosting habitat opportunities post-development. Additional mitigation measures for construction and detailed design are also provided. See report for greater details.
Plants					
American Chestnut (*Castanea dentata*)	END	Species distribution and on-site habitats	• Occupies dry deciduous forests.	**Negligible.** Species not documented during vascular plant surveys in 2022.	--
Black Ash (*Fraxinus nigra*)	END	Species distribution and on-site habitats	• Occupies deciduous swamps (often peaty), floodplains, and wet woods.	**Negligible.** Species not documented during vascular plant surveys in 2022.	--
Butternut (*Juglans cinerea*)	END	Species distribution and on-site habitats	• Occupies a variety of treed habitats including mature forests, early-successional forests, and hedgerows.	**Negligible.** Species not documented during vascular plant surveys.	--
Cucumber Tree (*Magnolia acuminata*)	END	Species distribution and on-site habitats	• Occupies moist deciduous or mixed forest habitats.	**Negligible.** Species not documented during vascular plant surveys in 2022.	--
Eastern Flowering Dogwood (*Cornus florida*)	END	Species distribution and on-site habitats	• Dry (usually with Oak) to rich deciduous forests, often on hillsides and river banks.	**Negligible.** Species not documented during vascular plant surveys in 2022.	--
Spoon-leaved Moss (*Bryoandersonia illecebra*)	END	Species distribution and on-site habitats	• Occupies moist or low-lying areas that are seasonally flooded under trees or shrub thickets. • May be found in a variety of vegetation communities including disturbed open woodlands, cultural thicket, savannah, and meadow.	**Negligible.** Species not documented during vascular plant surveys in 2022.	--
White Wood Aster (*Eurybia divaricata*)	THR	Species distribution and on-site habitats	• Occupies open, dry deciduous forests.	**Negligible.** Species not documented during vascular plant surveys in 2022.	--
Reptiles					
Eastern Hog-nosed Snake (*Heterodon platirhinos*)	THR	Ont. Herp Atlas	• Occupies a wide range of habitats generally occurring on sandy, well-drained soil with open vegetative cover	**Negligible.** Species is considered historical in the local landscape.	--

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Area within or adjacent to proposed Development or Site Alteration[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Gray Ratsnake (Carolinian) (*Pantherophis spiloides*)	END	Ont. Herp Atlas	• Occupies deciduous forests particularly areas with a mosaic of forest and open habitats.	**Negligible.** Previous records of this species (e.g., from Mud Lake CA) are considered to be in error. Species is not expected to occur in the local landscape.	--
Massasauga (*Sistrurus catenatus*)	THR	Ont. Herp Atlas	• Occupies generally open habitats including tallgrass prairies, peatlands, and shorelines. • Two (2) extant populations in Ecoregion 7 (Ojibway Prairie and Wainfleet Bog).	**Negligible.** Species is restricted to Wainfleet Bog and abutting lands.	--
Blanding's Turtle (*Emydoidea blandingii*)	THR	Ont. Herp Atlas	• Occupies freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes, and swamps. • Nests in exposed, usually coarse, friable substrate. • Known to make long-distance overland movements (i.e., several kilometers) between habitats.	**Unlikely.** While species could conceivably occur in the Central or Northern Quarry Ponds, no individuals were observed during the fieldwork program. The quarry ponds are constructed features and there is a general absence of other features likely to support Blanding's Turtle in the vicinity of the Subject Property.	--

[1] Likelihood categories are to be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

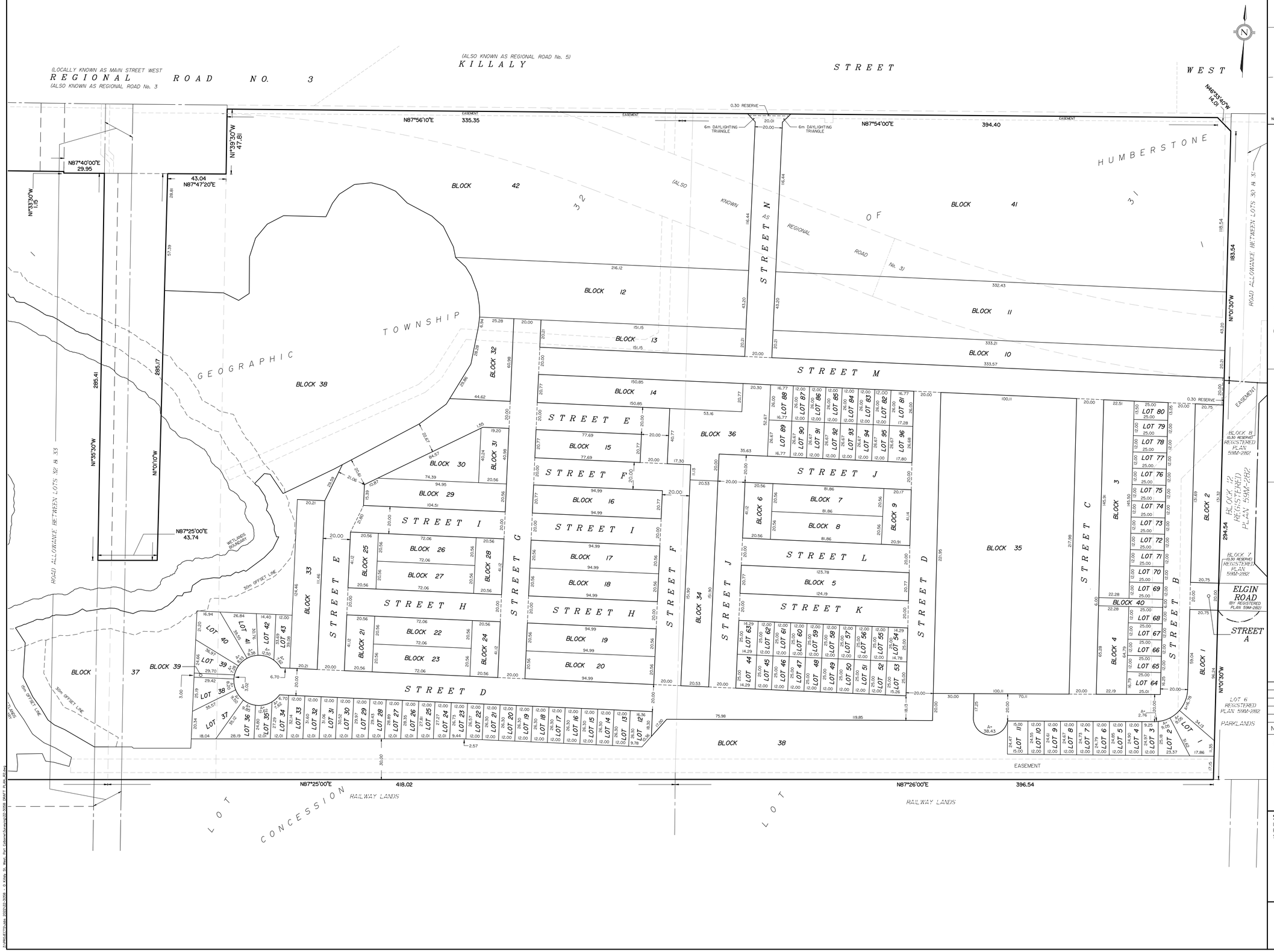
Unlikely: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

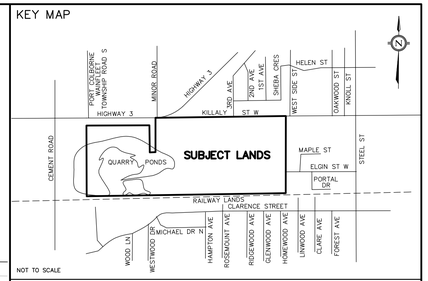
Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

Appendix 9. Proposed Development Plan.





DRAFT PLAN OF SUBDIVISION

PART OF LOTS 31, 32 & 33 CONCESSION 1 & PART OF ROAD ALLOWANCE BETWEEN TOWNSHIPS OF WAINFLEET & HUMBERSTONE

(CLOSED BY INSTRUMENT WF9687A, BY-LAW 960)

PART OF ROAD ALLOWANCE BETWEEN LOTS 32 & 33

(CLOSED BY INSTRUMENTS WF9687A & AA68900, BY-LAW 960) IN

CITY OF PORT COLBORNE

REGIONAL MUNICIPALITY OF NIAGARA

SCALE & NOTES

Scale 1:1250

20 0 0 20 40 60 80 METRES

BARICH GRENKIE SURVEYING LTD.
A DIVISION OF GEOMAPLE

METRIC
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

PLANNING ACT INFORMATION

THE FOLLOWING INFORMATION IS PROVIDED PURSUANT TO SECTION 51(17) OF THE PLANNING ACT

A) BOUNDARIES OF LAND	INDICATED ON PLAN
B) WIDTH & LOCATION OF HIGHWAYS	INDICATED ON PLAN
C) OTHER LANDS OF OWNER	INDICATED ON KEY PLAN
D) INTENDED USE OF LAND	INDICATED ON LAND USE ANALYSIS
E) ADJOINING LAND USE	INDICATED ON THE PLAN
F) LOT DIMENSIONS	INDICATED ON THE PLAN
G) EXISTING FEATURES	INDICATED ON THE PLAN
H) WATER SUPPLY	MUNICIPAL WATER TO BE INSTALLED BY DEVELOPER
I) SOIL INFORMATION	BEDROCK: BROWN GRAVEL/STONE WITH SANDY CLAY
J) EXISTING TOPOGRAPHY	NOT APPLICABLE
K) MUNICIPAL SERVICES	MUNICIPAL SERVICES TO BE MADE AVAILABLE
L) RESTRICTIONS/EASEMENTS	INDICATED ON THE PLAN

LAND USE SCHEDULE

USE	NO OF LOTS/BLOCKS	AREA(HECTARES)	% OF TOTAL AREA
SINGLE USE RESIDENTIAL	96	3.35	5.9%
TOWNHOUSE BLOCKS	34	8.57	15.0%
BLOCK 35 – WOODLANDS	1	2.20	3.9%
BLOCK 36 – PARKETTE	1	0.33	0.6%
BLOCK 37 – PARKLANDS	1	1.56	2.7%
BLOCK 38 – ENVIRONMENTAL	1	21.75	38.0%
BLOCKS 39&40 – WALKWAYS	2	0.04	0.0%
BLOCKS 41&42 – MIXED USE	2	8.22	14.4%
BLOCKS 43 – PARKLANDS	2	3.21	5.6%
STREETS		7.95	13.9%
TOTAL		57.18	100%

NO.	DATE	BY	REVISIONS

OWNERS'S CERTIFICATE

AS OF THE DATE ON THE PLAN, WE ARE THE REGISTERED OWNERS OF THE LANDS TO BE SUBDIVIDED AND WE AUTHORIZE BARICH GRENKIE LAND SURVEYORS LTD. TO PREPARE AND SUBMIT THIS PLAN FOR DRAFT APPROVAL ON OUR BEHALF

OWNER OF 100004618 ONTARIO LTD.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LANDSBEING SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN

NOVEMBER XX, 2023

DRAFT

ERIC G. SALZER
O.L.S., O.L.I.P.

Barich Grenkie Surveying Ltd.
301 HWY No. 8 (2ND FLOOR) - STONEY CREEK, ON
L8G 1E5 (905) 662-6767
A DIVISION OF GEOMAPLE

DWN BY:	EWA
CHK BY:	EGS
JOB No.	22-3058
SHEET No.	1 OF 2

KILLALY STREET WEST

N87°54'00"E 400.07

3.05M ROAD WIDENING

N87°56'10"E 235.67

N87°56'10"E 99.64

10x10M DAYLIGHT TRIANGLE

TRIANGLE

BUILDING 01
8 STOREY RESIDENTIAL

BUILDING 02
8 STOREY RESIDENTIAL

BUILDING 03
8 STOREY RESIDENTIAL

BUILDING 04
8 STOREY MIXED-USE

COMMERCIAL SPACE
1ST FLOOR ONLY!
607.0 SQM
6507.2 SQFT

BUILDING 05
8 STOREY MIXED-USE

BUILDING 06
8 STOREY RESIDENTIAL

BUILDING 07
8 STOREY MIXED-USE

BUILDING 08
8 STOREY MIXED-USE

COMMERCIAL SPACE
1ST FLOOR ONLY!
198.9 SQM
2141.1 SQFT

LIMIT OF PARKING ABOVE

609 PARKING SPACES

667 PARKING SPACES

DROP OFF

DRIVEWAY

SIDEWALK

N1°39'30"W 59.85

43.04
N87°47'20"E

N87°40'00"E 29.95

TO OUTDOOR AMENITY AREA

4M LANDSCAPE BUFFER

DEVELOPABLE AREA

N1°39'30"W 285.17

WETLANDS

30M OFFSET FROM WATER LEVEL

15M OFFSET FROM WATER LEVEL

30M CONNECTIVE CORRIDOR/SETBACK FROM THE POND BE ESTABLISHED, INCLUDED 15M OF FULLY NATURALIZED PARKLAND

N87°25'00"E 10.06

N87°25'00"E 33.68

POSSIBLE PARKLAND ABUTTING 15M OFFSET OF POND, 15,228M2 (8.0% OF DEVELOPMENT)

N87°25'00"E 418.02

N87°26'00"E 396.54

N1°39'30"W 285.17

PART 12 PLAN 59R-8019

PART 11 PLAN 59R-8019 PIN 64157-0021 (LT)

PART 6 PLAN 59R-14852

PART 9 PLAN 59R-14852

PART 2 PLAN 59R-14799

PART 10 PLAN 59R-14852

PART 5 PLAN 59R-14852

PIN 64157 - 0127 (LT)

Railway Tracks

S01 S02 S03 S04 S05 S06 S07 S08 S09 S10 S11 S12 S13

SURFACE PARKING FOR STACKED TOWNHOUSES

REGULAR TOWNHOUSES BACKYARDS

Regular TH.

Back To Back TH.

Rear Lane TH.

B01 B02 B03 B04 B05 B06 B07 B08 B09 B10 B11

RL01 RL02 RL03 RL04 RL05 RL06

Single Family

Parkette

WOODLOT

B12 B13 B14 B15

6M SERVICE ROAD

NOTE: REFER TO GRADING PLAN FOR FINISHED FLOOR ELEVATION

LEGEND

- MIXED USE RESIDENTIAL BUILDING
- COMMERCIAL SPACE
- STACKED TOWNHOUSES
- BACK TO BACK TOWNHOUSES
- REGULAR TOWNHOUSES
- SINGLE FAMILY HOUSES
- REAR LANE TOWNHOUSES

1	ISSUED FOR REZONING	2023/01/20

NORTH

TRUE

ONTARIO ASSOCIATION OF ARCHITECTS
M. REZA ESLAMI
LICENCE
6225

KILLALY STREET
PORT COLBORNE, ON

DRAWING TITLE
SITE PLAN

Scale: 1:1000
Date: MAR. 08, 2024
Project No. 22129

Drawn by: YA
Checked by: RE
Drawing No. A101

813 - 4789 YONGE ST. TORONTO M2N 0G3 ICONARCHITECTS.CA
T 416-224-0505 F 416-224-0504

ICON ARCHITECTS

Appendix 10. Summary of Technical Recommendations

Natural Feature	Technical Recommendations (per Section 5 of report)

Provincially Significant Wainfleet Eagle Marsh Drain Wetland Complex	• The revised PSW boundary is to be provided to the Ministry of Natural Resources and Forestry (MNRF) for approval and incorporation into the provincial wetland dataset.
	• No ecologically meaningful, adverse changes to water quality or average water levels in the Northern Quarry Pond will occur as a result of stormwater discharge emanating from the proposed development.
	• Salt management recommendations offered in Section 7.2 of the SWM Report (King EPCM) will be incorporated into detailed designs to the extent practicable.
	• Comprehensive Sediment and Erosion Control (ESC) Plans are to be prepared by a qualified professional as a condition of draft plan approval, and are to include the following components (minimum):
	  • Sediment and erosion control measures (e.g., silt fence) placed at the limit of disturbance.
	  • Timing of works (e.g., avoidance of working during adverse weather, avoidance of vegetation removal during the bird breeding and bat activity periods, etc.).
	  • Measures to reduce the potential for erosion of stockpiles and/or temporarily stored topsoil, fill, or aggregate material (e.g., piled as low as practicable, etc.), and measures to situate these construction features away from Blocks 35 and 38 to the extent possible.
	  • Measures to control and treat internal runoff during construction including temporary interceptor swales and/or sediment control basins (as necessary), which are to be stabilized (i.e., seeded) and maintained regularly.
	  • Designated machinery servicing areas.
	  • Fill control measures.
	  • Measures to minimize the spread of invasive species, particularly Phragmites.
	  • Dust suppression measures.
	  • Spills reporting protocol.
	  • Catch-basin protection.
	  • Inspection, maintenance, and contingency measures.
	  • Decommissioning protocol (i.e., removal of non-biodegradable erosion and sediment control materials including accumulated sediment once construction is complete and disturbed areas are stabilized).

Silky Dogwood Mineral Deciduous Thicket Swamp	• A Wetland Water Balance Risk Evaluation (TRCA 2017) will be undertaken for the Silky Dogwood thicket swamp. • Should the results suggest that there is risk of post-development hydrologic impacts due to reductions in surface water inputs, opportunities to convey clean surface water to the Silky Dogwood thicket swamp will be explored through detailed design to avoid negative impacts. • The setback between the new channel of the Intermittent Drainage Feature and Silky Dogwood thicket swamp within Block 38 will be maximized to the extent practicable. • The new channel will incorporate natural channel principles (e.g., meandering planform) to the extent practicable. • Necessary vegetation removals and disturbance associated with constructing the new channel of the Intermittent Drainage Feature within Block 38 will be minimized and addressed through a Wetland Buffer Enhancement Plan to be prepared as a condition of draft plan approval.

Natural Feature	Technical Recommendations (per Section 5 of report)
Significant Woodlands	• A Tree Saving Plan overlapping with proposed areas of encroachment within the Deciduous Forest and Deciduous Woodland will be completed to address proposed encroachment within the Significant Woodlands. • A Woodland Replacement Plan will be prepared as a condition of draft plan approval and is to include following components (minimum): • Conceptual areas of woodland replacement are shown on **Figure 5**. • The spatial area of replacement woodland will exceed the area of Significant Woodland removed (i.e., > 1.1 ha). • Tree removals (min. 10 cm DBH) within the areas of Significant Woodland encroachment will be replaced at a minimum 3:1 ratio. • A diversity of native trees and shrubs will be installed in the replacement woodland areas. • Removal of impervious surfaces (e.g., gravel storage and parking areas) will occur prior to planting coupled with placement of sufficient topsoil to be seeded with an appropriate native seed mix. • Wildlife habitat elements (e.g., log tangles, coarse woody debris placement) including locations and quantities will be specified, preferably using trees to be cleared for development. • All woodland replacement areas will be treated as natural, self-sustaining vegetation (i.e., no mow). • Ecological monitoring over a minimum 5-year period will be undertaken to demonstrate that the replaced woodland (and installed habitat features) are performing as designed. • A Linkage Enhancement Plan will be prepared as a condition of draft plan approval to improve the ecological function of the 30 m corridor at the southwest corner of Block 35, which will include the following specifications (minimum): • An appropriately-sized wildlife crossing (e.g., culvert) will be installed to convey small wildlife (e.g., herpetofauna) passage through the 30 m corridor. • Temporary soil disturbance and vegetation removals associated with installing proposed servicing (stormwater and sanitary) and/or facilitating emergency vehicle access through the 30 m corridor will be addressed through measures such as native plantings and/or seeding. • Lighting will be directed away from Blocks 35 and 38 through detailed design to the extent achievable. • A Comprehensive Trails Plan is to be prepared through detailed design (should a trail system be proposed) which will include the following specifications (minimum): • Identification of a trail alignment that minimizes woodland impacts to the extent achievable and avoids sensitive/significant areas (e.g., wetlands in Block 38). • Incorporation of existing trails/disturbed areas into the trail alignment, where appropriate. • Incorporation of permeable materials into the trail base. • Incorporation of signage to introduce trail users to the natural heritage functions of the area. • Permanent chain-link fencing (black vinyl) is to be established along the northern, eastern, and southern boundaries of the Deciduous Forest (Block 38) and the edges of Streets B, C, D, and M which abut the Deciduous Woodland (Block 35). • The permanent chain-link fencing (black vinyl) will be fitted with a permanent wildlife exclusion barrier which extends below grade (i.e., keyed into the ground). The exact exclusion barrier will be specified through detailed design and could allow for gates/openings at future trail heads (if trails are proposed).

Natural Feature	Technical Recommendations (per Section 5 of report)
Significant Wildlife Habitat	• Milkweed is to be seeded and/or installed in any areas of necessary disturbance within Block 38 (e.g., during realignment of the Intermittent Drainage Feature) and within naturalized portions of Block 37 (e.g., within 30 m of the Central Quarry Pond), to be specified at detailed design. • Prior to site preparation and/or vegetation removal, a spring (~May) survey for Kansas Hawthorn will occur to document all extant individuals within or adjacent to the area of disturbance. • Following the survey, a Kansas Hawthorn Relocation Plan will be prepared specifying the location(s) of all individuals to be relocated along with appropriate relocation methods (e.g., tree spade) and areas (e.g., Blocks 35, 37, or 38). • Only those Kansas Hawthorn which are considered to be in at least fair to good condition will be subject to relocation.
Habitat of Endangered and Threatened Species	• Conversion of the hayfield to residential uses must be undertaken consistent with the requirements of the Endangered Species Act and associated regulations as they pertain to Eastern Meadowlark. • Any necessary tree removal within the proposed Limit of Disturbance will only take place between October 1 and March 31 to avoid the active season for bats. Should tree removal be required between April 1 and September 30, MECP will be contacted for further advice. • If construction activities occur during the active bat season (i.e., April 1 and September 30), work will be restricted to daylight hours only and the use of artificial lighting will be avoided. • Any lighting incorporated into the final building designs should be directed downward (i.e., towards the ground) and/or away from the adjacent woodlot (i.e., directed eastward) to the extent practicable.
Other Natural Environment Considerations	• All necessary vegetation removal (e.g., trees, meadow vegetation, etc.) will be completed outside the primary bird nesting period (i.e., to be completed between September 1 and March 31). Should minor vegetation removal be required in small areas with good visibility during the bird nesting period, a bird nesting survey will occur prior to any vegetation removal. • Any necessary tree removal activities within the Deciduous Forest between February 1 and March 31 (if any) will only occur following completion of a survey for nesting raptors by a qualified professional. Should an active raptor nest be documented, a mitigation plan will be prepared for approval by MNRF. • Portions of Block 37 overlapping with the 30 m setback from the quarry ponds will consist of natural, self-sustaining vegetation, and will not be maintained (mowed) or contain hardscaping associated with parkland uses. • A Naturalization Plan will be prepared for the portion of Block 37 overlapping with the 30 m setback from the quarry ponds and will consist of installing a diversity of tree and shrub species native to the local landscape along with placement of a native seed mix (following any soil remediation measures, if required). • The Naturalization Plan will also specify measures to remediate necessary disturbance associated with installation of the stormwater outlet to the Northern Quarry Pond, such as native woody plantings and/or application of a native seed mix. • Other tree and shrub plantings in Block 37 specified through future Landscape Plans will consist of species native to the local landscape. • Incorporation of Bird-Friendly Guidelines into the building and residence designs such as those published in City of Toronto's "Best Practices for Bird-Friendly Glass" and "Best Practices for Effective Lighting" will be considered at detailed design. • Any Landscape Plans prepared as part of the development approval for the adjacent residential and commercial areas should rely primarily on woody species native to the local landscape and avoid species which are known to be invasive in southern Ontario.