

East Road at Dexter Line, Port Stanley, ON

Environmental Impact Study (EIS)

Project Location: East Road at Dexter Line, Port Stanley, ON

Prepared for: Wastell Homes 5-1895 Blue Heron Drive London, ON N6H 5L9

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1.0 INTRODUCTION

MTE has been retained by Wastell Homes (the Proponent) to complete an Environmental Impact Study (EIS) for a proposed residential development on East Road at Dexter Line, Port Stanley in the Municipality of Central Elgin and Elgin County (the 'Subject Lands'; Figure 1) in support of a Draft Plan of the development.

The Subject Lands are 8.23 ha and primarily consist of agricultural row crops with a woodland present along the northern edge of the property limits. The majority of the Subject Lands is designated as residential with the northern woodland identified as natural heritage and a portion designated as natural hazard (Schedules A2 and G, Municipality of Central Elgin; Figures 2 and 3). A treed hedgerow is located along the western edge of the Subject Lands bordering the adjacent residential properties.

The study area for the EIS includes the Subject Lands (which were the focus of field investigations) as well as Adjacent Lands within 120 metres, for the purpose of evaluating contiguous or nearby natural features. The Adjacent Lands to the north, across Sunset Drive, include a locally significant wetland within a provincially significant Earth Science Area of Natural and Scientific Interest (ANSI). The area east of the Subject Lands consists of woodland with a watercourse that is associated with Little Creek. West and south of the Subject Lands primarily consist of residential properties.

An Environmental Impact Study (EIS) is required when development or site alteration is proposed within or adjacent to an area designated as Natural Heritage on the Municipality of Central Elgin Land Use Schedules or within 50 m of an Earth Science ANSI shown on Schedule A2 (Municipality of Central Elgin). Unmapped natural features (e.g., habitat for threatened or endangered species) may also trigger an EIS if found within the Subject Lands, as natural heritage policies are applicable to natural features whether they are known or not. As a portion of the Subject Lands is designated as natural heritage, an EIS is required to demonstrate that the proposed development and/or site alteration will not have a negative impact on nearby natural heritage features or their ecological functions.

In Central Elgin, the EIS is generally preceded by an Issues Scoping Report (ISR) which assesses the significance of the existing natural heritage system features and functions. This report combines the requirements of the ISR, as outlined in OP Policy 3.4.1a), with those of an EIS, as described in OP Policies 3.4.2, to identify natural heritage features within and adjacent to the Subject Lands while providing an assessment of potential impacts to biological or physical features and functions resulting from the proposed development. The report contains recommendations for the avoidance and/or mitigation of impacts, environmental management strategies and monitoring requirements to protect the identified significant natural heritage features and functions.

2.0 LAND USE SETTING AND POLICY OVERVIEW

Federal, provincial, and municipal legislation and policies, summarized in an overview below, were reviewed to inform the evaluation of significant natural heritage features on the Subject Lands.

2.1 Planning Act

The Provincial Policy Statement (PPS; MMAH, 2024) was issued under the *Planning Act, 1990* to provide direction to regional and local municipalities regarding planning policy, ensuring that decisions made by planning authorities were consistent with provincial policy. With respect to natural heritage features and resources, the PPS defines seven natural heritage features:

- Significant wetlands and significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat (SWH);
- Significant areas of natural and scientific interest (ANSI's); and
- Habitat of endangered and threatened species.

These features are described in the Natural Heritage Reference Manual (MNR, 2010), a technical document intended to support the PPS which also provides guidance to help assess these natural heritage features. Section 2.1.4 of the PPS states that development and site alteration are not permitted in significant wetlands or significant coastal wetlands in Ecoregion 7E, where the Subject Lands are located. Section 2.1.5 states that development and site alteration shall not be permitted in significant woodlands, significant valleylands, SWH or ANSI's unless it has been demonstrated that there will be no negative impacts on the features or their ecological functions. Development and site alteration are not permitted in fish habitat (Section 2.1.6) or habitat of endangered or threatened species (Section 2.1.7), except in accordance with provincial and federal legislation. Development and site alteration are also not permitted on lands adjacent to the natural heritage features outlined in section 2.1.4-2.1.6 unless it has been demonstrated that there will be no negative impacts or their ecological functions.

2.2 Municipality of Central Elgin Official Plan (2023)

The Official Plan of the Municipality of Central Elgin includes policies that guide growth, economic development and the protection of natural heritage features across the municipality. With respect to Natural Heritage (Section 3.1.1), new permitted uses, or expansions/enlargements to existing uses, buildings or structures within a Natural Heritage designation that require a Planning Act approval may be permitted only if it can be demonstrated through an Environmental Impact Study (EIS) that there will be no negative impacts to the natural heritage features and/or their ecological functions.

The majority of the Subject Lands are designated as Residential with an area along the northboundary designated as Natural Heritage. The Adjacent Lands are designated as Residential and Natural Heritage per Schedule G.

2.3 County of Elgin Official Plan (2015)

The purpose of the Official Plan of the County of Elgin (Final consolidation, November 2015) is to provide direction and a framework for managing growth and land use decisions within the County through the establishment of a broad, upper tier policy framework that provides guidance to local municipalities, by implementation of the PPS at the County level, and by facilitating coordination and coordination amongst local municipalities and the County on planning and development issues. Section A4.2 describes the County's strategic objective to protect natural heritage features and areas, and their associated ecological functions.

Part D of the Official Plan provides more specific policies to achieve this objective, such as criteria for defining natural heritage significance (e.g. significant woodlands) and identifying how natural heritage features should be considered in the context of development and site alteration. Development and site alteration is not permitted in significant habitat of endangered or threatened species, significant wetlands, and significant coastal wetlands (D.1.2.6a).

Development and site alteration is not permitted in significant woodlands, significant valleylands, SWH and ANSIs (D.1.2.6b) or Adjacent Lands (D1.2.7) unless it has been demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions. Appendix B of the Official Plan provides the County's requirements for an EIS.

2.4 Kettle Creek Conservation Authority

The Kettle Creek Conservation Authority (KCCA) regulates lands within its watershed under Ontario Regulation 41/42, pursuant to Section 28 of the *Conservation Authorities Act*. The KCCA has jurisdiction over riverine flooding and erosion hazards, wetlands and the surrounding area, and requires that landowners obtain written approval from the Authority prior to undertaking any site alteration or development within the regulation limit.

A portion of the Subject Lands (~2.2 ha) are within regulation limit of the Kettle Creek Conservation Authority (KCCA) (Figure 4).

2.5 Endangered Species Act

The Endangered Species Act, 2007 (ESA) protects species listed as threatened, endangered or extirpated in Ontario from killing, harm, harassment or possession, and also protects their habitats from damage or destruction. All species are provided with general habitat protection for areas the species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. The provincial status of species in Ontario is determined by the Committee on the Status of Species at Risk in Ontario (COSSARO) and documented in the Species at Risk in Ontario (SARO) List.

2.6 Additional Relevant Legislation

During the implementation phase of the project, additional natural heritage focused legislation may need to be considered.

2.6.1 Migratory Birds Convention Act

The federal *Migratory Birds Convention Act, 1994* aims to protect and conserve migratory birds as populations and individual birds in Canada and the United States. No work is permitted to proceed that would result in the destruction of active nests (nests with eggs or young birds), or the wounding or killing of bird species protected under the Migratory Birds Convention Act, 1994 and/or Regulations under that Act. Many bird species not protected by the MBCA (e.g., raptors) are protected under the *Fish and Wildlife Conservation Act, 1997*.

2.6.2 Fish and Wildlife Conservation Act

The *Fish and Wildlife Conservation Act, 1997* (FWCA, 1997) regulates hunting, trapping, fishing, and related activities in Ontario in order to address the conservation of fish and wildlife resources in the province, including mammals, birds, reptiles, amphibians and fish. Under the Act, a person that hunts or traps wildlife requires a license administered by the Ministry of Natural Resources and Forestry (MNRF). Deliberate capture of wildlife or fish for the purpose of salvage and relocation is regulated under the FWCA, 1997.

3.0 NATURAL HERITAGE FEATURES AND FUNCTIONS

3.1 Designated Natural Features

The Land Information Ontario (LIO) mapping (MNRF, 2024), Natural Heritage Information Centre (NHIC) online database (2024), and municipal official plan schedules were reviewed for natural heritage features on the Subject Lands and 120 adjacent lands.

Woodlands present on the Subject Lands are part of the County's Natural Heritage System on Map Appendix '1' of the County of Elgin Official Plan, and as "wooded area" on Schedule A2 of the Central Elgin Official Plan (Figure 2). According to Map Appendix '1', the portion of scattered trees within the agricultural lands of the Subject Lands contribute to the woodland; however, these trees are not mapped on Schedule G (Land Use; Figure 3) or A2 (Environmental Features; Figure 2) of the Central Elgin Official Plan.

The provincially significant Port Stanley Till Earth Science Area of Natural and Scientific Interest (ANSI) is located northwest of the Subject Lands and across a 15 m wide roadway (Sunset Drive) (Figure 2). A locally significant wetland, the Moore Water Garden (KC 5) swamp, is also located to the north of the Subject Lands overlapping the Port Stanley Till Earth Science ANSI.

3.2 Species at Risk Records

For this EIS, Protected Species are those listed as Endangered or Threatened on the Species at Risk in Ontario (SARO) List of the ESA. Only Protected Species and their habitats receive protection under the ESA.

Species of Conservation Concern (SOCC) are those listed as Special Concern on the SARO list and species with a provincial ranking of S1-S3. Provincial status rankings for plants, vegetation communities, and wildlife are based on the number of occurrences in Ontario and have the following meanings:

- S1: critically imperiled; often fewer than 5 occurrences
- S2: imperiled; often fewer than 20 occurrences
- S3: vulnerable; often fewer than 80 occurrences
- S4: apparently secure
- S5: secure
- S?: unranked, or, if following a ranking, rank uncertain (e.g. S3?)

Provincial status rankings are established by the NHIC and do not provide an indication of regional abundance or rarity (i.e., species uncommon in the province may still be locally abundant in some regions).

A review of the Ontario Natural Heritage Information Centre (NHIC), Ontario Breeding Bird Atlas (OBBA), Ontario Reptile and Amphibian Atlas database, and Citizen Science sources (iNaturalist and eBird) was conducted to identify Protected Species and SOCC that may be present in the vicinity of the Subject Lands. The areas included in the background review vary, including 10 km Atlas squares (OBBA and Ontario Reptile/Amphibian Atlas), a 1 km Atlas square (NHIC), and the 120 m Adjacent Lands (Citizen Science sources). Some citizen science records from iNaturalist have their locations obscured (location randomly placed within 0.2 x 0.2 degree-cells) and may have been identified within the desktop review despite not occurring within the adjacent lands. It should be noted that OBBA occurrence data are from 2001-2005, and the dates of NHIC records are unknown. The remainder of the records are from within the

past 10 years. The observation dates are provided for each species where possible. These sources display data for a broad area and therefore provide only a general potential for species presence on or near the Subject Lands. Protected Species with occurrence records within 10 km of the Subject Lands are provided in Table 1.

| Common Name | Scientific Name | Status (SARO) | S-rank (NHIC) | Source |
|-----------------------------------|----------------------------|------------------|------------------|-----------------------------|
| Acadian Flycatcher | Empidonax virescens | END | S1B | OBBA, NHIC |
| American Badger (SW Ont pop'n) | Taxidea taxus jacksoni | END | S1 | NHIC |
| American Chestnut | Castanea dentata | END | S1 S2 | NHIC |
| American Ginseng | Panax quinquefolius | END | S2 | NHIC |
| Butternut | Juglans cinerea | END | S2? | NHIC |
| Eastern Prickly-pear Cactus | Opuntia cespitosa | END | S1 | NHIC |
| Red-headed Woodpecker | Melanerpes erythrocephalus | END | S3 | OBBA, iNaturalist |
| Spiny Softshell | Apalone spinifera | END | S2 | NHIC |
| Yellow-breasted Chat | lcteria virens | END | S1B | NHIC |
| Bank Swallow | Riparia riparia | THR | S4B | OBBA, eBird, iNaturalist |
| Bobolink | Dolichonyx oryzivorus | THR | S4B | NHIC, OBBA, iNaturalist |
| Chimney Swift | Chaetura pelagica | THR | S3B | OBBA, iNaturalist |
| Eastern Meadowlark | Sturnella magna | THR | S4B, S3N | NHIC, OBBA |
| Louisiana Waterthrush | Parkesia motacilla | THR | S2B | NHIC, OBBA |

Table 1: Review of Recent Protected Species Occurrence Records within 10km of the Subject Lands

A number of relatively widespread species and habitats protected under the ESA are underrepresented within the NHIC Database and Citizen Science records. For this reason, Little Brown Myotis (END), Northern Myotis (END), and Tri-colored Bat (END) have been added to the background list of potential species.

Habitat potential for SAR on the Subject Lands was evaluated using a combination of desktop review, satellite photo interpretation and field investigations. The full screening lists of Protected Species and SOCC are provided in Appendix A and results are discussed in Sections 3.4 and 3.5.

3.1 Field Investigations

Field investigations were conducted within the Subject Lands and the Adjacent Lands to the north between May and August in 2022 to classify vegetation communities, inventory plant species, document breeding birds, identify potential habitat for Protected Species, and record incidental observations of wildlife. In addition to the targeted surveys described below, incidental observations of wildlife and general habitat characteristics were recorded during all site visits. MTE staff were permitted to access the property north of the Subject Lands to investigate the area as part of the survey. Natural heritage features on the remaining Adjacent Lands were assessed from the edge of the property.

These investigations were completed to support the assessment of potential impacts to natural heritage features and SAR in the context of provincial and municipal policy. A summary of field investigations undertaken as part of the EIS is provided in Table 2.

| Field Investigation | Date |
|--------------------------------------|--|
| Ecological Land Classification (ELC) | May 11, 2022 |
| Bat Habitat Assessment | May 11, 2022 |
| Spring Botanical Inventory | May 11, 2022 |
| Summer Botanical Inventory | August 9, 2022 |
| Butternut Health Assessment (BHA) | July 27, 2022 |
| Breeding Bird (Survey #1) | June 1, 2022 |
| Breeding Birds (Survey #2) | June 16, 2022 |
| Mammal Den Surveys (trail camera) | May 19 – 21 and June 7 – June 15, 2022 |

Table 2: Summary of field investigations undertaken on the Subject and Adjacent Lands

3.1.1 Vegetation Communities

Vegetation communities on and within approximately 30 metres of the Subject Lands and the property to the north were surveyed on May 11, 2022 by MTE staff, certified to conduct ELC in Southern Ontario, using protocols outlined in the Ecological Land Classification (ELC) System for Southern Ontario (Lee et al., 1998). Provincial significance of vegetation communities is based on the rankings assigned by the NHIC (2020).

Table 3: Ecological Land Classifications for the Subject Lands

| Community Type | Polygon | ELC Code | Description | S-rank | Area (ha) |
|------------------------------|---------|----------|------------------------------|--------|-----------|
| Mineral Cultural Woodland | 1 | CUW1 | Mineral Cultural Woodland | n/a | 3.10 |
| Agricultural | AG | - | Active Agriculture | n/a | 5.70 |
| Anthropogenic | A | - | Anthropogenic | n/a | 0.50 |

The Subject Lands are comprised of one cultural vegetation community as well as a recently active agricultural field and anthropogenic area (Figure 5). The site is surrounded by residential properties (including a subdivision to the west), active agricultural fields, and woodland.

Vegetation community descriptions as observed during field investigations from the Subject and Adjacent Lands to the north are as follows:

- Community 1 is a Mineral Cultural Woodland (CUW1) with a canopy layer dominated by Trembling Aspen (*Populus tremuloides*), Manitoba Maple (*Acer negundo*) and Black Walnut (*Juglans nigra*). The understory consists of Tatarian Honeysuckle (*Lonicera tatarica*), Grey Dogwood (*Cornus racemosa*) and Allegheny Blackberry (*Rubus allegheniensis*). The groundlayer contains species such as Garlic Mustard (*Alliaria petiolata*), Wild Black Currant (*Ribes americanum*), and Canada Goldenrod (*Solidago canadensis*). This community has many dead and fallen Ash that contributed to the loss of canopy cover and a ground layer that is dominated by non-native and invasive species.
- Vegetation communities within the Adjacent Lands consists of a Dry-Moist Old Field Meadow (CUM1-1) to the northeast that is dominated by Smooth Brome and a Cultural Thicket (CUT) to the north which includes a Swamp Thicket (SWT) inclusion.

3.1.2 Floral Inventory

Botanical inventories were undertaken on the Subject and Adjacent Lands on May 11 and August 9, 2022. The status of all plant species is based on the provincial NHIC database (MNRF, 2024) and the list of vascular plants for the Carolinian Zone (Oldham, 2017).

A total of 76 vascular plant species were recorded during field investigations within the Subject Lands and the property to the north of which 56 (74%) are native and 20 (26%) are introduced. A total of 20 (26%) vascular plant species identified within the Subject Lands and/or adjacent property are considered to be invasive species. Butternut (END, S2?) was found on the Subject Lands within the Cultural Woodland (CUW1). No other plant Protected Species or SOCC were observed within the Subject Lands and Study Area.

A complete list of vascular plant species observed within the Subject and Adjacent Lands is provided in Appendix B.

Butternut Health Assessment

A Butternut health assessment was completed for trees in Community 1 on July 27, 2022, by MTE's Butternut Health Assessor (BHA#222), according to protocols. Butternut data collection forms (2010 edition) were completed for three (3) apparent Butternut trees. Tree health, size, percent live crown and diagnostic hybrid features were noted. Leaf samples from each of the three trees were sent to Nature Metrics North America Ltd. to undergo genetic testing. Genetic testing is undertaken as Butternut hybridizes freely with non-native Walnut species and only pure Butternut are protected under the *Endangered Species Act, 2007*.

Testing concluded that all three of the trees are hybrids. BHA field sheets and the BHA report, including the full genetics report, are provided in Appendix E. It is noted that in the time since the Butternut health assessment, regulations relating to Butternut trees in Ontario have been updated. Given the trees are hybrids, the updates are not applicable to the trees.

3.1.3 Breeding Bird Surveys

Breeding bird surveys were completed on the Subject Lands on June 1 and June 16, 2022, guided by the protocols in the Ontario Breeding Bird Atlas (OBBA) (Cadman et al., 2007). A combination of wandering transects (area searching) and point counts in all vegetation communities on the Subject Lands and adjacent woodland were used to characterize the breeding bird communities on the Subject Lands. The highest level of breeding evidence was recorded for each species using codes from the Ontario Breeding Bird Atlas (Cadman et al. 2007). Surveys began within half an hour of sunrise and were completed before 10 a.m.

A total of 25 species were observed within the Subject Lands during breeding bird surveys. No Protected Species were detected. All species observed had a breeding species in Ontario status of secure (S5), apparently secure (S4), or not applicable (SNA). A complete list of the bird species observed, and their breeding evidence codes is provided in Appendix C.

3.1.4 Mammal Habitat

A bat habitat assessment was conducted during the leaf-off period to identify and assess candidate bat maternity roost trees within the portion of the Subject Lands where development is proposed using guidance from the *Survey Protocol for Species at Risk within Treed Habitats: Little Brown Myotis, Northern Myotis & Tri-colored Bat* (MNRF, 2017). This protocol involves assessing trees based on: Species, diameter at breast height (DBH), height, presence of loose/peeling bark, cavity and cavity height, decay class, open canopy, and proximity of other snags.

Four trees that may provide suitable maternity roost habitat (trees > 10 cm DBH with loose or naturally exfoliating bark, cavities, hollows, or cracks) were identified within the agricultural crop area of the Subject Lands (Figure 5). Targeted acoustic monitoring to confirm use was not conducted as part of this EIS.

A mammal den was observed within the woodland located in the Subject Lands. The den was monitored using a trail-cam that collected footage from May 19 to May 21 and June 7 to June 15, 2022. The resulting footage was reviewed and found no den-using mammals or SAR; white-tailed deer, rabbit and raccoon were the only species observed on the trail-cam footage.

3.1.5 Incidental Wildlife Observations

Eastern chipmunk, white-tailed deer, raccoon, and gray squirrel were observed during the summer breeding birds survey and on trail-cam footage. No other incidental wildlife observations were observed during field investigations.

3.2 Significant Wildlife Habitat

MNRF Significant Wildlife Habitat (SWH) Criteria Schedules for Ecoregion 7E (January 2015) use ELC ecosite codes and habitat criteria (e.g., Size of ELC polygon, location of ELC polygon) to identify candidate SWH. An assessment of candidate SWH was completed for the Subject and Adjacent Lands using a combination of desktop analysis and field observations. A complete assessment of candidate SWH is provided in Appendix D.

Candidate features were further evaluated using the results of the targeted field investigations described in Section 3.3 to determine if SWH was confirmed based on criteria such as species presence, abundance, and diversity. Where targeted field investigations were not completed (i.e., on Adjacent Lands) the SWH remains candidate, unconfirmed.

No candidate or confirmed SWH were present on the Subject Lands. Results of the assessment of significance for SWH are presented in Section 4.5.

3.3 Habitat for Threatened and Endangered Species

Habitat potential for Protected Species within the Subject and Adjacent Lands was evaluated using a combination of desktop review, satellite photo interpretation and results of field investigations. A summary of the evaluation is provided in Appendix A.

Suitable habitat for the following Protected Species is present within the Subject Lands:

Little Brown Myotis, Northern Myotis, and Tri-colored Bat (END):

- Four trees were identified within the agricultural crop area that may provide suitable tree roosting habitat for Endangered bats (Figure 5).
- Potential tree roosting habitat for Endangered bats is assumed to be present on adjacent lands, notably the Cultural Woodland (CUW1) and hedgerow located near the western boundary of the Subject Lands.

The remaining Protected Species listed in Table 1 are considered absent from the Subject Lands due to lack of suitable habitat or an absence of species' observations during targeted surveys (e.g., breeding bird surveys and botanical inventory). Three potential Butternut trees observed within the Subject Lands were confirmed to be hybrids (Section 3.3.2), which do not receive protection under the ESA.

The Adjacent Lands may contain suitable habitat for: America Badger (SW Ontario population), American Chestnut, Butternut, Red-headed Woodpecker, and Louisiana Waterthrush. Habitat and presence of species could not be confirmed within the majority of the Adjacent Lands due to lack of property access.

4.0 ASSESSMENT OF SIGNIFICANT NATURAL HERITAGE FEATURES

4.1 Significant Wetlands

A locally significant wetland, the Moore Water Garden (KC 5) swamp, is present on the Adjacent Lands across Sunset Drive. The portion of wetland within the Study Area is approximately 1 ha in size. There is no direct surface water connection between this wetland and the Subject Lands.

4.2 Significant Woodlands

The Provincial Policy Statement (2020) defines a Significant Woodland as:

an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history (pg. 51).

To assist in the identification of significant woodlands, planning authorities are encouraged to develop a set of evaluation criteria based on the factors and characteristics provided in the Natural Heritage Reference Manual (MNR, 2010). As the County of Elgin and Municipality of Central Elgin official plan policies include criteria for evaluating woodland significance, these are applied below.

4.2.1 Municipality of Central Elgin Official Plan (2023)

Under the Municipality of Central Elgin Official Plan Policy 3.1.1.2 all woodlands greater than 2 ha in size are considered significant. Woodlands are defined generally as treed areas, woodlots or forested areas.

The woodlands within the Subject Lands are part of a contiguous woodland feature greater than 2 ha in size. In accordance with the Municipality of Central Elgin Official Plan, the woodland within the Subject Lands, meets the criteria for designation as a Significant Woodland.

4.2.2 County of Elgin Official Plan (2015)

Under the County of Elgin Official Plan Section D1.2.2.1, Significant Woodlands are defined as:

- Woodlands greater than 10 ha.
- Woodlands between 2 and 10 ha if located within 30 m of another significant natural heritage feature boundary.

Based on a review of satellite imagery, the contiguous woodland feature on the Subject Lands and extending beyond the Study Area is approximately 12 ha. Therefore, this feature meets the County of Elgin Official Plan criteria for designation as a Significant Woodland.

4.3 Significant Valleylands

The Provincial Policy Statement (2020) defines a Significant Valleyland as a natural area occurring in a valley or other landform depression with flowing or ephemeral water that is ecologically important in terms of features, functions, representation, or amount. This feature should contribute to the quality and diversity of the natural heritage system. The identification and evaluation of Significant Valleylands is the responsibility of planning authorities and is based on recommended criteria from MNR, as provided in the Natural Heritage Reference Manual (MNR, 2010).

No Significant Valleylands are mapped within the Study Area, and no landform depression with flowing or ephemeral water is present on or adjacent to the Subject Lands.

4.4 Significant Wildlife Habitat

Candidate significant wildlife habitat (SWH) is based on ELC communities that were identified in Section 3.3. Confirmed significant wildlife habitat is determined through appropriate field investigations and evaluation of species use in accordance with specific criterion outlined in the Ecoregion Criteria Schedules 7E (MNRF, 2015). Candidate SWH for the Study area is fully assessed in Appendix D and the results are presented here.

No candidate or confirmed SWH is present on the Subject Lands. Candidate SWH is associated with wetland and woodland communities on Adjacent Lands, but not confirmed through targeted field investigations. Table 4 includes a list of Candidate SWH on Adjacent Lands.

4.5 Significant Areas of Natural and Scientific Interest

The provincially significant Port Stanley Till Earth Science ANSI is located northwest of the Subject Lands, across Sunset Drive.

4.6 Fish habitat

Watercourses or waterbodies providing direct or indirect fish habitat are absent from the Subject Lands.

4.7 Habitat of Endangered and Threatened Species

As noted in Section 3.5, tree roosting habitat for Little Brown Myotis, Northern Myotis, and Tricolored Bat (END) is assumed to be present in the Cultural Woodland (CUW1) on the Subject Lands and four trees providing suitable habitat are present with the agricultural area. Suitable habitat may be present on the Adjacent Lands for American Chestnut, Butternut, and Redheaded Woodpecker; however, species presence could not be confirmed due to lack of property access.

4.8 Significant Natural Heritage Features Summary

A summary of significant features and functions identified on the Subject Lands and Adjacent Lands, in accordance with provincial and municipal policy, is provided in Table 3, below.

| Policy Category | Policy-protected Natural Heritage Feature | Description of Feature on the Subject Lands and Adjacent Lands (120 m) |
|---|--|---|
| | Significant Wetlands | Moore Water Garden (KC 5) is a locally significant wetland located on the Adjacent Lands, to the north of the Subject Lands. |
| | Significant Woodlands | Significant Woodland is present within the Subject Lands and Study Area. |
| Provincial Policy Statement, Elgin County Official Plan and Municipality of Central Elgin Official Plan | Significant Wildlife Habitat (SWH) | There is no SWH present on the Subject Lands. Candidate SWH is present on the Adjacent Lands for: Land Bird Migratory Stopover Areas; Amphibian Breeding Habitat (Woodland); Woodland Area-Sensitive Bird Breeding Habitat; Marsh Breeding Bird Habitat (Green Heron); Terrestrial Crayfish; and Special Concern and Rare Wildlife Species: Broad Beech Fern, Crooked-stem Aster, Eastern False Rue-anemone, Eastern Ribbonsnake, Eastern Wood-Pewee, Horned Grebe, Monarch, Snapping Turtle, and Wood Thrush. |
| | Areas of Natural and Scientific Interest | The Port Stanley Till earth science ANSI is present on Adjacent Lands, north of the property limit and across Sunset Drive. |
| | Habitat of Threatened and Endangered Species | Potential habitat for three Endangered bat species is present within the subject and adjacent lands: Four trees within the active agricultural field are considered suitable maternity roost trees. Assumed to be present throughout the Cultural Woodland (CUW1) and the hedgerow west of the Subject Lands. |
| KCCA Regulations | Hazard Lands | The regulation limit provided by KCCA is associated with the Hazard Area (slope) to the north of the Subject Lands. |

Table 4: Natural Heritage Features or Functions of the Subject Lands

5.0 PROJECT DESCRIPTION

The proposal for this project includes the construction of 32 single detached lots, 63 street towns, and a 1.13 ha medium/high density development (either 72 apartment units or 47 townhouses, to be finalized during detailed design). The development is to be connected by two streets ("Street A" and an extension of "Beamish Street"). A stormwater management block (0.38 ha) is also proposed within the residential development.

The estimated total developable area is 6.43 ha with 1.80 ha being set aside as the natural heritage and the associated setback. A concept drawing of the project has been included within this report (Figure 6).

6.0 POTENTIAL IMPACTS AND MITIGATION RECOMMENDATIONS

In accordance with relevant municipal policy, potential direct and indirect impacts to natural heritage features must be addressed through avoidance, mitigation, or compensation measures. Impacts associated with the proposed residential development are described separately from the potential future commercial development along Sunset Drive. An overlay of the development and relevant natural heritage features has been included in Figure 7.

6.1 Significant Wetland

Moore Water Garden, a locally significant wetland, is situated on the Adjacent Lands across Sunset Drive (a two-lane road with an approximate width of 15 m). No direct impacts to the locally significant wetland are anticipated as a result of the proposed development. Based on physical separation and topography, no evidence of a surface water connection from the Subject Lands to this wetland was observed. Consequently, no indirect impacts to the wetland are anticipated. Potential impacts to SWH within the wetland are discussed in Section 6.3, below.

6.2 Significant Woodland & Other Vegetation

In order to accommodate the proposed residential development, the removal of several isolated Shagbark Hickory trees within the agricultural field is required. No other natural vegetation removal is proposed for development of the residential, stormwater management or park blocks.

The hedgerow near the western edge of the Subject Lands is on adjacent lands and will be retained as part of the proposed development. In order to protect the Significant Woodland, on the northeast side of the residential development, an average setback of 10 m from the dripline is recommended (shown on Figure 7). The setback between the edge of residential development and the woodland should be naturalized to the extent possible through the planting of native species.

Tree removal is not anticipated to occur within the woodland setback. If the removal of overhanging branches is required, branches shall be removed by a qualified arborist to ensure limited impacts to understory and remaining trees. If work is required within the setback, the consultant shall be contacted for direction. Any damage to selected remaining trees as a result of construction related operations shall be reported to the consultant immediately to ensure that the appropriate treatment measures can be implemented.

The following mitigation and compensation measures are recommended to avoid negative impacts to the Significant Woodland:

Recommendation 1: In order to protect the Significant Woodland feature and its functions, grading and structures should be located a minimum of 10 m beyond the dripline of the retained woodland edge where possible (Figure 7).

Recommendation 2: Flag the limits of the Significant Woodland and vegetation communities retained prior to construction to avoid inadvertent encroachment.

Recommendation 3: Incorporate naturalized plantings with native tree and shrub species in setback area between the proposed development and the Significant Woodland to provide a natural buffer to the woodland.

Recommendation 4: Invasive plant species that are identified along the Significant Woodland edge or within the proposed naturalization area should be removed and best management practices for limiting spread of floral invasive species should be followed during development.

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Recommendation 5: Areas of exposed soil following construction should be stabilized with vegetation or other suitable ground cover, avoiding plant species with the potential to invade the Significant Woodland.

6.3 Significant Wildlife Habitat and Wildlife

No SWH was identified within the Subject Lands. The following candidate (unconfirmed) SWH is present or assumed to be present on the Adjacent Lands based on the size and characteristics of habitat available:

- Land Bird Migratory Stopover Areas;
- Amphibian Breeding Habitat (Woodland);
- Woodland Area-Sensitive Bird Breeding Habitat;
- Marsh Breeding Bird Habitat (Green Heron);
- Terrestrial Crayfish; and
- Special Concern and Rare Wildlife Species: Broad Beech Fern, Crooked-stem Aster, Eastern False Rue-anemone, Eastern Ribbonsnake, Eastern Wood-Pewee, Horned Grebe, Monarch, Snapping Turtle, and Wood Thrush.

The locally significant wetland located within the Study Area (Moore Water Garden (KC 5)) is a swamp situated on the Adjacent Lands, across Sunset Drive (a two-lane road with an approximate width of 15 m). The portion of the wetland that occurs immediately adjacent to the Subject Lands is approximately 1 ha in size and is not expected to support the concentrations of wildlife typically required to confirm SWH. Therefore, it is unlikely that candidate SWH, which may be found within the greater Moore Water Garden (KC 5) wetland, would be impacted by the proposed development on the Subject Lands.

Wildlife may experience temporary disturbance during construction when crossing roads or moving through active construction areas. Timing restrictions on vegetation removal are recommended to avoid disturbance to wildlife that may be using natural areas on the site, including breeding birds and bats. Nesting migratory birds are protected under the Migratory Birds Convention Act (MBCA), 1994. No work is permitted to proceed that would result in the destruction of active nests (nests with eggs or young birds), or the wounding or killing of birds, of species protected under the Migratory Birds Convention Act, 1994 and/or Regulations under that Act. Some MBCA-protected species, such as Killdeer, may make use of un-maintained areas as they frequently make nests on the ground in construction sites and other disturbed areas.

Mitigation measures to avoid impacts to wildlife and wildlife habitat are recommended as follows:

Recommendation 6: Avoid vegetation clearing during the migratory bird breeding season (April 1 to August 31) to ensure that no active nests will be removed or disturbed, in accordance with the MBCA and/or Regulations under that Act. If vegetation clearing is proposed within the breeding season, the area should be checked for nesting birds by a qualified professional prior to work occurring. If there are any nesting birds, works within the nesting area should not proceed until after August 31 or the nest is confirmed to be inactive.

Recommendation 7: If an animal enters the work site, work at that location will stop and the animal should be permitted to leave un-harassed. If there are repeat observations of wildlife in the work area, barrier fencing (e.g. silt fence) may be used to direct wildlife away from active construction and toward natural areas.

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6.4 Areas of Natural and Scientific Interest (ANSI)

The provincially significant Port Stanley Till Earth Science Area of Natural and Scientific Interest (ANSI) is located to the northwest of the Subject Lands, across Sunset Drive (LIO, 2014). The ANSI designation for this area falls under the category of an Earth Science ANSI that is related to a geological formation. The Natural Heritage Reference Manual for the PPS (MNR, 2010) notes that appropriate land uses adjacent to an Earth Science ANSI are those that conserve topography and other geologically-defined features for which the area was identified. The proposed development will conserve the topography of the Subject Lands and will have no direct or indirect impacts to the adjacent Earth Sciences ANSI.

6.5 Habitat of Endangered or Threatened Species

Four trees providing potential maternity roost habitat for the Endangered species Little Brown Myotis, Northern Myotis and Tri-colored Bat are present in the agricultural area within the Subject Lands and are anticipated to be removed to accommodate the proposed development. There is some potential one of the four trees, located within the proposed SWM Block may be retained.

The suitable maternity roost habitat assumed to exist within the Cultural Woodland (CUW1) as well as within the hedgerow along the western boundary of the Subject Lands is anticipated to be retained. Select hazard tree removal within the west hedgerow may be required, pending results of the hazard tree assessment. If tree removal is required, removals should occur outside of the bat active season.

Potential habitat for other Protected Species may be present in adjacent lands. No direct impacts to habitat of these species will result from the proposed development. Incidental encounters with wildlife Protected Species during construction are considered unlikely.

In addition to the general mitigation measures for wildlife and wildlife habitat recommended previously in Section 6.3, the following additional mitigation measures are recommended:

Recommendation 8: Tree removals, if necessary, should occur outside of the bat active season (April 1 – September 30) as to not impact potential maternity roosting trees.

Recommendation 9: No Bank Swallow (THR) were observed within or adjacent to the Subject Lands, however creation of suitable habitat (e.g., soil stockpiles) during construction should be avoided. Best management practices for deterring nesting during construction activities should be implemented (OMNRF, 2017). These measures should include stockpile slope management (i.e., grading stockpiles, eliminating vertical extraction faces, reducing slopes to 70 degrees or less) until at least July 15.

Recommendation 10: Any observation of a Protected Species should be reported to MECP. Protected Species should not be handled, harassed, or moved unless they are in immediate danger.

6.6 Indirect Impacts

Natural heritage features may also experience indirect effects during construction, such as sedimentation and erosion or soil/root zone compaction, or post-construction, such as inadvertent encroachment. Indirect impacts on natural features will be mitigated through the implementation of standard environmental protection measures, discussed below.

6.6.1 Sediment and Erosion Control

Due to the proximity of construction activities to Significant Woodland and the top of slope, potential indirect impacts due to sediment transport and soil erosion are possible. For all works and especially those within 30 m of adjacent natural heritage features, sediment and erosion control measures will be required to ensure that indirect impacts to the natural heritage features identified in this report are avoided or mitigated.

Recommendation 11: Prior to works on site, robust sediment and erosion control fencing should be installed adjacent to all retained natural features. The fence will act as a barrier to keep construction equipment and soil away from vegetation and prevent erosion and sedimentation of the adjacent features. Sediment and erosion control fencing will be installed according to the to the Guidelines for Erosion and Sediment Control for Urban Construction Sites (OMNR, 1987) and the applicable standards established in the Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD) documents.

Recommendation 12: During construction, the lands between the sediment and erosion control fencing should be maintained. Fencing should remain in place until construction is complete and any natural areas to remain are seeded and naturalized.

Recommendation 13: Soil stockpiles should be established on the tableland in locations that are away from natural surface drainage pathways. Soil stockpiles should be protected with robust sediment and erosion control. Access to the stockpile should be confined to the upgradient side. If this is not possible, these stockpiles should be protected with robust sediment and erosion control. The stockpile locations should be reviewed at detailed design.

Recommendation 14: Sediment and erosion control fencing should be inspected prior to construction to ensure it was installed correctly and during construction to ensure that the fencing is being maintained and functioning properly. Any issues that are identified are resolved as quickly as possible, ideally the same day.

Recommendation 15: Sediment and erosion control fencing should not be removed until adequate re-vegetation and site stabilization has occurred. Additional re-vegetation plantings and/or more time for vegetation to establish may be required; however, two growing seasons are typically sufficient to stabilize most sites.

Recommendation 16: All disturbed areas should be re-seeded as soon as possible to maximize erosion protection and to minimize volunteer populations of invasive species which may spread to the adjacent feature.

Recommendation 17: Roof runoff to bare ground can generate considerable sediment movement beyond the construction limits. Until the grounds have been vegetated and stable for housing and development adjacent to vegetation, roof leaders should be directed to the road or nearby stabilized vegetated areas.

6.6.2 Noise and Lighting

The portion of the Subject Lands proposed for development is adjacent to Sunset Drive, a major traffic route into Port Stanley. There may be some increased noise on the Subject Lands due to proposed parking, deliveries and general use of the proposed commercial buildings and restaurant. Uncontrolled lighting could also impact the adjacent woodland. To avoid indirect impacts resulting from noise or lighting, the following mitigation recommendations are provided:

Recommendation 18: Exterior lighting should be fully shielded and pointed downward to minimize skyglow, glare and light trespass into the adjacent natural features.

Recommendation 19: A lighting plan should be developed following best practices suited to natural areas which avoid over-lighting, restrict light trespass, and include Dark Sky Compliant fixtures (IDA Dark Sky Approved).

Recommendation 20: Noise disturbance should be limited to allowable hours per the Municipality of Central Elgin By-Law No. 212 (Table 3-1). Where possible, construction noise from heavy machinery should also be avoided during the migratory bird breeding period, defined as April 1 to August 31, to avoid disturbance of birds nesting within the adjacent woodland.

6.6.3 Construction Site Management

Recommendation 21: Regular cleanup of the Subject Lands must be completed during construction and post-construction to ensure the adjacent natural heritage features are not degraded.

Recommendation 22: Equipment should be cleaned prior to arrival on site including tires, undercarriage, and any part of the equipment that may transport invasive seeds to the site.

Recommendation 23: Dust abatement measures (e.g., watering) are recommended if site grading will occur during extended dry weather periods.

6.6.4 Snow Storage and Salt Management

The use of salt for de-icing in winter could result in salt accumulation within soils and inadvertent runoff to naturalized drainage swales or natural features. Snow storage piles can also create a more concentrated source of contamination during the spring melt. Mitigation measure to avoid negative impacts to natural heritage features as a result of snow storage and salt use are provided below:

Recommendation 24: Develop a salt management plan as part of detailed design studies that recommends best practices for limiting the use of salts or other additives for ice and snow control on the roadways.

Recommendation 25: Snow storage should be located away from natural heritage features and drainage swales.

7.0 CONCLUSION

MTE has evaluated the proposal for the East Road development that includes the construction of 32 single detached lots, 63 street towns, and a 1.13 ha medium/high density development (either 72 apartment units or 47 townhouses) within the Subject Lands. MTE has determined that the potential impacts to natural heritage features within the Subject or Adjacent Lands will be avoided and/or mitigated with the recommendations written within this Environmental Impact Study. Provided the above recommendations for mitigation measures are followed during all stages of proposed construction, no negative impacts to the natural heritage features are expected. MTE seeks comments from the Municipality of Central Eglin, Elgin County, and KCCA concerning the contents of this report. Formal comments may be submitted on behalf of the client to MTE. Should any clarification, questions, or additional materials be needed as part of this review of this report, do not hesitate to contact us.

All of which is respectfully submitted,

MTE Consultants Inc.

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Heather Kime, B.Sc. (Hons) Senior Terrestrial Ecologist 519-204-6510 ext. 2274 hkime@mte85.com

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LEGEND

| SUBJECT LANDS |
|---|
| STUDY AREA (120m Buffer from Subject Site) |

REFERENCES

BING IMAGERY AS OF AUGUST 9 - 2022 (IMAGE DATE UNKNOWN); MONTEITH BROWN PLANNING CONSULTANTS, PROPOSED SUBDIVISION, AUGUST 21 - 2024; AND LAND INFORMATION ONTARIO, ROAD AND WATER NETWORK (Key Plan).

NOTES

Nov 14/24

THIS FIGURE IS SCHEMATIC ONLY AND TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT. BING IMAGERY USED FOR ILLUSTRATION PURPOSES ONLY AND NOT TO BE USED FOR MEASUREMENTS.

ALL LOCATIONS ARE APPROXIMATE.



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LEGEND



REFERENCES

MONTEITH BROWN PLANNING CONSULTANTS, PROPOSED SUBDIVISION, AUGUST 21 - 2024; AND THE MUNICIPALITY OF CENTRAL ELGIN, SCHEDULE A2, ENVIRONMENTAL FEATURES, FEBRUARY 21 - 2012.

NOTES

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ALL LOCATIONS ARE APPROXIMATE.





ENVIRONMENTAL IMPACT STUDY EAST ROAD (RESIDENTIAL COMPLEX) PORT STANLEY, ONTARIO

ENVIRONMENTAL FEATURES (Central Elgin Official Plan)

FIGURE 2

| 10.0011 | | Julie | |
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| | DCH | AS SHOW | 'N |
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REFERENCES

MONTEITH BROWN PLANNING CONSULTANTS, PROPOSED SUBDIVISION, AUGUST 21 - 2024; AND THE MUNICIPALITY OF CENTRAL ELGIN, SCHEDULE G, LAND USE PLAN, FEBRUARY 8 - 2013.

NOTES

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ENVIRONMENTAL IMPACT STUDY EAST ROAD (RESIDENTIAL COMPLEX) PORT STANLEY, ONTARIO



48808-100

Nov 14/24

FIGURE 3



| Legend: | Disclaimer: The KCCA disclaims exp or guarantee as to the content, seque a particular purpose, merchantability of depicted and provided therein. The KCCA assumes no liability for any the information provided berein and fi | ONTARIO REGULATION 181/06 Development, Interference with Wetlands and Alterations to Shorelines and Watercourses | |
|--------------------------|---|--|------------------------|
| Shoreline Erosion Hazard | decisions made or actions taken or no upon the information and data furnish | | |
| | Imagery: 2020 SWOOP | Date: September 16, 2022 | Conservation Authority |



02005.DWG TREET ω Z 100/ CAD: P: ∖P'

| 123 | ELC NUMBER | ELC CODE | Description | |
|-----|---------------|---|---|--|
| 100 | 1 | CUW1 | Mineral Cultural Woodland (3.10ha) | |
| 5 | 2 | CUM1 | Mineral Cultural Meadow (0.96ha) | |
| | 3 | CUT | Cultural Thicket (1.90ha - includes 3a) | |
| 1 | 3a | SWT | Swamp Thicket (1.08ha) | |
| - | AG | | Active Agriculture | |
| 9 | Note: areas | eas (ha) are within the Study Area only | | |



LEGEND

| | SUBJECT LANDS |
|-----|---|
| | STUDY AREA (120m Buffer from Subject Site) |
| -1- | VEGETATION COMMUNITY |

LOCALLY SIGNIFICANT WETLAND (LIO)

- **BAT TREE**
- BUTTERNUT TREE
- MAMMAL DEN

REFERENCES

BING IMAGERY AS OF AUGUST 9 - 2022 (IMAGE DATE UNKNOWN); MONTEITH BROWN PLANNING CONSULTANTS, PROPOSED SUBDIVISION, AUGUST 21 - 20240; AND LAND INFORMATION ONTARIO, WETLAND.

NOTES

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ALL LOCATIONS ARE APPROXIMATE.





Monteith+Brown

planning consultants

| LAND USE SCHEDULE | | | | | | |
|------------------------------------|------|-----|-------|-----|--|--|
| REGULATION | AREA | % | UNITS | PPL | | |
| SINGLE DETACHED LOTS | 1.49 | 23 | 32 | 96 | | |
| STREET TOWNS | 1.93 | 30 | 63 | 151 | | |
| MEDIUM / HIGH DENSITY BLOCK | 1.13 | 30 | 72 | 115 | | |
| SWM BLOCK | 0.38 | 6 | | | | |
| ROADS & RESERVES | 1.50 | 23 | | | | |
| DEVELOPABLE AREA | 6.43 | | | | | |
| NATURAL HERITAGE / HAZARD BLOCK | 1.80 | 22 | | | | |
| TOTAL SITE AREA | 8.23 | 134 | | | | |
| UNITS / PEOPLE | | | 167 | 362 | | |

ZONE TO PERMIT ADU'S (IF NOT ALREADY IN THE PARENT ZONE)

PROPOSED SUBDIVISION

EAST ROAD PORT STANLEY WASTEL HOMES



519.686.1300 | WWW.MBPC.CA



| 1000 | ELC NUMBER | ELC CODE | Description | | |
|------|---|----------|---|--|--|
| | 1 | CUW1 | Mineral Cultural Woodland (3.10ha) | | |
| | 2 | CUM1 | Mineral Cultural Meadow (0.96ha) | | |
| | 3 | CUT | Cultural Thicket (1.90ha - includes 3a) | | |
| 1 | 3a | SWT | Swamp Thicket (1.08ha) | | |
| 1 | AG | | Active Agriculture | | |
| 3 | Note: areas (ha) are within the Study Area only | | | | |





LEGEND

| | SUBJECT LANDS STUDY AREA (120m Buffer from Subject Site) |
|----------|--|
| _1_ | VEGETATION COMMUNITY |
| 7171717. | KCCA REGULATION LIMIT |
| | LOCALLY SIGNIFICANT WETLAND (LIO) |
| BAT | TREE |
| A | |

- **BUTTERNUT TREE**
- MAMMAL DEN

REFERENCES

BING IMAGERY AS OF AUGUST 9 - 2022 (IMAGE DATE UNKNOWN); MONTEITH BROWN PLANNING CONSULTANTS, PROPOSED SUBDIVISION, AUGUST 21 - 2024; AND LAND INFORMATION ONTARIO, WETLAND.

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ALL LOCATIONS ARE APPROXIMATE.



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ENVIRONMENTAL IMPACT STUDY EAST ROAD (RESIDENTIAL COMPLEX) PORT STANLEY, ONTARIO

DEVELOPMENT OVERLAY

| Drawn | Scale | |
|-------------------|--------------------------|-----|
| DCH | AS SHOWN | |
| Checked | Project No. 48808-100 | FIG |
| Date Nov 14/24 | Rev No. 0 | |

GURE 7



List of Protected Species and Species of Conservational Concern (SOCC)



TABLE 1

Habitat potential for Threatened and Endangered species based on satellite photo interpretation, background data review and MTE field investigations in summer 2022. Historic Records (> 30 years old) have been removed.

| Species | SARO List Status | Habitat Description and Preliminary Habitat Assessment | Rationale and Field Observations | Habitat Present on the Subject Lands? | Habitat Present on the Adjacent Lands? |
|--|------------------|---|---|--|---|
| Acadian Flycatcher Empidonax virescens | END | Typically found in mature, interior forest habitat within mature, shady forests with ravines with American Beech or Eastern hemlock, or in forested swamps with lots of maple and beech trees. Nest placement near the tip of a lower limb on a tree, often over water. Nest often looks messy and scraggly | The Subject Lands and Adjacent Lands do not contain interior forest habitat. No Acadian Flycatcher were observed during targeted field investigations. The natural heritage features north of Sunset Drive were not investigated. | No | No |
| American Badger (SW Ontario population) Taxidea taxus jacksoni | END | Variety of habitats including tall grass prairies, sand barrens, open grassland, and farmland. | The Subject Lands and Adjacent Lands both contain farmland and grassland and are located near the shore of Lake Erie. No American Badger were observed during targeted field investigations. A mammal den was observed; however, a trail-cam was used to observe the den and no evidence of a den-using mammal or SAR was found on the footage. | No | Yes |
| American Chestnut Castanea dentata | END | Typically, habitat is upland deciduous forests on moist to well drained, sandy acidic soils. Occasionally occurs on heavy soils. | The Subject Lands does not contain any forested area. The Adjacent Lands do include forests that may provide suitable habitat. No American Chestnut were observed during targeted field investigations. | No | Yes |
| American Ginseng Panax quinquefolius | THR | Grows in rich, moist, undisturbed and relatively mature deciduous woods in area of neutral soil (over limestone or marble bedrock). Especially found on rock, shaded cool slopes. | The Subject and Adjacent Lands do not include mature deciduous woods or swamp forests with a closed canopy. No American Ginseng were observed during targeted field investigations. | No | No |
| Butternut Juglans cinerea | END | Usually found alone or in small groups in deciduous forests with moist, well-drained soils. Often occurs along streams. Butternut require sunny conditions and therefore are often found in canopy openings or near forest edges. | The Subject and Adjacent Lands do contain suitable habitat for Butternut. Three Butternut were observed during targeted field investigations; however, genetic testing confirmed they were hybrids and not protected under the Endangered Species Act. | No | Yes |
| Eastern Prickly-pear Cactus Opuntia cespitosa | END | Grows in dry sandy areas which are in early stages of succession (sandy ridges or sandy dunes). | The Subject Lands and Adjacent Lands do not provide dry sandy areas that are required for habitat. No Eastern Prickly-pear Cactus were observed during targeted field investigations. | No | No |
| Little Brown Myotis Myotis lucifugus | END | Little Brown Myotis roosts in caves, quarries, tunnels, hollow trees, or buildings. Little Brown Myotis typically prefer buildings or building-associated features for maternity roosting rather than natural features (Gerson, 1984; Humphrey & Fotherby, 2019). This species hibernates in humid caves and forages in wetlands and forest edges. | The Subject and Adjacent Lands do contain suitable maternity roosting habitat for this species within the woodland, western hedgerow, and shagbark hickory trees within the agricultural lands. | Yes | Yes |
| Northern Myotis Myotis septentrionalis | END | Roosts in houses, manmade structures, but prefers hollow trees or under loose bark. Hunts in forests. | The Subject and Adjacent Lands do contain suitable maternity roosting habitat for this species within the woodland, western hedgerow, and shagbark hickory trees within the agricultural lands. | Yes | Yes |

| Species | SARO List Status | Habitat Description and Preliminary Habitat Assessment | Rationale and Field Observations | На |
|---|------------------|--|---|----|
| Red-headed Woodpecker <i>Melanerpes</i> <i>erythrocephalus</i> | END | Found in a variety of habitats, including oak and beech forests, forest edges, orchards, pastures, riparian forests, roadsides, etc. Uncommon in Ontario, elsewhere within its range Ooften found in parks, golf courses, and cemeteries due to thewith dead trees for perching and nesting. | The Subject Lands do not contain woodland edge or open woodland. Adjacent Lands do contain deciduous woodland habitat that may be suitable for the Red-headed Woodpecker. No Red-headed Woodpecker were observed during targeted field investigations. | |
| Spiny Softshell Apalone spinifera | END | Highly aquatic, rarely traveling far from water. Primarily in rivers and lakes but also creeks, ditches, and ponds near rivers. Require open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and food availability. | The Subject and Adjacent Lands do not contain any rivers, lakes, or watercourses near rivers. No Spiny softshell were observed during field investigations within the Subject Lands or the adjacent cultural woodland. | |
| Tri-colored Bat Perimyotis subflavus | END | Roosts in older forests and occasionally barns/structures. Hibernate in damp, draft-free caves. Hunt over water and along streams in a forest. | The Subject and Adjacent Lands do contain suitable maternity roosting habitat for this species within the woodland, western hedgerow, and shagbark hickory trees within the agricultural lands. | |
| Bank Swallow Riparia riparia | THR | Nests in burrows in natural and artificial disturbed settings where there are vertical faces in silt and sand deposits. Many found along rivers and lakes, but also in active sand and gravel pits. | The Subject Lands and Adjacent Lands do not contain any vertical faces required for Bank Swallows to nest. No Bank Swallow were observed during targeted field investigations. | |
| Bobolink Dolichonyx oryzivorus | THR | Found in large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields, marshes. Grasslands size requirements have been reported to range from 5 ha to 50 ha depending on the study (MNR, n.d.). | The Subject Lands are fragmented from nearby meadow and abandoned agricultural fields. The cultural meadow adjacent to the Subject Lands is less than 1 ha and is likely too small to support a breeding pair of this species. No Bobolink were observed during targeted field investigations. | |
| Chimney Swift Chaetura pelagica | THR | Found in urban and rural areas near buildings. Nest and roosts in hollow trees, crevices of rock cliffs, and, most commonly, in unlined chimneys. Suitable sites are reused annually. | No chimneys or hollow trees are present within the Subject Lands to provide suitable habitat for Chimney Swift. The residential homes along East Street are well maintained and unlikely to contain chimneys viable for chimney swifts to roost. No Chimney Swift were observed during targeted field investigations. | |
| Eastern Meadowlark Sturnella magna | THR | Breeds mostly in moderately tall grasslands (native prairies and savannahs), also non-native pastures, hayfields, herbaceous fencerows, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Eastern Meadowlarks may not be strongly area-sensitive (McCracken et al. 2013), however large tracts of grasslands (5 ha or greater) are preferred over smaller fragments (Herkert 1991, Vickery et al. 1994). | The Subject Lands are fragmented from nearby meadow and abandoned agricultural fields. The cultural meadow adjacent to the Subject Lands is less than 1 ha and is likely too small to support a breeding pair of this species. No Eastern Meadowlark were observed during targeted field investigations. | |
| Louisiana Waterthrush Parkesia motacilla | THR | Found in steep, forested ravines with fast-flowing streams. Prefers running water, especially clear, coldwater streams. Less frequently found in heavily wooded, deciduous swamps with large pools of open water. Nests on ground. | No forested ravines, running water, or pools of open water are found within the Subject or Adjacent Lands. No Louisiana Waterthrush were observed during targeted field investigations. | |
| Yellow-breasted Chat Icteria virens | END | Lives in thickets and scrub, especially areas where clearings have become overgrown. Nests above ground in bush, vine, etc. | Yellow-breasted Chat does not reliably breed in Ontario outside Point Pelee and Pelee Island. No Yellow-breasted Chat were observed during targeted field investigations. | |

| abitat Present on the Subject Lands? | Habitat Present on the Adjacent Lands? |
|--------------------------------------|---|
| No | Yes |
| No | No |
| Yes | Yes |
| No | No |

TABLE B4

Habitat potential for Species of Conservation Concern (SOCC) based on satellite photo interpretation, background data review and MTE field investigations in summer 2022.

| Species | SARO List Status | Habitat Description and Preliminary Habitat Assessment | Rationale and Field Observations | Suitable Habitat Present on the Subject Lands? | Suitable Habitat Present on the Adjacent Lands? |
|---|------------------|---|--|--|---|
| Barn Swallow Hirundo rustica | SC | Barn Swallows are typically found nesting in close association with human rural settlements, such as in old sheds, barns, and under bridges or culverts. This species forages for aerial insects in open habitats including grassy fields, pastures, agricultural fields and farms, lake and river shorelines, wetlands, and clearings. | The Subject Lands do not contain human-made structures that are required for nesting. The buildings along Sunset Drive were examined and no evidence of Barn Swallow nests was observed. The residential homes along East Street are well maintained and therefore unlikely to support habitat for barn swallow. No Barn Swallows were observed during targeted field investigations. | No | No |
| Broad Beech Fern Phegopteris hexagonoptera | SC | Grows in rich soils in deciduous forests, often dominated by maple and beech. Requires moist soils and full shade. Range: Southern Muskoka, along Lake Erie, and eastern Lake Ontario – St. Lawrence River region. | There is no deciduous forests with rich soils present within the Subject Lands; however, suitable habitat may be present within the Adjacent Lands. No Broad Beech Fern were observed during targeted field investigations. | No | Yes |
| Common Hoptree Ptelea trifoliata | SC | Along shorelines in areas of nutrient poor sandy soils. Intolerant of shade. | There is no shoreline habitat within the Subject or Adjacent Lands. No Common Hoptree were observed during targeted field investigations. | No | No |
| Crooked-stem Aster Symphyotrichum prenanthoides | SC | Grows in rich, sandy soil at the edge of forests or in sunny openings within forests. Also wet areas along rivers/streams, and roadsides. | The roadways surrounding the Subject and Adjacent Lands may provide suitable habitat for this species; however, there were no Crooked-stem Aster observed during targeted field investigations. | No | Yes |
| Eastern False Rue- anemone Enemion biternatum | SC | Found in deciduous forests and thickets with rich, moist soil, wooded slopes and valleys, and river floodplains. Frequently found in close proximity to watercourses within mature forests. | The cultural woodland was included in field investigations and no Eastern False Rue-anemone were observed, but the Adjacent Lands across Sunset Drive do contain deciduous forest and swamp thicket that may provide suitable habitat. | No | Yes |
| Eastern Ribbonsnake Thamnophis sauritus | SC | Found close to water, often marshes. | There is no aquatic habitat, including marshes, located within the Subject Lands. Suitable habitat may be present within the Adjacent Lands for this species. No Eastern Ribbonsnake were observed during field investigations. | No | Yes |
| Eastern Wood-Pewee Contopus virens | SC | Lives in mid-canopy layer of forest clearings and the edges of deciduous and mixed forests. Abundant in middle-aged forests with little understory. | There is no forest within the Subject Lands. The Adjacent Lands may contain suitable deciduous forest and forest edge habitat for this species. No Eastern Wood-Pewee were observed during targeted field investigations. | No | Yes |
| Horned Grebe Podiceps auritus | SC | Nests in small ponds, marshes, and shallow bays with open water and emergent vegetation. | No ponds, marshes, or shallow bays with open water are present within the Subject Lands. Suitable habitat may be present for this species within the area north of Sunset Drive. No Horned Grebe were observed during targeted field investigations. | No | Yes |

| Species | SARO List Status | Habitat Description and Preliminary Habitat Assessment | Rationale and Field Observations | Suitable Habitat Present on the Subject Lands? | Suitable Habitat Present on the Adjacent Lands? |
|---|------------------|--|--|--|---|
| Monarch Danaus plexippus | SC | Caterpillars confined to areas with milkweed. Adults use diverse habitats with a variety of wildflowers | Common Milkweed was observed within the Subject Lands during field investigations. Habitat with a variety of wildflowers is also present within the Subject Lands | Yes | Yes |
| Snapping Turtle Chelydra serpentina | SC | Spend most of their time in water, preferring shallow waters to hide in soft mud and leaf litter. Nest in gravelly or sandy areas along streams, taking advantage of man-made structures for nesting sites, including roads, dams, and aggregate pits. Range: Limited to southern part of Ontario. | No watercourses or suitable nesting sites were observed within the Subject Lands. The Adjacent Lands may contain suitable habitat. No Snapping Turtle were observed during field investigations within the Subject Lands or the adjacent cultural woodland. | No | Yes |
| Wood Thrush Hylocichla mustelina | SC | Lives in mature deciduous and mixed forests, seeking moist stands with well-developed undergrowth. Prefer large forests, but will use smaller. | No mature deciduous or mixed forests with moist stands and well-developed undergrowth is present within the Subject Lands; however, suitable habitat may be present within the Adjacent Lands. No Wood Thrush were observed during targeted field investigations. | No | Yes |

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Botanical Inventory List


| | | Floral Inventory (2022-05-11) | | | | | | | |
|---|---|-------------------------------|--------------------------|------|---------|------|-------|----|-----|
| 1 | 2 | Scientific Name | Common Name | CW | COSEWIC | SARO | SRank | EL | 7E4 |
| Х | | Acer negundo | Manitoba Maple | 0.0 | | | S5 | С | IC |
| Х | | Acer platanoides | Norway Maple | 5.0 | | | SE5 | IR | IC |
| Х | | Acer rubrum | Red Maple | 0.0 | | | S5 | С | С |
| Х | | Acer saccharum | Sugar Maple | 3.0 | | | S5 | С | С |
| Х | | Alliaria petiolata | Garlic Mustard | 0.0 | | | SE5 | IC | IC |
| Х | | Allium tricoccum | Wild Leek | 3.0 | | | S4 | | |
| | Х | Ambrosia artemisiifolia | Common Ragweed | 3.0 | | | S5 | С | С |
| | Х | Ambrosia trifida | Great Ragweed | 0.0 | | | S5 | С | U |
| Х | | Anemone quinquefolia | Wood Anemone | 0.0 | | | S5 | С | U |
| Х | Х | Arctium minus | Common Burdock | 3.0 | | | SE5 | IC | IC |
| Х | | Arisaema triphyllum | Jack-in-the-pulpit | -3.0 | | | S5 | С | С |
| | Х | Asclepias syriaca | Common Milkweed | 5.0 | | | S5 | С | С |
| Х | | Athyrium filix-femina | Common Lady Fern | 0.0 | | | S5 | | |
| Х | | Berberis thunbergii | Japanese Barberry | 3.0 | | | SE5 | IU | IC |
| Х | Х | Betula papyrifera | Paper Birch | 3.0 | | | S5 | С | С |
| Х | | Cardamine hirsuta | Hairy Bittercress | 3.0 | | | SE4 | IR | IX |
| Х | | Carya cordiformis | Bitternut Hickory | 0.0 | | | S5 | С | С |
| Х | | Carya ovata | Shagbark Hickory | 3.0 | | | S5 | С | U |
| | Х | Centaurea stoebe | Spotted Knapweed | 5.0 | | | SE5 | IX | IR |
| | Х | Chenopodium album | White Goosefoot | 3.0 | | | SE5 | IC | IC |
| | Х | Cichorium intybus | Chicory | 3.0 | | | SE5 | IC | IC |
| | | Circaea canadensis | Broad-leaved Enchanter's | | | | \$5 | C | C |
| Х | | | Nightshade | 3.0 | | | 55 | Ŭ | Č |
| | Х | Cirsium arvense | Canada Thistle | 3.0 | | | SE5 | IC | IC |
| х | | Cornus alternifolia | Alternate-leaved Dogwood | 3.0 | | | S5 | х | С |
| Х | Х | Cornus racemosa | Gray Dogwood | 0.0 | | | S5 | Х | С |
| Х | | Cornus sericea | Red-osier Dogwood | -3.0 | | | S5 | С | С |
| Х | | Crataegus crus-galli | Cockspur Hawthorn | 0.0 | | | S4 | Х | R |
| Х | | Crataegus punctata | Dotted Hawthorn | 5.0 | | | S5 | С | С |
| | Х | Dactylis glomerata | Orchard Grass | 3.0 | | | SE5 | IC | IC |
| | Х | Daucus carota | Wild Carrot | 5.0 | | | SE5 | IC | IC |
| Х | | Dryopteris carthusiana | Spinulose Wood Fern | -3.0 | | | S5 | С | С |
| Х | | Echinocystis lobata | Wild Mock-cucumber | -3.0 | | | S5 | Х | С |
| Х | | Elaeagnus umbellata | Autumn Olive | 3.0 | | | SE3 | IR | IU |
| | Х | Elymus repens | Creeping Wildrye | 3.0 | | | SE5 | IC | IC |
| Х | | Equisetum arvense | Field Horsetail | 0.0 | | | S5 | С | С |
| | Х | Equisetum sylvaticum | Woodland Horsetail | -3.0 | | | S5 | R | R |
| | Х | Erigeron annuus | Annual Fleabane | 3.0 | | | S5 | С | С |
| | Х | Erigeron canadensis | Canada Horseweed | 3.0 | | | S5 | С | U |
| Х | | Erythronium americanum | Yellow Trout-lily | 5.0 | | | S5 | С | С |
| Х | | Fagus grandifolia | American Beech | 3.0 | | | S4 | С | С |
| Х | | Fraxinus americana | White Ash | 3.0 | | | S4 | С | С |
| Х | | Fraxinus pennsylvanica | Green Ash | -3.0 | | | S4 | С | С |
| Х | | Galium aparine | Cleavers | 3.0 | | | S5 | Х | U |
| Х | | Geranium maculatum | Spotted Geranium | 3.0 | | | S5 | С | С |
| Х | | Geum canadense | White Avens | 0.0 | | | S5 | Х | С |
| | Х | Helianthus tuberosus | Jerusalem Artichoke | 0.0 | | | SU | Х | IC |

| | | Floral Inventory (2022-05-11) | | | | | | | |
|---|---|-------------------------------|---|------|---------|------|----------|----|-----|
| 1 | 2 | Scientific Name | Common Name | CW | COSEWIC | SARO | SRank | EL | 7E4 |
| Х | - | Hesperis matronalis | Dame's Rocket | 3.0 | | | SE5 | IC | IC |
| | Х | Hypericum perforatum | Common St. John's-wort | 5.0 | | | SE5 | IC | IC |
| | Х | Impatiens capensis | Spotted Jewelweed | -3.0 | | | S5 | С | С |
| Х | | Juglans nigra | Black Walnut | 3.0 | | | S4? | С | С |
| Х | | Juglans x bixbyi | (Juglans ailantifolia X Juglans cinerea) | | | | SNA | | hyb |
| Х | | Larix decidua | European Larch | 5.0 | | | SE2 | IX | IX |
| Х | | Leonurus cardiaca | Common Motherwort | 5.0 | | | SE5 | IC | IC |
| х | | Ligustrum vulgare | European Privet | 3.0 | | | SE5 | IR | ΙU |
| х | | Lonicera tatarica | Tartarian Honeysuckle | 3.0 | | | SE5 | | IC |
| | Х | Lotus corniculatus | Garden Bird's-foot Trefoil | 3.0 | | | SE5 | IX | IC |
| Х | | Maianthemum canadense | Wild Lily-of-the-valley | 3.0 | | | S5 | С | С |
| х | | Maianthemum racemosum | Large False Solomon's Seal | 3.0 | | | S5 | С | С |
| х | | Malus pumila | Common Apple | 5.0 | | | SE4 | IX | IC |
| Х | | Matteuccia struthiopteris | Ostrich Fern | 0.0 | | | S5 | С | C |
| | х | Melilotus albus | White Sweet-clover | 3.0 | | | SE5 | IC | IC |
| | X | Monarda fistulosa | Wild Bergamot | 3.0 | | | S5 | | |
| х | | Morus alba | White Mulberry | 0.0 | | | SE5 | IU | IC |
| | х | Oenothera biennis | Common Evening Primrose | 3.0 | | | S5 | x | U |
| х | | Onoclea sensibilis | Sensitive Fern | -3.0 | | | S5 | C | C |
| x | | Ostrva virainiana | Eastern Hop-hornbeam | 3.0 | | | 55 55 | | C |
| ~ | | Oxalis stricta | Upright Yellow Wood-sorrel | 0.0 | | | 55 | | |
| | Х | | | 3.0 | | | S5 | Х | С |
| Х | | Parthenocissus vitacea | Thicket Creeper | 3.0 | | | S5 | С | С |
| | Х | Pastinaca sativa | Wild Parsnip | 5.0 | | | SE5 | IX | IC |
| Х | | Phragmites australis | Common Reed | -3.0 | | | S4? | | |
| Х | | Picea glauca | White Spruce | 3.0 | | | S5 | | U |
| | Х | Plantago lanceolata | English Plantain | 3.0 | | | SE5 | IC | IC |
| Х | | Podophyllum peltatum | May-apple | 3.0 | | | S5 | С | С |
| Х | | Populus deltoides | Eastern Cottonwood | 0.0 | | | S5 | | |
| Х | | Populus tremuloides | Trembling Aspen | 0.0 | | | S5 | С | С |
| Х | | Prunus cerasifera | Cherry Plum | 5.0 | | | SE1 | | IR |
| Х | | Prunus serotina | Black Cherry | 3.0 | | | S5 | С | С |
| Х | | Prunus virginiana | Choke Cherry | 3.0 | | | S5 | С | С |
| Х | | Pteridium aquilinum | Bracken Fern | 3.0 | | | S5 | С | С |
| Х | | Quercus rubra | Northern Red Oak | 3.0 | | | S5 | С | С |
| Х | | Rhamnus cathartica | Common Buckthorn | 0.0 | | | SE5 | IC | IC |
| Х | Х | Rhus typhina | Staghorn Sumac | 3.0 | | | S5 | С | С |
| Х | | Ribes americanum | Wild Black Currant | -3.0 | | | S5 | С | С |
| Х | | Ribes nigrum | European Black Currant | 5.0 | | | SE2 | | IR |
| Х | | Robinia pseudoacacia | Black Locust | 3.0 | | | SE5 | IC | IC |
| Х | | Rosa multiflora | Multiflora Rose | 3.0 | | | SE5 | IX | IC |
| Х | | Rosa virginiana | Virginia Rose | 0.0 | | | SU | | |
| Х | | Rubus allegheniensis | Allegheny Blackberry | 3.0 | | | S5 | С | С |
| Х | | Rubus occidentalis | Black Raspberry | 5.0 | | | S5 | Х | С |
| | Х | Rudbeckia hirta | Black-eyed Susan | 3.0 | | | S5 | С | U |
| | Х | Rumex crispus | Curly Dock | 0.0 | | | SE5 | IC | IC |

| | | Flor | al Inventory (2022-05-11) | | | | | | |
|---|----|------------------------|---------------------------|------|---------|------|-------|----|-----|
| 1 | 2 | Scientific Name | Common Name | CW | COSEWIC | SARO | SRank | EL | 7E4 |
| Х | | Rumex obtusifolius | Bitter Dock | -3.0 | | | SE5 | IX | IU |
| Х | | Sambucus racemosa | Red Elderberry | 3.0 | | | S5 | Х | С |
| | Х | Securigera varia | Common Crown-vetch | 5.0 | | | SE5 | IX | IC |
| | Х | Setaria faberi | Giant Foxtail | 3.0 | | | SE4 | IC | IX |
| | Х | Silene vulgaris | Bladder Campion | 5.0 | | | SE5 | IX | IR |
| | Х | Sisymbrium altissimum | Tall Tumble Mustard | 3.0 | | | SE5 | IX | IR |
| Х | | Solidago caesia | Blue-stemmed Goldenrod | 3.0 | | | S5 | Х | С |
| | Х | Solidago canadensis | Canada Goldenrod | 3.0 | | | S5 | | |
| | Х | Sonchus oleraceus | Common Sow-thistle | 3.0 | | | SE5 | IX | IU |
| Х | | Streptopus lanceolatus | Rose Twisted-stalk | 3.0 | | | S5 | R | U |
| Х | | Symplocarpus foetidus | Skunk Cabbage | -5.0 | | | S5 | С | R |
| | Х | Taraxacum officinale | Common Dandelion | 3.0 | | | SE5 | IC | IC |
| | Х | Tragopogon dubius | Yellow Goat's-beard | 5.0 | | | SE5 | IX | IR |
| | Х | Trifolium pratense | Red Clover | 3.0 | | | SE5 | IX | IC |
| Х | | Viburnum lentago | Nannyberry | 0.0 | | | S5 | С | C |
| Х | ., | Viburnum opulus | Cranberry Viburnum | -3.0 | | | S5 | | |
| | Х | Vicia cracca | Tufted Vetch | 5.0 | | | SE5 | IX | IC |
| X | | Viola labradorica | Labrador Violet | 0.0 | | | S5 | Х | R |
| X | | Viola pubescens | Yellow Violet | 3.0 | | | S5 | С | С |
| Х | Х | Vitis riparia | Riverbank Grape | 0.0 | | | S5 | С | С |
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Breeding Bird Survey Information Summary Sheet





Project Name: East RD & Sunset Rd Port Standley

Collector(s):

WH

MTE File No.: 48808-100

Start Finish Weather Date Visit 1 1-Jun-22 7:00 8:30 22C, Wind 2, direction W, CC 0%, Rain none Visit 2 ######

| Species | Species | | Com | m. 1 | | Comm. 2 | | m. 2 | . 2 | | ESA | DIE | |
|---------|--------------------------|-------|----------|-------|-------|---------|------|------|------|-----------|--------|--------|-------|
| Abbr. | Name | V | isit 1 | Vis | sit 2 | Visi | it 1 | Vis | it 2 | 3 Bank | ESA | FIF | Notes |
| | | Code | No. | Code | No. | Code | No. | Code | No. | Ralik | อเลเนร | Status | |
| TUVU | Turkey Vulture | | | OB | 1 | | | | | S5 | | | |
| SOSPR | Osprey | | | SM | 3 | | | | | S5 | | | |
| DOWO | Downy Woodpecker | | | VO | 1 | | | | | S5 | | | |
| GCFL | Great Crested Flycatcher | SM | 1 | | | | | | | S4 | - | | |
| EAKI | Eastern Kingbird | | | VO | 1 | | | | | S4 | | RC | |
| AMCR | American Crow | Р | 4 | OB,NU | . 2 | | | | | S5 | | | |
| HOWR | House Wren | SM | 1 | SM | 1 | | | | | S5 | | | |
| EABL | Eastern Bluebird | SM | 2 | | | | | | | S5 | - | | |
| AMRO | American Robin | | | FY | 4 | | | | | S5 | | | |
| GRCA | Gray Catbird | SM | 3 | SM | 2 | | | | | S4 | | | |
| EUST | European Starling | Р | no count | Ρ | Many | | | | | SNA | | | |
| CEDW | Cedar Waxwing | SH | 2 | VO | 5 | | | | | S5 | | | |
| YWAR | Yellow Warbler | SM, T | 5 | SM, T | 4 | | | | | S5 | | | |
| AMRE | American Redstart | SM | 1 | SM | 1 | | | | | S5 | | | |
| COYE | Common Yellowthroat | SM | 3 | | | | | | | S5 | - | | |
| CHSP | Chipping Sparrow | SM | 3 | | | | | | | S5 | | | |
| SOSP | Song Sparrow | SM | 2 | | | | | | | S5 | | | |
| NOCA | Northern Cardinal | P, VO | 5 | SM | 3 | | | | | S5 | | | |
| INBU | Indigo Bunting | Р | 4 | SM | 3 | | | | | S4 | | | |
| RWBL | Red-winged Blackbird | SM | 3 | VO | 2 | | | | | S4 | | | |
| COGR | Common Grackle | Р | 3 | OB | 2 | | | | | S5 | | | |
| BHCO | Brown-headed Cowbird | Р | 3 | Ρ | 2 | | | | | S4 | | | |
| OROR | Orchard Oriole | | | | | | | | | S4 | | | |
| BAOR | Baltimore Oriole | SM | 1 | | | | | | | S4 | | RC,RS | |
| AMGO | American Goldfinch | Р | 2 | SM | 4 | | | | | S5 | | | |
| HOSP | House Sparrow | Р | no count | P, FY | Many | | | | | SNA | | | |

Evidence Codes:

Breeding Bird - Possible

SH=Suitable Habitat SM=Singing Male

Breeding Bird - Probable

T=Territory A=Anxiety Behaviour D=Display N=Nest Building P=Pair V=Visiting Nest

Breeding Bird - Confirmed

DD=Distraction NE=Eggs AE=Nest Entry NU=Nest Used NY=Nest Young FY=Fledged Young FS=Food/Faecal Sack Other Wildlife Evidence

OB=Observed DP=Distinctive Parts TK=Tracks VO=Vocalization HO=House/Den FE=Feeding Evidence CA=Carcass Fy=Eggs or Young SC=Scat SI=Other Signs (specify)



Significant Wildlife Habitat (SWH) Table



| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH | | | | |
|--|-----------------------------|--|------------------|--|------------------|--|--|--|--|
| | | | | Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | | | | | |
| Motorfoud | | a dan a ƙalabarik | | Any mixed species aggregations of 100 or more individuals required. | No | | | | |
| Stopover and Staging Areas (Terrestrial) | CUM1 and CUT1 (Adjacent) | Large fields with abundant sheet water in spring not available. | No | • The flooded field ecosite habitat plus a 100- 300m radius, dependent on local site conditions and adjacent land use is the significant wildlife habitat. | | | | | |
| | | | | Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). | | | | | |
| | | | | Studies carried out and verified presence of: | | | | | |
| | | | | Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days. | | | | | |
| | | | | Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH | | | | | |
| Waterfowl Stopover and | _ | No watercourses present within the | No | The combined area of the ELC ecosites and a 100m radius area is SWH | No | | | | |
| Staging Areas (Aquatic) | | Subject Lands. | | Wetland area and shorelines associated with sites identified within the SWHTG are significant wildlife habitat. | | | | | |
| | | | | • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). | | | | | |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH | | |
|---|--------------------------|---|------------------|--|------------------|--|--|
| | | | | Studies confirming: | | | |
| | | No beach areas, bars, seasonally flooded, muddy | | Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). | | | |
| Shorebird Migratory Stopover Area | - | and un-vegetated shoreline habitat available within | No | Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. | No | | |
| | | the Subject Lands. | | The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area. | | | |
| | | | | Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | | | |
| | | | No | Studies confirm the use of these habitats by: | | | |
| | | | | One or more Short-eared Owls or; One of more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species. | | | |
| Raptor Wintering Area | CUM1, CUT1 (Adjacent) | No forest ELC codes present for habitat combination | | To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. | No | | |
| | CUW1 | UW1 requirements to be met. | | The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. | | | |
| | | | | Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | | | |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|------------------------------|-----------------------|--|------------------|---|------------------|
| Bat Hibernacula | - | No suitable features present. | No | All sites with confirmed hibernating bats are SWH. The area includes 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms Studies are to be conducted during the peak swarming period (Aug–Sept). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" | No |
| Bat Maternity Colonies | - | No forest present within Study Area. | No | Maternity Colonies with confirmed use by; >10 Big Brown Bats >5 Adult Female Silver-haired Bats The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects" | No |
| Turtle Wintering Areas | SW (Adjacent) | No suitable over- wintering sites (permanent water bodies, large wetlands, bogs, fens, etc.) within the Subject Lands. | No | Presence of 5 over-wintering Midland Painted Turtles is significant. One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. The mapped ELC Ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deepwater pool where the turtles are over wintering is the SWH. Over wintering areas may be identified by | No |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|-------------------------------------|---------------------------|---|------------------|--|------------------|
| | | | | searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept-Oct) or spring (Mar- May). Congregation of turtles is more common where wintering areas are limited and therefore significant. | |
| | | | | Studies confirming: | |
| | | No features | | Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. | |
| Reptile Hibernaculum | All other than really wet | indicative of hibernation sites (bedrock fissures, rock piles, burrows) present within the Subject Lands. | No | Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. Near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). | No |
| | | | | Note: If there are Special Concern Species present, then site is SWH. | |
| | | | | The feature in which the hibernacula is located plus a 30 m radius area is SWH. | |
| | | | | Studies confirming: | |
| Colonially- | | No exposed soil banks, cliff faces | | Presence of 1 or more nesting sites with 8cxlix or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. | |
| Nesting Bird Breeding Habitat | - | sandy hills, borrow pits, steep slopes, or other | No | A colony identified as SWH will include a 50m radius habitat area from the peripheral nests. | No |
| (Bank/Cliff) | | suitable habitat present. | | • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | |
| Colonially- | - | No suitable | No | Studies confirming: | No |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|-------------------------------------|-----------------------|---|------------------|---|------------------|
| Nesting Bird Breeding | | wetland habitat is present. | | Presence of 2 or more active nests of Great Blue Heron or other listed species. | |
| (Trees/Shrubs) | | No heron nesting sites/colonies present based on LIO mapping (wildlife values | | The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. | |
| | | area map). | | Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April-August) or by evidence such as the presence of fresh guano, dead young and/or eggshells. | |
| | | | | Studies confirming: | |
| | | No islands, peninsulas, or | No | Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. | |
| Colonially | | low bushes close to streams/ditches | | Presence of 5 or more pairs for Brewer's Blackbird. | |
| Nesting Bird Breeding Habitat | - | streams/ditches are present. No nesting sites for Ding billed | | Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. | No |
| (Ground) | | Gull or Herring Gull identified in the area by LIO wildlife values | | • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH. | |
| | | area mapping. | | Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|---|-----------------------|--|----------------------------|---|-------------------------|
| Migratory Butterfly Stopover Areas | - | A butterfly stopover area will be >10 ha in size with a combination of forest (FOD) and field (CUM/CUT), and be located within 5 km of Lake Erie or Lake Ontario. Criteria not met due to the lack of forested ELC | No | Studies confirm: The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. | No |
| | | codes adjacent field or meadow in the Study Area. | | MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. | |
| Land Bird Migratory Stopover Areas | - | Woodlots >5 ha in size that are within 5 km of Lake Ontario and Lake Erie. No associated ELC code. Woodlots >5 ha within 5 km of Lake Erie are present within the Adjacent Lands. | Yes (Adjacent Lands) | Studies confirm: Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. Studies should be completed during spring (Mar to May) and fall (Aug-Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" | Candidate (Adjacent) |

| Wildlife | ELC Codes | Additional Habitat | Candidate | SWH Defining Criteria | Confirmed |
|--------------------------------------|-----------|---|-----------|--|-----------|
| Habitat | Triggers | Criteria | SWH | | SWH |
| Deer Winter Congregation Areas | - | No woodlots >100 ha in size. No White-tailed Deer wintering areas identified in the area by LIO wildlife values area mapping. | No | Studies confirm: Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. Use of the woodlot by whitetailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. | No |

Rare Vegetation Communities

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH | |
|----------------------------|-----------------------|--------------------------------|------------------|--|------------------|--|
| Cliffs and Talus Slopes | - | Not present. | No | Confirm any ELC Vegetation Type for Cliffs or Talus Slopes. | No | |
| | | | | Confirm any ELC Vegetation Type for Sand Barrens. | | |
| Sand Barren | - | Not present. | NO | • Site must not be dominated by exotic/introduced species (<50% vegetative cover exotic sp.). | No | |
| | | | | Field studies that identify 4 of the 5 Alvar Indicator Species at a Candidate Alvar site is significant. | | |
| Alvar | - | Not present. | No | • Site must not be dominated by exotic/introduced species (<50% vegetative cover exotic sp.). | No | |
| | | | | • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. | | |
| | | | | Field Studies will determine: | | |
| | | Not present. | | If dominant trees species are >140 years old, then the area containing these trees is SWH. | No | |
| Old Growth Forest | - | | No | • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) | | |
| | | | | The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. | | |
| | | | | Determine ELC vegetation types for the forest area containing the old growth characteristics. | | |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|--------------------------|-----------------------|--------------------------------|------------------|--|------------------|
| Savannah | _ | Not present. | No | Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 7E should be used. | No |
| | | | | • Area of the ELC Ecosite is the SWH. | |
| | | | | Site must not be dominated by exotic/introduced species (<50% vegetative cover exotic sp.). | |
| Tallgrass | - | Not present. | No | • Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used. | No |
| Prairie | | | | Area of the ELC Ecosite is the SWH. | |
| | | | | Site must not be dominated by exotic/introduced species (<50% vegetative cover exotic sp.). | |
| Other Rare Vegetation | - | Not present. | No | Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. | No |
| | | | | Area of the ELC Vegetation Type polygon is the SWH. | |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|---|-----------------------|--|------------------|---|------------------|
| Waterfowl Nesting Area | SWT (Adjacent) | Wetland found on Adjacent Lands is considered swamp and may contain wetlands suitable for waterfowl nesting. However, the wetland is bordered by roads/driveways and would not provide suitable adjacent upland nesting habitat. No suitable habitat within the Subject Lands. | No | Studies confirmed: Presence of 3 or more nesting pairs for listed species excluding Mallards, or; Presence of 10 or more nesting pairs for listed species including Mallards. Any active nesting site of an American Black Duck is considered significant. Nesting studies should be completed during the spring breeding season (April-June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. | No |
| Bald Eagle and Osprey Nesting, Foraging, Perching | - | Bald Eagle was not identified by NHIC in the atlas square that includes the Subject Lands. Bald Eagle and Osprey were not observed in the 2001-2005 OBBA records in the general area of the Subject Lands. No Osprey feeding or resting areas identified in the Study Area on LIO wildlife values mapping. | No | Studies confirm the use of these nests by: One or more active Osprey or Bald Eagle nests in an area. Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat. | No |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|----------------------------|-----------------------|---|------------------|--|------------------|
| | | | | • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant. | |
| | | | | • Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid-August. | |
| | | | | Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | |
| | | | | Studies confirm: | |
| | | | | Presence of 1 or more active nests from species list is considered significant. | |
| | - | • No natural or conifer plantation woodlands/forest stands >30ha with >4ha of interior habitat. Criteria not met. | No | Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) | |
| Woodland Raptor Nesting | | | | Barred Owl – A 200m radius around the nest is the SWH. | No |
| Habitat | | | | Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is SWH. | |
| | | | | Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. | |
| | | | | Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. | |

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|--|-----------------------|--|-------------------|--|-------------------------|
| Turtle Nesting Areas | - | No areas with exposed mineral soils were observed adjacent to the wetland. | No | Studies confirm: Presence of 5 or more nesting Midland Painted Turtles. One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. | No |
| Springs and Seeps | - | No seeps or springs observed within the Subject Lands. | No | Field Studies confirm: Presence of a site with 2 or more seeps/springs should be considered SWH. The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat. | No |
| Amphibian Breeding Habitat (Woodland) | - | Adjacent Lands contain a wetland (swamp) that is within 120 m of a woodland ecosite. | Yes (Adjacent) | Studies confirm; Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Code 3. | Candidate (Adjacent) |

Specialized Habitats of Wildlife Considered SWH

| Wildlife Habitat | ELC Codes Triggers | Additional Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|--|-----------------------|--|-------------------|--|-------------------------|
| | | | | A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat | |
| Amphibian Breeding Habitat (Wetlands) | - | Adjacent Wetlands located >120m from woodland ecosites are present within or directly adjacent to the Subject Lands. | No | Studies confirm: Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. The ELC ecosite wetland area and the shoreline are the SWH. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. | No |
| Woodland Area-Sensitive Bird Breeding Habitat | - | Large mature (>60yrs old) forest stands or woodlots >30 ha. Woodlots >30 ha are present within the adjacent lands. | Yes (Adjacent) | Studies confirm: Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. Conduct field investigations in spring and early summer when birds are singing and defending their territories. | Candidate (Adjacent) |

Specialized Habitats of Wildlife Considered SWH

| Wildlife | ELC Codes | Additional Habitat | Candidate | SWH Defining Criteria | Confirmed |
|----------|-----------|--------------------|-----------|--|-----------|
| Habitat | Triggers | Criteria | SWH | | SWH |
| | | | | Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | |

| Wildlife Habitat | ELC Codes Triggers | Candidate Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|--|-------------------------|---|-------------------|---|-------------------------|
| Marsh Breeding Bird Habitat | SWT, CUM1 (Adjacent) | Adjacent wetland communities present to support Green Heron | Yes (Adjacent) | Studies confirm: Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. Area of the ELC ecosite is the SWH. Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | Candidate (Adjacent) |
| Open Country Bird Breeding Habitat | CUM1 (Adjacent) | Natural and cultural fields >30 ha are not present. | No | Field studies confirm: Presence of nesting or breeding of 2 or more of the listed species. A field with 1 or more breeding Short-eared Owls is to be considered SWH. The area of SWH is the contiguous ELC ecosite field areas. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | No |

| Wildlife Habitat | ELC Codes Triggers | Candidate Habitat Criteria | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|---|-----------------------|---|-------------------|---|-------------------------|
| Shrub/Early Successional Bird Breeding Habitat | CUW1 | No large fields succeeding to shrub and thicket habitats >10 ha in size are present. | No | Field Studies confirm: Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered SWH. The area of the SWH is the contiguous ELC Ecosite field/thicket area. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". | No |
| Terrestrial Crayfish | SWT (Adjacent) | Potential habitat in Adjacent SWT. No chimneys or individuals observed within the Subject Lands. | Yes (Adjacent) | Studies Confirm: Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. Area of ELC ecosite or an eco-element area of meadow marsh or swamp within the larger ecosite area is the SWH. Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult. | Candidate (Adjacent) |

| Wildlife | ELC Codes | Candidate Habitat | Candidate | SWH Defining Criteria | Confirmed |
|--|-----------|--|-------------------|---|-------------------------|
| Habitat | Triggers | Criteria | SWH | | SWH |
| Special Concern and Rare Wildlife Species (NHIC and MNRF pre- consultation) | - | NHIC and Citizen Science identified the following Special Concern and/or rare species as potentially present within the Study Area: Broad Beech Fern, Common Hoptree, Crooked-stem Aster, Eastern Ribbonsnake, Eastern Wood- Pewee, Horned Grebe, Monarch, Snapping Turtle, and Wood Thrush as potentially present. None of the mentioned species were observed within the Subject Lands but there is potential within the Adjacent Lands. | Yes (Adjacent) | Studies Confirm: Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g., specific nesting habitat or foraging habitat. Suitable habitat is present for the following special concern species within the Adjacent Lands: Broad Beech Fern, Crooked-stem Aster, Eastern False Rue-anemone Eastern Ribbonsnake, Eastern Wood-Pewee, Horned Grebe, Monarch, Snapping Turtle, and Wood Thrush. | Candidate (Adjacent) |

| Wildlife | ELC Codes | Additional Habitat | Candidate | SWH Defining Criteria | Confirmed |
|------------------------------------|-----------|---|-----------|--|-----------|
| Habitat | Triggers* | Criteria | SWH | | SWH |
| Amphibian Movement Corridors | - | • Movement corridors are determined when there is confirmed amphibian breeding habitat in wetlands. Only woodland amphibian breeding SWH has been identified. | No | Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. | No |

SWH Exceptions

| Wildlife Habitat | Ecosites | Habitat Criteria and Information | Candidate SWH | SWH Defining Criteria | Confirmed SWH |
|--------------------------------|-------------|-------------------------------------|------------------|--|------------------|
| Bat Migratory Stopover Area | No triggers | The site is not near Long Point. | No | • The confirmation criteria and habitat areas for this SWH are still being determined. | No |



Butternut Health Assessment





September 12, 2022 MTE File No.: 48808-100

Julian Novick 5-1895 Blue Heron Drive London, ON N6H 5L9 julian@wastell.ca

Dear Julian:

RE: Butternut Health Assessment Report East Road \$ Dexter Line, Port Stanley

Please find the attached Butternut Health Assessment report for the trees found on your property. Three trees were assessed and leaf samples of each tree were sent for genetic testing to determine hybridity.

All 3 trees were found to be of hybrid origin.

This report must be submitted to the MECP Species at Risk branch via email <u>SAROntario@ontario.ca</u>

Should you have any questions or concerns please contact me at your convenience.

Yours truly,

MTE Consultants Inc.

Butternut Health Assessor #222 519-204-6510 ext. 2246 whuys@mte85.com

Enclosures:

- 1. Information from the Ministry of Natural Resources and Forestry about Butternut and the Endangered Species Act, 2007
- 2. Butternut Health Assessor's Report
- 3. Original data forms
- 4. Electronic and printed copies of the Excel data spreadsheet (BHA Tree Analysis)

Ministry of Natural Resources and Forestry Ministère des Richesses naturelles et des Forêts

Species At Risk P.O. Box 7000, 300 Water Street Peterborough ON K9J 8M5 Espèces en péril C.P. 7000, 300, rue Water Peterborough ON K9J 8M5



The enclosed Butternut Health Assessor's Report documents the results of the Butternut health assessment that was conducted by the designated Butternut Health Assessor (BHA) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be affected by the activity and they are not identified in the enclosed BHA Report, they too must be assessed by a designated BHA.

Butternut is listed as an endangered species on the Species at Risk in Ontario List, and as such, it is protected under the *Endangered Species Act, 2007* (ESA) from being killed, harmed, or removed. If you are planning to undertake an activity that may affect Butternut, you may be eligible to follow the requirements set out in section 23.7 of Ontario Regulation 242/08 under the ESA, or you may need to seek an authorization under the ESA (e.g., a permit).

Please visit e-laws at the link provided below for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled. Information about Butternut is also available at: <u>http://www.ontario.ca/environment-and-energy/butternut-trees-your-property</u>.

If you are eligible to kill, harm or take Butternut under section 23.7 of the regulation, your first step is to submit the BHA Report and the original data forms enclosed in this package to the local Ministry of Natural Resources and Forestry (MNRF) District Manager. Note that MNRF cannot accept photocopies or scanned electronic copies of the data forms.

Note regarding changes:

If the enclosed BHA Report does not identify which Butternut tree(s) are proposed to be killed, harmed, or taken in Table 1 (i.e., if "unknown" is indicated in the second last column of Table 1), or, if the information in the last two columns of Table 1 has changed since the date this BHA Report was produced, <u>do not make any edits to the BHA Report</u>. Instead, please attach a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed, or taken (by referencing the tree identification numbers) when you submit the enclosed BHA Report to the local MNRF District Manager.

The BHA Report must be submitted at least 30 days prior to registering an eligible activity to kill, harm, or remove a Butternut tree. During this 30 day period, no Butternut trees (of any category) may be killed, harmed, or removed, and MNRF may contact you for an opportunity to examine the trees. If MNRF chooses to examine the trees, a representative of MNRF will contact you using the information you supplied when you submitted the BHA Report.

If you are eligible to follow the rules in regulation under section 23.7, you may register your activity using the "Notice of Butternut Impact" form on the <u>MNRF Registry</u> <u>after the 30 day period has</u> <u>elapsed</u>.

If you are <u>not</u> eligible to follow the rules in regulation under section 23.7, please contact the local MNRF district office to determine whether you will need to seek an authorization (e.g., a permit). A link to the directory of MNRF offices is provided below.

Note that municipal by-laws and legislation other than the ESA may also be applicable to the removal or harming of trees.

Please retain this information and a copy of the BHA Report (including copies of all data forms) for your records, along with any other documentation you may receive from MNRF should an examination of the trees occur. If you have any questions, please contact your local MNRF district office.

Links:

Endangered Species Act, 2007: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm

Ontario Regulation 242/08 (refer to section 23.7): http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm

MNRF Office Locations:

https://www.ontario.ca/government/ministry-natural-resources-and-forestry-regional-and-districtoffices

Butternut Health Assessor's Report Number: 222-221

William Huys #222 123 St. George St. London, ON N6A 3A1 whuys@mte85.com

Julian Novick 5-1895 Blue Heron Drive London N6H 5L9 julian@wastell.ca

Site location: East Road & Dexter Line Port Stanley ON

Date(s) of Butternut health assessment: July 27, 2022) Date BHA Report prepared: September 12, 2022

Map datum used: NAD83

Total number of trees assessed in this BHA Report: 3

The assessed trees were numbered on site using white paint. The numbers at the site correspond to the tree numbers referenced in this report.

This BHA Report includes the following tables:

- Table 1: Butternut Trees Assessed
- Table 2: Trees Determined by BHA to be Butternut Hybrids
- Table 3: Summary of Assessment Results

| Table 1: Butternut | Trees Assessed |
|--------------------|----------------|
|--------------------|----------------|

| Tree # | UTM coordinates | Category ¹ (1, 2, or 3 ²) | dbh³ (cm) | Cultivated? (Y/N) | Proposed to be: (<i>enter</i> <i>one:</i> <i>unknown⁴</i> , <i>killed</i> , <i>harmed or</i> <i>taken</i>) | If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken: |
|-----------|-----------------|---|-----------|----------------------|---|--|
| | | | | | | |
| | | | | | | |

¹ The extent to which the tree is affected by Butternut Canker is presented in the Excel document titled, "BHA Tree Analysis" that accompanies this BHA Report.

² Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08.

³ dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)

⁴ In this column, "unknown" indicates that at the time of assessment, there are no proposals to kill, harm or take this tree that are known to the BHA.

| Tree # | UTM coordinates | Category ¹ (1, 2, or 3 ²) | dbh³ (cm) | Cultivated? (Y/N) | Proposed to be: (enter one: unknown ⁴ , killed, harmed or taken) | If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken: |
|-----------|-----------------|---|-----------|----------------------|---|--|
| | | | | | | |
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Table 2: Trees Determined by BHA to be Butternut Hybrids

| Tree # | UTM coordinates | Method used (genetic testing or field identification): |
|--------|-----------------|--|
| 1 | 483077, 4725428 | Genetic testing |
| 2 | 483143, 4725409 | Genetic testing |
| 3 | 483172, 4725412 | Genetic testing |

Table 3: Summary of Assessment Results

| Result: | Total #: | Important information for persons planning activities that may affect Butternut: |
|---------------|-------------|---|
| Category 1 | 0 | • A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered "non-retainable". |
| | | During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. |
| | | • Category 1 trees may be killed, harmed or taken <u>after</u> the 30 day period that follows submission of this BHA Report to the MNRF District Manager, unless the results of an MNRF examination indicate that the assessment has not been conducted in accordance with the document entitled "Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the <i>Endangered Species Act, 2007</i> ". |
| Category 2 | 0 | • A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered "retainable". |
| | | During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. |
| | | Activities that may kill, harm or take up to a <u>maximum of ten (10)</u> Category 2 trees may be eligible to follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation. |
| | | Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: <u>http://www.e-</u> |

| Result: | Total #: | Important information for persons planning activities that may affect Butternut: |
|---------------|-------------|---|
| | | laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm |
| | | • Activities that may kill, harm or take more than ten (10) Category 2 trees are not eligible to follow the rules in section 23.7 of Ontario Regulation 242/08. Contact the local MNRF district office for information on how to seek an ESA authorization (e.g., a permit) or consider an alternative that would be eligible for the regulation. |
| Category 3 | 0 | A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered "archivable". |
| | | Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. |
| | | Contact the local MNRF district office for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees. |
| Cultivated | 0 | An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08. |
| | | • Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNRF district office. |
| | | • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records. |
| Hybrid | 3 | Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation. |

Butternut Health Assessor's Comments:

All trees found and assessed within the study have been genetically tested and determined to be hybrid. The test results have been attached to the end of this report.

This concludes the summary of the BHA Report. A complete BHA Report must also include:

- 1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and
- 2. Electronic and printed copies of the Excel data analysis spreadsheet.

| 0 cm | ^{3cm} Butte | Form 1 - <u>2</u> | 010 Edition | 15cm | | | | | | | |
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| Shaded fields are m | Shaded fields are mandatory for Butternut Health Assessments $27 - 0$ | | | | | | | | | | |
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| Owner or Company | 1.14 < HC | | EVEL | OPME | WESLU | VC | | | | | |
| (check if same as surveyor) Email | Tiana | wast | e II. | cal | | | | | | | |
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| Property Owner's Mailing addre | | | | | | ostal Code Prov. | | | | | |
| Address $5 - 1$ | 895B | LUEH | HERO/ | VOR | IV-e M | 6 H 3 L 7 U M | | | | | |
| Tree Location (if different from | mailing address) | | | | | | | | | | |
| Address/(911#) | FIDNI | 2 DEX | 2780 | $L \downarrow N$ | E | | | | | | |
| Township | | | | | | Lot Con | | | | | |
| Directions City | RTST | ANLEY | 1 OM | | | | | | | | |
| J_ | | | | | | | | | | | |
| | | | | _ | | | | | | | |
| Yes No Car | Share Location Ir visits OK? (prior | formation with or arrangments w | other Butternu vill always be r | t Recovery Or nade for a site | ganizations? vist) | | | | | | |
| > (Greater than) | Butternut Tree | s Tally by Dia | meter Class | <u> </u> | Overall Prope | rty Description | | | | | |
| < (Less than) | o a dot tally in b | lank space; wri | te total# in i | box for each) | (area(s) conta | Ining Butternut) | | | | | |
| Tree Condition | < 3 cm | 3-15 cm | 16-30cm | >30 cm | ☐ Valley Slope | U Variable | | | | | |
| Vigorous: > 50% Live Crown | | | | | Tableland | Unknown | | | | | |
| Minor or no cankers | | | ╷ <mark>╷╴╴╴╴╴╴╴╴╴╴</mark> | LI | Vegetation | Community/ies | | | | | |
| Poor Vigor: <50% Live Crown or >50% Live Crown + heavily | | | | | ☐ Shrubland | ☐ Roadside | | | | | |
| cankered stem | | Li i | ╷┡╍╍┺╍╍┛╷ ┥╴╴╴╸╸╸╴╴╴╴ | • • • • • • • • • • • • • | DeciduousFore | st 🔲 Quary | | | | | |
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| Historically, do some | e trees produ | ce seeds?L | | | | | | | | | |
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| | | | | | Loam | 🗖 Unknown | | | | | |
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 Peterborough, ON, K9J 2V4 www.fgca.net

| 48608-100 | 1:00 |
|--|---|
| Butternut Data Collection FORM 2 (2010 Edition) (PLEASE USE BLOCK LETTERS) Shaded fields are mandatory for Butternut Health Assessments Butternut Health Assessments | en Form 1 indicates canker is well shed. The information opn Form 2 e filled out for all trees when doing a ut Health Assessment |
| Site Code(A,B,Z, AA) Surveyor ID or BHA # Z Z Z Surveyor Last Name U U S Image: Starting from 1 for each site | Date (dd/mm/yyyy) |
| Tree # Zone Easting Northing 0 1 1 4 3 7 1 1 2 5 4 4 Assess below live crows 3 Crown 1 1 4 3 7 1 1 2 5 4 4 4 8 3 Crown 1 1 1 2 5 4 4 7 4 1 2 5 4 4 7 4 1 2 5 4 4 4 5 4 4 7 4 1 2 5 4 4 4 5 4 4 4 5 4 4 4 5 4 4 6 6 4 6 6 4 6 6 4 6 6 4 7 6 4 7 4 6 6 7 7 6 7 7 4 7 7 4 4 6 6 7 7 7 7 </td <td>wn pen #SootyMetres from badly cankered tree $40 \square > 40 \square Found$Competing Species$0 0 0$$0 0 0$$0 0 0$</td> | wn pen #SootyMetres from badly cankered tree $40 \square > 40 \square Found$ Competing Species $0 0 0$ $0 0 0$ $0 0 0$ |
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| Tree # Zone Easting Northing Image: Crown Class Image: Crown % Image: Crown % Main Stem Length(m) Class Image: Crown % Image: Crown % Image: Crown % Image: Crown % Image: Twig Dieback Image: Crown % Image: Twig Dieback Image: Crown % Image: Cro | wn pen #Sooty Competing Species |
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| | BHA Tree Analysis (version: December 2013) | | | | | | | | | | | | | | | | | | | |
|---------------------------------|--|--------------|--|--|--------------|-----------------------|-------------------|---|-------------------------|--------------------------------|--|----------------------------------|------------------------|-------------------------------|-------------------------------|---|-----------------|--|-----------|---|
| | | | | | Th | is tabl | e is to | o be c | comple | eted by a | designate | d Butternu | ut Health | Assesso | r (BHA). | | | | | |
| BHA Report # 222-221 Date(s) | | | | | | | | | 27-Jul-22 Total # | | | | | | # Butternut Trees A Report | | | | 3 | |
| BHA I | D # | 22 | 2 | BH | A Na | ime | | William Huys | | | | | | | | | | | | |
| Lando | owner | / Clie | ent N | lame | ÷ | | | | | | | | Julia | n Novia | :k | | | | | |
| Prope | erty Lo | ocatio | n | | | | | | | Eas | t Road (| & Dexte | r Line | Port St | anley | | | | | |
| | | inp | ut fie | eld d | ata | | | | | auto | omatic c | alculatic | o <mark>ns fror</mark> | n field | data | | Cat | egor | 'ies: | |
| | | | # | # bole cankers | | | $\left[\right]$ | or N) | | Circ. (cm) = Pi x dbh | total bole canker width (sooty x 2.5 + open x 5) | total RF | bole | RF canker % of circ. | total | 1: non-retainable, 2: retainable, 3: archivable | | | | ble, |
| Tree # | -ive Crown % | ree dbh (cm) | soot (wil assiç 2.5 cı can | ty (S) open (O) # rc ill be (will be flare gned assigned 5 cant m per cm per nker) canker) | | oot : (RF) kers | cankered tree? () | width (sooty x 2.5 + open x 5) | canker % of circ. | | | root canker % of 2xCirc | LC% >/= 50 & | | LC% >70 & | LC% >70 & | ary tree call | FINAL TREE CALL a Cat 2, dbb>200 | | |
| | | F | S <2 m | S >2 m | 0 <2 m | 0 >2 m | RF S | RF O | <40 m from (| Circ (cm) | BC (cm) | RC (cm) | BC% | RC% | BRC% | BC% = 0 | 8RC % <20 | вс % <20 | Prelimina | dbn/200 m <40m from a Cat 1 |
| 1 | 90 | 12 | h | у | b | r | i | d | | 37.68 | ###### | ###### | ##### | ##### | ##### | #### | ### | ### | ## | ####### |
| 2 | 90 | 10 | h | у | b | r | i | d | | 31.4 | ###### | ###### | ##### | ##### | ##### | #### | ### | ### | ## | ####### |
| 3 | 95 | 18 | h | у | b | r | i | d | | 56.52 | ###### | ###### | ##### | ##### | ##### | #### | ### | ### | ## | ####### |


BUTTERNUT HYBRIDITY TESTING **RESULTS**

| Order number: | NA-SO00084 |
|-----------------------|--------------------------------------|
| Report number: | NM-HAH015 |
| Company: | MTE Consultants Inc. |
| Contact: | William Huys |
| Project: | 48808-100, East Road and Dexter Line |
| BC Project | 48808-100, East Road and Dexter Line |
| Sample type: | Plant tissue (leaf) |
| Date of report: | 18 August 2022 |
| Number of samples: | 3 |

Thank you for sending your samples for analysis by NatureMetrics. Your samples have been **analysed** following our **Butternut RFLP (Restriction Fragment Length Polymorphism)** pipeline supplemented by **Sequence Characterized Amplified Region (SCAR)** codominant marker.

Butternut (*Juglans cinerea* L.) is considered an **endangered (EN)** tree species in Ontario. This report contains biodiversity information that may be sensitive, particularly with respect to endangered or protected species. It is the responsibility of the client to ensure that due consideration is given to the data and that the information is shared in a responsible way.

Disclaimer: Provided test only detects the occurrence of a hybridization event between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.) similar to the previous OFRI test derived from the publication by Zhao and Woeste (2011).

Here we present an overview of the key results, followed by a more detailed report that starts with the taxonomic composition of the samples followed by a more detailed look at the steps taken to extract, amplify, sequence, and analyse your DNA. A glossary for terms in **bold** is provided at the end of the report to define key terms used within the report.

OVERVIEW OF YOUR RESULTS

- A total of 0 butternut samples and 3 hybrid samples (see Disclaimer) were identified.
- All laboratory **controls** performed as expected.



FULL REPORT

Sample composition

A total of 0 butternut samples and 3 hybrid samples were identified (**Table 1, Figure 2**).

High-quality PCR products were obtained from all four tested markers with corresponding restriction enzyme profiles, where applicable.

All laboratory controls performed as expected.

| Customer ID | Barcode | Date arrived | DNA (ng/µl) | trnT-R RFLP | ITS RFLP | 15R-8 RFLP | 22-5 SCAR | Identification |
|----------------|---------|-----------------|----------------|----------------|--------------|---------------|--------------|----------------|
| 48808- | NAS-01- | 29-July- | 0 558 | J. | Hybrid | l cinerea | Hybrid | Hybrid |
| 100 BH1 | H0049 | 22 | 0.556 | ailantifolia | пурпа | 5. спистей | пурпа | riybhu |
| 48808- | NAS-01- | 29-July- | 0.674 | J. | J. | J. cinerea | J. cinerea | Hybrid |
| 100 BH2 | H0050 | 22 | | ailantifolia | ailantifolia | | | |
| 48808- | NAS-01- | 29-July- | 0.692 | J. | J. | Hybrid | J. | Hybrid |
| 100 BH3 | H0051 | 22 | | ailantifolia | ailantifolia | | ailantifolia | |

Table 1. The concentration of extracted DNAs and summary of RFLP and SCAR results.



NAS-01-H0051

Figure 1. Reference **butternut** PCR for 3 markers with corresponding restriction profiles and 22-5 SCAR marker PCR.



Figure 2. Non-digested (uncut)/digested amplicons and 22-5 SCAR marker PCR profile for submitted samples.





Figure 3. Re-run on higher resolution gel: non-digested (uncut)/digested amplicons for trnT-F marker profile.



METHODS

DNA from plant samples was extracted using a commercial plant DNA extraction kit with a protocol modified to produce standard DNA yields suitable for PCR and restriction analysis. An extraction blank was also processed for the extraction batch.

Comment: DNA yield was as expected (**Table 1**).

Extracted DNAs for samples and negative extraction control were amplified with **PCR** for four regions: trnT-F, ITS, 15R-8 and 22-5.

All PCRs were performed using pre-validated PCR mixes in the presence of both a **negative DNA extraction control** and a **negative PCR control**. Amplification and restriction enzyme digestion products were analyzed by **gel electrophoresis**.

Markers and corresponding restriction digests:

- Assay #1) PCR amplification of chloroplast gene trnT-F, followed by restriction digest with enzyme MboII.
- Assay #2) PCR amplification of ITS region of ribosomal nuclear DNA, followed by restriction digest with enzyme BsiEI.
- Assay #3) PCR amplification of random nuclear fragment called "15R-8", followed by restriction digest with enzyme AcII.

Assay #4) PCR amplification of SCAR marker 22-5 without restriction digest.



Comment: PCR reactions were consistently successful for all four markers, except for the sample NAS-01-H0051 which needed PCR repeat for trnT-F region. Electrophoresis bands were strong and of the expected size. No bands were observed on electrophoresis gels for the extraction blank or negative controls.

END OF REPORT

| Report issued by: | Мау Меі |
|---------------------|--------------------------|
| Report reviewed by: | Natalia Ivanova |
| Contact: | team@naturemetrics.co.uk |

REFERENCES

Zhao, P. & Woeste, K. E. (2011). DNA markers identify hybrids between butternut (*Juglans cinerea* L.) and Japanese walnut (*Juglans ailantifolia* Carr.). Tree Genetics & Genomes, 7, 511-533.



GLOSSARY

Butternut

Extraction Blank

Gel Electrophoresis

Inhibitors/inhibition

Hybrid

IUCN Red List

Juglans cinerea L. hybrid event between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.)

A DNA extraction with no sample added to assess potential contamination during the DNA extraction process.

The process in which DNA is separated according to size and electrical charge via an electric current, while in a gel. The process is used to confirm the successful amplification of a specific size fragment of DNA.

Naturally-occurring chemicals/compounds that cause DNA amplification to fail, potentially resulting in false negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors) or by additional cleaning of the DNA, but dilution carries the risk of reducing the DNA concentration below the limits of detection. At NatureMetrics, inhibition is removed using a commercial extraction/purification kit.

In this report – hybrid between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.).

The IUCN (International Union for the Conservation of Nature) is a global union of government and civil organisations that disseminates information to assist conservation. The IUCN Red List of Threatened Species is an inventory of the conservation status of over 100,000 species worldwide. The Red List evaluates data such as population trends, geographic range and the number of mature individuals in order to categorise species based on their extinction risk:

Extinct (EX) - No individual of this species remains alive.

Extinct in the Wild (EW) - Surviving individuals are only found in captivity.

Critically Endangered (CE) - species faces an extremely high risk of extinction in the wild. e.g. Population size estimated at fewer than 50 mature individuals.

Endangered (EN) - species faces a very high risk of extinction in the wild. e.g. Population size estimated at fewer than 250 mature individuals.

Vulnerable (VU) - species faces a high risk of extinction in the wild. e.g. Population size estimated at fewer than 10,000 mature individuals and declining.

Near Threatened (NT) - species is below the threshold for any of the threatened categories (CE, E, V) but is close to this threshold or is expected to pass it in the near future.

Least Concern (LC) - species is not currently close to qualifying for any of the other categories. This includes widespread and abundant species.

Data Deficient (DD) - There is currently insufficient data available to make an assessment of extinction risk. This is not a threat



category - when more data becomes available the species may be recategorised as threatened.

Used to determine if PCR reactions are contaminated.

Short for Polymerase chain reaction. A process by which millions of copies of a particular DNA segment are produced through a series of heating and cooling steps. Known as an 'amplification' process. One of the most common processes in molecular biology and a precursor to most sequencing-based analyses.

Short for Restriction Fragment Length Polymorphism which is a difference in homologous DNA sequences that can be detected by the presence of fragments of different lengths after digestion of the DNA samples in question with specific restriction endonucleases. Used to determine whether the assay is working correctly.

Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by PCR. Can be designed to be totally specific to a particular species (so that only that species' DNA will be amplified from a community DNA sample), or to be very general so that a wide range of species' DNA will be amplified. Good design of primers is one of the critical factors in DNA-based monitoring.

Short for Sequence Characterized Amplified Region. SCARs are DNA fragments amplified by the PCR using specific 15-30 bp primers, designed from nucleotide sequences established from cloned RAPD fragments linked to a trait of interest. Obtaining a codominant marker may be an additional advantage of converting RAPDs into SCARs, although SCARs may exhibit dominance when one or both primers partially overlap the site of sequence variation. Length polymorphisms are detected by gel electrophoresis.

Strictly, a taxonomic group. Here we use the term to describe groups of DNA sequences that are equivalent to species. We do not use the term species because we are unable to assign complete identifications to all of the groups at this time due to gaps in the available reference databases.

species (s./pl.) - A group of individuals capable of interbreeding. This is the most important taxonomic unit defined by scientists and the population trends of individual species are a key indicator in judging the effect of conservation programs. Related species are grouped together into progressively larger taxonomic units, from genus to kingdom. *Homo sapiens* (human) is an example of a species.

genus (s.) / **genera** (pl.) - A group of closely related species. Each genus can include one or more species. *Homo* is an example of a genus.

family (s.) / **families** (pl.) - A group of closely related genera. *Homo sapiens* is in the family Hominidae (great apes).

order (s.) / **orders** (pl.) - A group of closely related families. *Homo sapiens* is in the order Primates.

class (s.) / **classes** (pl.) - A group of closely related orders. *Homo sapiens* is in the class Mammalia.

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Negative Control PCR

RFLP

Positive Control Primers

SCAR

Taxon (s.) / taxa (pl.)

Taxonomy